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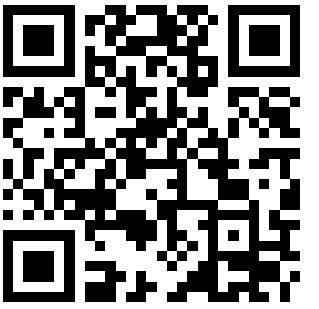

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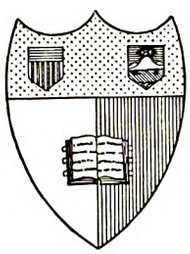

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Getting the Most from the Index

This is essentially a subject index, not an index of titles, and articles treating a number of different subjects are listed under each of them. In addition, a geographical reference is published wherever the article relates to any particular railway company, city, state or nation. Entries about an electric railway are under the name of the city in which the main office of the company is located, but in the case of electrified sections of steam railroads, the entries appear under the name of the railroad.

In the subject index, the alphabetical method is followed. If there is a choice of two or three keywords the one most generally used has been selected, cross references being supplied. Below is a list of the common keywords used in the index to this volume. This list has been subdivided for convenience into fourteen general subjects.

The headings which appear in the index itself are in small type under the general classifications. The main headings in capitals below do not appear in the index. The list of keywords is revised from time to time to keep the index abreast with developments.

As an example of how to use the index, if a reader wishes to locate an article on special trackwork he obviously would look in the list below at the general subject "Track." Under this caption, only "Special trackwork" could apply to the article in question. The reader would therefore refer to this keyword under S in the body of the index.

In addition to the groups of articles covered by these headings, papers and reports from railway associations are grouped under the names of the various organizations. Proceedings of other associations and societies are indexed in general only in accordance with the subject discussed. Short articles about machine tools appear only under the heading "Repair shop practice; shop methods and equipment" and are not indexed alphabetically, because there is a wide choice in most cases of the proper keyword to be used.

Signed articles also are indexed by the name of the author. When the name of the author is known to the reader this provides the simplest method of locating any article.

CLASSIFIED LIST OF KEYWORDS

ACCIDENTS AND ACCIDENT PREVENTION

Accident claim department
Accident prevention
Accidents (including wrecks)
Insurance, Fire
Safety work
Storm and fire damage

ELECTRIC CARS AND SERVICE CARS

Cars (including car design)
Locomotives
Service and tower trucks
Trackless trolley

CAR EQUIPMENT

Bearings
Brakes and compressors
Doors, car
Electrical equipment for cars (except motors)
Gears and pinions
Heaters, electric
Lighting and lighting fixtures
Motors, Electric
Resistors
Seats
Trolley wheels
Trucks
Wheels and axles

EMPLOYEES

Education
Employees
Insurance and pensions
Labor
Strikes and arbitrations
Wage decreases
Wage increases
Wages and working agreements

FARES

Fare collection (including apparatus)
Fare decreases
Fare increases
Fares
Traffic investigations
Traffic stimulation

FINANCIAL, LEGAL AND STATISTICS

Accounting
Appraisal of railway property
Blanks and forms
Discontinuance of lines
Financial (methods of financing)
Franchises
Insurance, Fire
Insurance and pensions
Legal
Legislation for railways
Market conditions
Operating records and costs
Public service and regulative commissions
Statistics
Taxes

HEAVY ELECTRIC TRACTION

Heavy electric traction (general)
Locomotives

MAINTENANCE OF EQUIPMENT

Car cleaning
Lubrication
Maintenance practice
Motor buses, Practice with
Painting
Repair shop practice; cars and car equipment
Repair shop practice; shop methods and equipment
Repair shops and equipment
Stores
Tests of materials and equipment
Welding

MOTOR BUSES

Motor buses, design
Motor buses, gas-electric
Motor buses, field for
Motor buses, installations
Motor buses, jitney competition
Motor buses, operating practice
Motor buses, regulation

POWER

Energy checking devices
Energy consumption
Fuels
Overhead contact system

POWER—Continued

Power distribution
Power generation
Power stations and equipment
Power transmission
Substations and equipment

STRUCTURES

Bridges
Carhouses and storage yards
Power stations and equipment
Repair shops and equipment
Substations and equipment
Terminals and waiting stations

TRACK

Pavements
Rail joints and bonds
Rails
Special trackwork
Ties
Track construction
Track maintenance

TRAFFIC AND TRANSPORTATION

Advertising
Customer ownership
Dispatching
Freight and express
Interurban railways
Merchandising transportation
Parking of cars
Publicity
Public, Relations with
Rapid transit (elevated and subway)
Schedules and timetables
Signals
Street traffic congestion
Traffic investigations
Traffic regulation
Traffic stimulation
Transportation, Metropolitan (general studies)

MISCELLANEOUS

European practice
Management
Noise reduction
Railways (general)
Snow and ice removal
Standardization
Wood preservation

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Abbreviations: *Illustrated. c Communications.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review
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CHARLES GORDON, *Editor*

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Drifting Along the Path of Least Resistance

RESULTS just obtained in a survey of car purchases for the first six months of the year and published in this issue demand careful consideration by all electric railway men. A most serious condition is divulged by these figures. To say that some mighty straight thinking is required by the industry is putting the situation mildly. There have been a total of 802 cars purchased for the half year and at present there seems to be little prospect of exceeding this number during the next six months. At this rate there would be a total of 1,600 cars purchased for the year. This is approximately the number purchased during 1925, the lowest for several years.

A moment's consideration shows where this rate of car purchases is leading the industry. Assuming that all cars bought are for replacements and not for additional facilities, it would take at least 45 years to renew the cars now in service. Of these 25,000 are now more than twenty years old. Some are even much older. It requires no prophetic power to anticipate what will happen to the industry long before its cars are permitted to get into any such condition as is indicated by these figures.

What are railway men going to do about it? At present they are permitting the equipment on which they are dependent for attracting patronage rapidly to get into a more and more disreputable condition. Street cars cannot run forever, and any attempt to dodge the facts is suicidal. If the present neglect of car replacement is not corrected the public apathy toward any service which presents a down-at-the-heels appearance will lead not only to complete public indifference to tax, fare and franchise problems, but will ultimately result in active demand for abolition of such service as a nuisance.

What matters it that electric railways continue to be the most economical method of public transportation? The American public will not tolerate any service that seems out of date, regardless of its economy, nor will it listen long to appeals for remedial measures for the preservation of a service that has become unpopular. True, money for new cars is scarce and hard to get, but fortunately, it has been adequately demonstrated that on most properties new equipment literally pays for itself through operating economies alone. Manufacturers stand ready to arrange equipment trusts. Savings that can be made in the cost of new cars, particularly on the smaller properties, by adherence to some uniformity in type and size, would probably more than compensate for the necessary banking discount for such financing.

New cars are not a panacea. They will not take the place of good management, but they are a part of good management. They may be made the basis for bringing about many needed measures for relief from franchise restrictions, inadequate fares and other burdens. Even a comparatively small number of up-to-date, attractive new cars on a hard-pressed property may be made the means of bringing home to the public the character of improvements that would result from relief measures sought by the railway. Such a procedure may be characterized as "selling" the idea of relief to the public by offering something attractive as an inducement.

The industry is today faced in the wrong direction on this car situation. It is high time to forget the fallacious idea that people will ride in any old vehicle that gets them to their destination. It is a grave mistake to drift along the path of least resistance because improvement is difficult. There is a strong current of progress in transportation, and the agency which drifts is sure to be headed down stream.

Chicago Sets a New World's Record

NEITHER the story nor the pictures presented elsewhere in this issue tell all there is about the transportation feat that was performed at Chicago in handling the Eucharistic Congress crowds. This does not mean that either the story or the pictures are inadequate. It is a stimulating account of accomplishment and the pictures tend to round it out, but like all similar accounts the reader must put something into it if he would get something out of it. The figure of 5,087,481 passengers carried by the Chicago Surface Lines in one day, a number 650,000 in excess of the corresponding day a year ago, reduces the feat to mathematical proportions, but it does not give a real idea of the problems involved. That would be well nigh as insuperable as was the feat itself. Similarly the fact that the North Shore and the Rapid Transit Lines delivered 130,000 at the gates of the seminary six hours after the migration began, stupendous as are the figures, also tells only part of the whole story. Consult the picture of the crowd milling around the Wabash Avenue station! This and the other pictures merely illuminate the subject with flashes that show the problem and the extent to which they went to cope with the situation.

Motor highways were reserved for the use of travelers to Mundelein, but despite this only an inconsequential number relied on their private cars to reach the site of the conclave. That in itself was a great tribute to the consciousness of the ability of the railroads to perform satisfactorily.

Out of the experience at Chicago many lessons will come. Not the least by any means of those already learned is that the rigid ban placed on parking in all streets in the Loop district for three days speeded up traffic to such an extent that a resolution has already been introduced into the Council to make the no-parking rule for the downtown district permanent.

It is a valuable story of measures and men, this one

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of handling the Chicago crowds. Either would have been ineffective without the other. If in the account elsewhere in this issue the efforts of the men appear to be submerged, that is only because, after all, their performances were largely personal, individual. A very significant testimonial to them is that there were no man failures, no casualties. All in all, it is a record of a stupendous undertaking successfully completed. Managements and men deserve great credit.

Transit Congestion May Force Stricter Height Limitation in New York

COMPARING the present appearance of Manhattan Island to a railroad baggage room on the day after Labor Day, strewn about with up-ended trunks and boxes, Henry H. Curran, a member of Mayor Walker's recently-formed committee on city planning and survey, urged an immediate ban against skyscrapers. He suggested a building limit of six stories on side streets and ten stories on avenues. Construction of high buildings has outrun the ability to provide adequate rapid transit, he pointed out. The more subways are dug the more skyscrapers are built to utilize the added capacity, and the perennial straphanger remains the symbol of metropolitan transportation conditions.

Gradually the idea is spreading that relief from congestion is not to be had simply by building more and more transit lines. It takes only a simple calculation to show that the ultimate demand for transportation, if the entire business district were built up to the limit allowed by law, would be far in excess of the ultimate capacity of all the rapid transit lines which it would be feasible to construct. The sooner this situation is understood the better it will be. If stricter height limitation must eventually be adopted, this should be done as quickly as possible. By this means a more even development of the entire metropolitan area will be encouraged. Neglected and dilapidated sections of the city will be restored to usefulness. The transportation system will broaden out, and the city will be healthier and better for the change.

Europe Has Faith in the Future of Rail Transportation

CONFIDENCE in the future of electric surface railway transportation is indicated by recent car purchases in foreign countries. In Great Britain the tramways have ordered nearly 700 new cars since the first of last year. Details were given in an article in this paper on June 26. Not long ago the street railways of Berlin, Germany, placed orders for 1,000 new cars. After extensive experimentation the Paris system decided a little more than a year ago to build 475 new tramcars. A long list might be given of other foreign street railways that have recently made substantial additions to rolling stock.

Particular significance attaches to these car purchases because they were made despite vociferous arguments of the bus proponents to the effect that the usefulness of the tramways was over and that buses should be bought rather than new cars. Careful study of conditions, however, convinced the various managements that the tramways were performing an essential service which would not satisfactorily be superseded by bus service.

Reasons given for retaining the tramways rather than substituting buses for them were substantially the same in the different cities. Primarily, it was evident that transportation service could be rendered much more cheaply by tram than by bus, and, second, it was feared that the large number of buses which would be required to replace the cars would make worse the already serious traffic congestion. The difficulties resulting from the presence of an excessive number of buses in streets of London has given pause to some of the more enthusiastic bus adherents.

Ownership of the transportation system by the municipality itself in nearly all of the cities where new cars recently have been purchased assures the impartiality of the investigation of the relative merits of cars and buses. Questions of franchise rights, protection of security holders, etc., which have sometimes tended to obscure the issue and prevent its determination on the basis of merit alone, were largely absent. Moreover, many of these transportation systems have already undertaken bus operation on an extensive scale, and know from experience its advantages and disadvantages. The decision to continue and expand the tramway service is thoroughly in accord with the ideas of competent transportation men in the United States, and leads to the hope that the confusion which has existed concerning the proper spheres of the street car and bus is gradually being cleared.

Law on Use of Highways Rapidly in the Making

PRACTICALLY all courts, whether with state or federal jurisdiction, are now rapidly making precedents on legal questions relating to the use of the highways. The reason, of course, is the large number of motor vehicles desiring to use the roads, but particularly it is the great increase of trucks and buses, many of which are operated in competition with the older forms of common carriers. During the last few years there has been a great deal of legislation relating to motor carrier operation, and the courts have passed more explicitly than has ever been necessary in the past upon the fundamental rights and duties of all users of the highways.

One of the most interesting recent decisions is that of the United States Supreme Court, early in June, in the case of the Frost & Frost Trucking Company. Readers of this paper are familiar with the position taken by the California Legislature that it had the power to set the conditions under which the highways of the state can be used for commercial purposes. This position received the approval of the California Supreme Court, which upheld the State Public Service Commission when it refused a carrier under private contract right to operate in the state without first having secured from the commission a certificate of public convenience and necessity.

In one sense this position of the state has been approved in the United States Supreme Court decision just rendered, but in another way it has been upset. In disagreeing with the California view the Supreme Court says there are limits to the conditions which a state can impose on carriers. It cannot, for example, compel a private carrier to assume against his will the duties and burdens of a common carrier. More broadly speaking, it cannot offer to grant him a valuable privilege only if he will relinquish rights guaranteed to him under the federal Constitution. But the Supreme Court was very careful to add that it did not mean

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to abate in any degree the power exercised by the state or of its utilities commission over common carriers or over those who to escape utility regulation posed as private carriers. In other words, it was the effort of the California law to change the status of the carrier from what it was to something it was not that came under the ban of the Supreme Court.

Outside of this decision, the most important recent development on the status of highway usage is probably the decision rendered by the Ohio Supreme Court within the last few weeks overruling an order of the State Public Utilities Commission which granted the Buckeye Special Transit Company of Columbus right to operate motor buses promiscuously over irregular routes within the state. Every such route, according to the court, must be advertised in the required way in each county to be traversed and the service must be one which will fulfill a demand for convenience and necessity. Some sixteen existing transportation companies in Ohio carried this case to the Ohio Supreme Court as appealing the decision of the commission.

In some respects this decision is like that of the California case, since in both there was an attempt to bring under the common carrier law a carrier that wanted to do a special business. The difference was that in California the carrier objected, while in Ohio the objection came from the railways and bus companies that would be subject to competition. But both cases show the increasing demand for various kinds of motor carrier service and the necessity in each state for some definite legislative program by which the activities of these carriers will come under proper regulation. This regulation ought to be such as will give the public the benefit of the expanding uses offered by motor buses and trucks without encroaching on what is really the entirely different service given by the established common carriers. Such a program can be begun none too soon.

It is unfortunate for this reason that the effort to provide some sort of adequate regulation for public interstate motor carriers seems destined to failure at the present session of Congress. The bill offered may not be ideal in every respect, yet admittedly some improvement over existing conditions is greatly needed. If nothing should be done at this session, steps should be taken promptly when Congress meets again.

Higher Standards the Real Goal at Which to Shoot

MUCH discussion always follows the suggestion that affiliated bus operations should be similar to rail operations in color of equipment, style of uniform and methods of performance. Equally as many opinions are voiced that it should be distinctive; that care should be taken to differentiate between the service details so that the people may know that here is something different and a step ahead in transportation.

It appears that there are grounds for both of these contentions, but the underlying reasons apparently do not often come to the surface. The basic consideration is that whatever is done should be an improvement in every sense of the word. The quality of transportation should be lifted and no attempt made to drag down the people's desires to the level of antiquated equipment.

If through the adoption of modernization programs in the past the rail system enjoys the support and good will of the public there is reason to have the bus system emulate the electric cars in color, finish, method of operation, etc. In this way the bus will assume the rôle of an auxiliary service to be operated on the same high standards that have been previously established.

On the other hand, it may be a stroke of genius to establish an auxiliary bus service in a totally different manner and as far removed as possible from the rails. By doing this the onus of the old is not passed on to hamper the initial effect of the new agent. Further expansion of the bus and perhaps a revamping of the rail lines will thus be encouraged.

A Drive Against the Summer Fool Killer

SOMEHOW the glamor of the summer season is dimmed by accidents, especially week-end accidents. From Saturday noon to Monday morning throughout the summer season, with people pleasure bound and safety barriers let down, the accident record reaches its apogee. Far too often what might have been the culmination of a happy holiday is converted into a catastrophe. Even those who fortunately are not participants in the tragedies suffer the pangs of the ill-fated ones. These survivors no longer philosophize on "accidents will happen," but sorrowfully recount how the accident might have been averted.

Now that this carefree season is nigh again the necessity for practicing safety first measures becomes of paramount importance. Railway companies can well afford to follow the example of the United Railways, Baltimore, which has started a campaign for the reduction of week-end accidents. It will be a drive distinct and different from the continuous safety work carried on by the company, and by its concentration on the proverbial accident period will probably increase the interest in the general subject of safety. By means of car card advertisements and posters the railway is transmitting its purpose to the public, and at the same time soliciting their help. Special cards have been distributed to the company's agents—trainmen and bus operators—warning them of their responsibility in preventing accidents which mar happiness and wreck homes.

With a slogan of "no week-end accidents" the 1926 record of safety on electric railway properties could be even more impressive than that of 1925, a banner year in many cities for safety first. A glance at some recent accident reports is testimony of this. In Scranton, Pa., 30,000,000 people were carried by the railway lines in 1925 without a fatality or serious accident of any kind. The railway department of the Milwaukee Electric Railway & Light Company reports a reduction of 50 per cent in accidents of all kinds during 1925. The United Railways, St. Louis, reports a decrease in accidents of all kinds of 12.5 per cent over 1924. In Buffalo the number of accidents decreased 7.2 per cent in 1925 over 1924. In Los Angeles the Pacific Electric Railway reported a decrease of 16 per cent over the preceding year. In Baltimore the number of accidents decreased 31 per cent compared with 1919, when the safety department was organized. In Rhode Island there was a decrease of 8.38 per cent over the 1924 record. So was progress made during 1925 toward the safe handling of passengers, whether due to safety contests, councils or codes. Further tangible evidences can be expected when the week-end campaign is universally adopted. A drive of this kind would not mean a cessation of regular safety activity. Rather would it serve to intensify general safety enterprise.

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Car Purchases Below Normal Rate

Survey for Past Six Months Shows a Total of Only 802 Cars of All Types Ordered—740 of These Are Passenger Cars—Little Present Indication of Improvement During Remainder of Year—Bus Purchases Approximate First-of-the-Year Predictions —Analysis of Car Types Is Included

COMPLETE figures for the first six months of 1926 indicate that 802 cars of all types have been ordered by the electric railway industry. Of these 740 were passenger cars and the remaining 62 were freight and service units. These figures were obtained from a survey of all the car builders in this country, backed up by a review of orders which have been published in this paper.

In an effort to obtain some idea of the number of orders which will be placed during the coming six months, representative electric railways were requested to state their probable purchases of rolling stock, both cars and buses. Replies were received from some 70 properties, comprising nearly all of the larger railways in the country and a number of the smaller ones.

Buses are contemplated in abundance, but there is uncertainty in the matter of street cars to be ordered. The manufacturers are fairly evenly divided, some taking the attitude that the coming months will herald the long-anticipated revival of activity in the acquisition of cars, while others are more conservative and wish to witness a few promising inquiries before committing themselves. One car builder states that a group of four companies is actively contemplating the acquisition of 335 cars within the next 90 days.

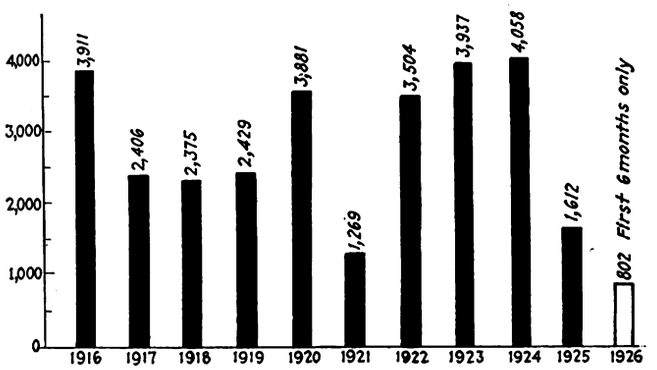
The largest prospective order for cars that has been announced to date is that of the Seattle Municipal Street Railway, Seattle, Wash. Bids have been requested for 80 cars with a closing date of July 30. Several purchases of additional rolling stock will be contingent on the outcome of public service commission hearings, negotiations with local authorities, etc., now in progress. Practically all cars which are definitely known to be in contemplation are of the double-truck, one-man, two-man type.

TABLE I—PASSENGER CARS ORDERED BY ELECTRIC RAILWAYS DURING SIX-MONTH PERIODS SINCE 1922

	Total	Per Cent
1923		
First six months	1,467	46
Second six months	1,708	54
Total	3,175	100
1924		
First six months	1,731	71
Second six months	699	29
Total	2,430	100
1925		
First six months	331	25
Second six months	983	75
Total	1,314	100
1926		
First six months	740	

That it is difficult to predict the total purchases from the figures for the first six months is seen from Table I, showing a division for the last three years. In 1924 the first six months brought in 71 per cent of the orders, while last year 75 per cent were received the second half of the year. In 1923 the orders were quite evenly divided, 46 per cent being ordered in the first six months.

Two circular diagrams analyze the information contained in Table II to show the types of cars which comprise the 802 ordered during the half year and further to split the city service cars into their various classifications. These diagrams bring out a number of interesting facts concerning trends in car design and the proportions of cars being purchased for city and interurban service. The fact that 75 per cent of the total cars ordered were for city passenger service is scarcely a matter for comment. This is about the average for the past six years, and reflects the relative amount of city and interurban business.



Total Yearly Purchases of All Types of Cars by Electric Railways Since 1915

Only 35 freight cars were ordered during the six months, these being purchased by two of the companies which participated in the Central Electric Railway Association agreement to standardize freight trailer equipment. It will be remembered that a considerable number of these standard cars were ordered toward the close of 1925 by other members of the C.E.R.A. The further purchase of box and gondola cars is being contemplated by several roads for the current year.

Of the city cars 222, or 36 per cent, were of a type suitable for both one and two-man operation. Most of these were double-end, with double trucks and equipped with four motors. Next in favor were cars for straight two-man operation, these totaling 210, or 34 per cent of the whole. The third largest group was made up of double-truck cars for one-man operation, these also being generally equipped with four motors and of double-end construction.

At the bottom of the list appear the one-man single-truck cars. There were only 45 of these or approximately 7.5 per cent of the total orders. All but eight of these were greater than 28 ft. in length and therefore do not come under the general category of Birney cars. The double-truck car for one-man operation seems to be rapidly attaining the nature of a standard for this type of service, at least in current purchases.

Special Characteristics of Cars Ordered

It has been quite noticeable in the cars ordered during the past few months that continually increasing emphasis is being placed on the matters of riding com-

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fort and esthetic appearance. Seats are undergoing a metamorphosis and the wood slats are giving way to spring cushions upholstered with plush, rattan and leather. In particular the frequency with which plush and leather are being specified indicates that these materials have met with marked approval from the railways and their customers. Upholsterings of leather and leather substitutes are perhaps somewhat in the lead over plush. Deep springs are much in evidence and there is a distinct tendency to use considerably lower seats than formerly. In fact, there have been several orders placed which called for seats 17 in. high.

Post and seat spacing varies from 28½ in. to 33 in. for city cars, and an average dimension of 29½ in. or 30 in. seems to be fairly common. This is another evidence that the railways are going more than half way in the effective marketing of transportation by catering to the comfort of their patrons.

Special floor coverings have been specified in a number of instances. Inlaid rubber tiling and linoleum are the materials which have principally been used for this purpose. Fewer cars are being built with wood slats on the floors than in past years. Practically all of the cars ordered were equipped with folding doors and steps and in many cases treadle mechanisms have been provided to operate rear or center doors for one-man service. On some interurban cars bucket type seats

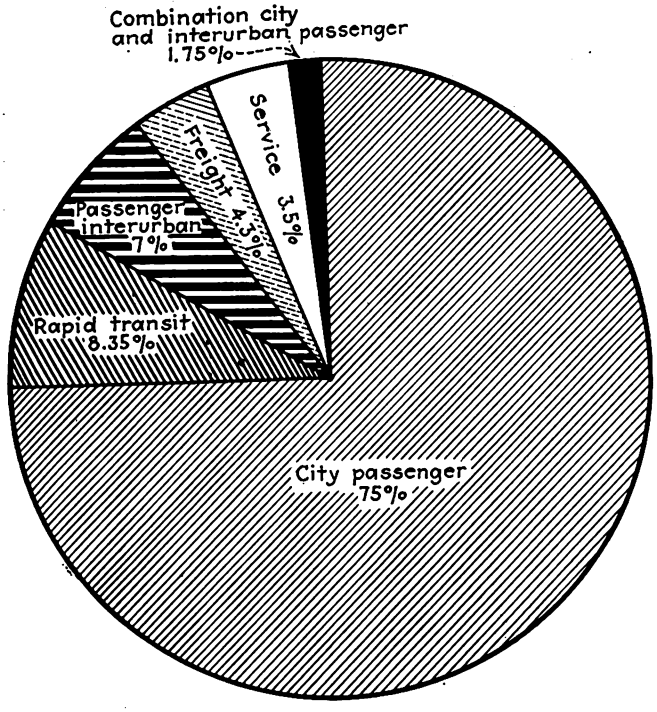


Diagram Showing the Proportion of Various Types of Cars Purchased During the First Half of the Year

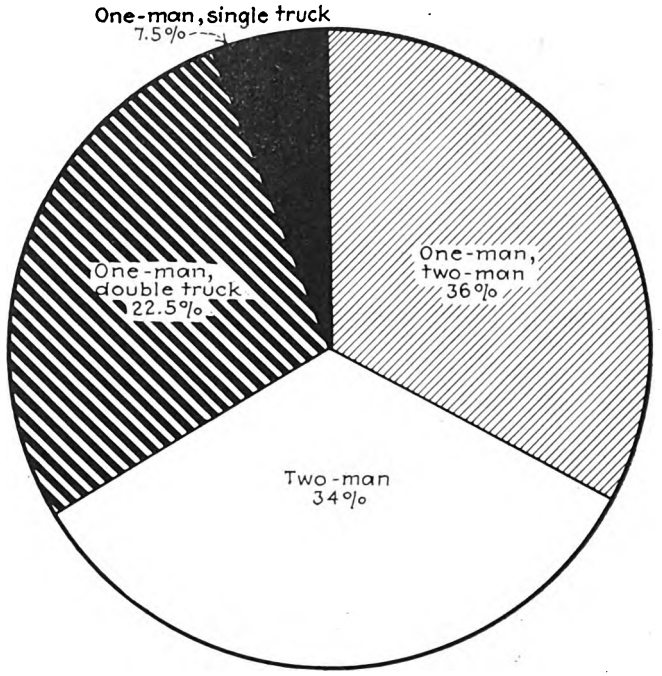
have been specified, this being a deliberate bid to emulate the comfort and luxurious atmosphere attained in the modern parlor car bus.

Bus Developments During the Past Six Months

Roughly estimated, the number of buses purchased by electric railways during the first half of the year was 1,000. Detailed purchases by companies have not been obtained, but material in the rolling stock columns of the JOURNAL and in reports received from the leading manufacturers indicate that this is a fairly representative figure.

With the exception of 135 buses bought by the Philadelphia Rapid Transit Company, no particularly large orders have been placed. Several roads have made their initial investment in bus equipment to supplement their railway service during the six-month period, and many others have made further additions to existing bus equipment.

More buses were ordered for city service than for



The Various Types of City Service Cars Are Here Graphically Analyzed in the Proportions Ordered

interurban routes. The tendency even in the street car type of bus has been to render service as attractive as possible by means of more luxurious equipment, increased knee room and better appearance, both exterior and interior. Practically all interurban and suburban equipment was of the de luxe parlor car type. Of some 175 double-deck buses ordered, 75 went to the Philadelphia Rural Transit Company and 50 to the Department of Street Railways, Detroit, Mich. In the single-deck equipment 25 and 29-passenger capacities predominated, although many railways indicated that for their particular services the 21-passenger bus was more adaptable. The gas-electric type of equipment continues to arouse interest among railway bus operators. The Philadelphia Rural Transit Company, a bus subsidiary of the Philadelphia Rapid Transit Company, has standardized its entire equipment on the gas-electric basis, including the 135 buses it ordered. Two other large orders for gas-electric equipment were those of the Department of Street Railways of Detroit for 50 and the Public Service Company of Newark, N. J., for 54 buses.

For the most part bus manufacturers are decidedly optimistic in their predictions of business during the next six months. Doubling the figure of 1,000 buses for the first half of the year would not equal the 2,200 units purchased by electric railways last year. Plans for more complete co-ordination of bus and trolley service are being rapidly pushed forward by many companies, and the manufacturers appear to be justified in expecting an increase of business for the remainder of the year. At least one company is contemplating the purchase of more than 100 buses, provided that certain features of the local transportation situation are satisfactorily worked out. Numerous inquiries for buses

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in lots of from 10 to 25 have been received by several of the manufacturers. The predictions of the manufacturers taken in connection with the purchases estimated by the railways seem to indicate that approximately 1,500 buses will be ordered by them from July to the end of the year. This will bring the total for the twelve months to approximately 2,500, a considerable advance over 1925.

Table II—Details of Rolling Stock Ordered During First Six Months of 1926

	No.	Class	Service	Motor or Trailer	Single or Double Truck	Length, Ft. In.	Width, Ft. In.	Weight, Lb.	Motors	Seats	One or Two Man	Center or End Entrance
Alabama												
Birmingham Electric Co.	16	Passenger	City	Motor	Double	49— 7	8— 0	35,000	4	62	Both	Center
Mobile Light & Railroad Co.	5	Passenger	City	Motor	Single	29— 9	.....	.....	2	32	One	End
Arkansas												
Arkansas Central Power Co.	30	Passenger	City	Motor	Single	28— 6½	.....	.....	2	33	One	End*
Forth Smith Light & Traction Co.	6	Passenger	City & Int.	Motor	Single	28— ½	8— 0	16,000	2	32	One	End
California												
Key System Transit Co.	6	Dump	Construct	Motor	Double	40— 0	.....	.....	.....	.....	.....	.....
Key System Transit Co.	4	Dump	Construct	Trailer	Double	40— 0	.....	.....	.....	.....	.....	.....
Connecticut												
Connecticut Co.	1	Crane	Construct	Motor	Double	42— 0	.....	.....	.....	.....	.....	.....
District of Columbia												
Washington Railway & Electric Co.	15	Passenger	City	Motor	Double	42— 3	.....	.....	.....	49	One	.....
Florida												
City of St. Petersburg	8	Passenger	City	Motor	Double	40— 1	.....	.....	4	44	One	End
Georgia												
Georgia Railway & Power Co.	5	Passenger	Interurban	Motor	Double	45— 6	8— 4	36,245	4	51	One	End*
Georgia Railway & Power Co.	5	Passenger	City	Motor	Double	46— 4	8— 4	37,380	4	48	One	End
Georgia Railway & Power Co.	60	Passenger	City	Motor	Double	46— 4	8— 3	37,000	4	48	One	End
Illinois												
Aurora, Elgin & Fox River Electric Co.	8	Passenger	Interurban	Motor	Single	28— 0	7— 9½	18,050	2	32	One	End
Chicago & Joliet Electric Railway	10	Passenger	Interurban	Motor	Double	46— 2	8—10½	38,000	4	52	One	End
Chicago Surface Lines	34	Passenger	City	Motor	Double	48—11	.....	41,000	2	.....	Both	.....
Chicago Surface Lines	33	Passenger	City	Motor	Double	48—11	.....	41,000	2	.....	Both	.....
Chicago Surface Lines	33	Passenger	City	Motor	Double	48—11	.....	41,000	2	.....	Both	.....
Indiana												
Gary Railways	5	Passenger	City	Motor	Double	45— 0	.....	37,000	4	46	One	End
Southern Indiana Gas & Electric Co.	13	Passenger	City	Motor	Double	37— 6	.....	.....	4	.....	One	End*
Maryland												
Potomac Edison Co.	2	Passenger	City	Motor	Double	40— 0	.....	.....	4	38	Both	.....
Massachusetts												
Berkshire Street Railway	10	Passenger	Interurban	Motor	Double	.....	.....	.....	4	.....	.....	.....
Boston Elevated Railway	6	Work	Construct	Motor	Double	40— 0	.....	.....	.....	.....	.....	.....
Boston Elevated Railway	75	Passenger	City	Motor	Double	46— 7½	8— 7½	.....	2	44	Two	.....
Boston Elevated Railway	25	Passenger	City	Motor	Double	46— 7½	8— 7½	.....	2	44	Two	.....
East Taunton Street Railway	2	Passenger	City	Motor	Double	36—10	8— 1	27,934	4	44	Both	.....
Michigan												
Michigan Railroad	15	Freight	Interurban	Trailer	Double	49— 8	8— 5½	.....	.....	.....	.....	.....
Minnesota												
Twin City Rapid Transit Co.	1	Crane	Construct	Motor	Double	.....	.....	.....	.....	.....	.....	.....
New York												
Brooklyn City Railroad	1	Crane	Construct	Motor	Double	44— 0	.....	.....	.....	.....	.....	.....
Brooklyn-Manhattan Transit Corp.	67	Passenger	City	Motor	†	.....	.....	.....	.....	.....	Train	.....
Jamestown Street Railway	8	Passenger	City	Motor	Single	.....	.....	.....	2	30	One	.....
New York State Railways	1	Dump	Construct	Motor	Double	40— 0	.....	.....	.....	.....	.....	.....
New York State Railways	1	Dump	Construct	Trailer	Double	40— 0	.....	.....	.....	.....	.....	.....
Schenectady Railway	2	Dump	Construct	Motor	Double	40— 0	.....	.....	.....	.....	.....	.....
Ohio												
Columbus, Delaware & Marion Electric Co.	2	Parlor	Interurban	Motor	Double	62— 0	.....	102,000	4	35	Two	.....
Northern Ohio Traction & Light Co.	1	Dump	Construct	Trailer	Double	40— 0	.....	.....	.....	.....	.....	.....
Penn-Ohio System	10	Freight	Interurban	Trailer	Double	49— 8	8— 5½	.....	.....	.....	.....	.....
Portsmouth Public Service Co.	3	Passenger	City	Motor	Double	42—11	8— 6¾	26,800	4	55	Both	.....
Steubenville, East Liverpool & Beaver Valley Traction Co.	8	Passenger	City & Int.	Motor	Double	48— 0	.....	40,000	4	51	Both	.....
Stark Electric Railroad	8	Passenger	Interurban	Motor	Double	47— 0	8— 8½	32,500	4	52	Both	.....
Toledo Edison Co.	1	Dump	Construct	Trailer	Double	40— 0	.....	.....	.....	.....	.....	.....
Western Ohio Railway	10	Freight	Interurban	Trailer	Double	49— 8	8— 5½	.....	.....	.....	.....	.....
Pennsylvania												
Pennsylvania Railroad	8	Passenger	Interurban	‡	Double	.....	.....	.....	.....	.....	.....	End
Philadelphia Rapid Transit	50	Passenger	City	Motor	Double	45— 6	8— 6	36,940	4	48	Two	Center*
Pittsburgh Railways	50	Passenger	City	Motor	Double	.....	.....	.....	4	.....	Two	Center
Sunbury & Selinsgrove Railway	3	Passenger	Interurban	Motor	Double	40— 3	.....	.....	4	51	Both	.....
West Side Electric Street Railway	3	Passenger	City	Motor	Double	41— 2	8— 3	35,060	4	46	Both	End
Wilkes-Barre Railway	10	Passenger	City	Motor	Double	45— 0	.....	.....	4	.....	Two	.....
Rhode Island												
United Electric Railways	10	Passenger	City	Motor	Double	41— 0	.....	.....	.....	44	Both	.....
Tennessee												
Memphis Street Railway	32	Passenger	City	Motor	Double	46— 0	.....	.....	4	.....	Both	*
Nashville Railway & Light Co.	10	Passenger	City	Motor	Double	40— 0	.....	.....	4	.....	Both	.....
Nashville Railway & Light Co.	1	Work	Construct	Motor	Double	40— 0	.....	.....	.....	.....	.....	.....
Tennessee Electric Power Co.	10	Passenger	City	Motor	Double	40— 0	.....	.....	4	.....	One	End
Texas												
Dallas Railway	2	Dump	Construct	Motor	Double	40— 0	.....	.....	.....	.....	.....	.....
Dallas Railway	30	Passenger	City	Motor	Double	45— 8¼	8— 5	.....	4	.....	Both	.....
Vermont												
Springfield Terminal Railway	2	Pas. & bag.	Interurban	Motor	Double	41— 6	.....	.....	.....	28	Two	End
Virginia												
Roanoke Railway & Electric Co.	6	Passenger	City	Motor	Double	41— 4	.....	.....	.....	44	Both	.....
Purchaser not specified	19	Passenger	City	Motor	Double	42— 0	.....	.....	4	44	One	End*

* Single-end construction. †Articulated three-car units. ‡Motor-multiple unit.

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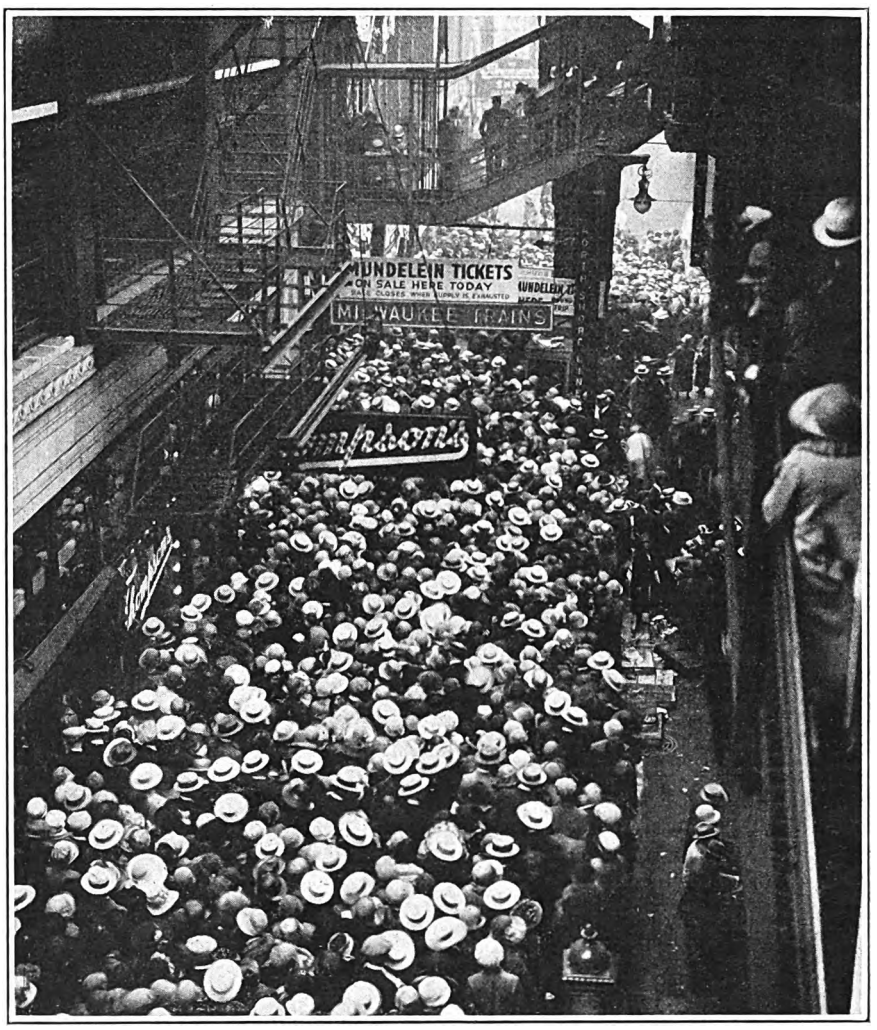
Greatest Feat in Transportation History

All Records for Passenger Handling Believed to Have Been Broken by the Chicago Surface and Elevated Lines During the Mundelein Migration—Vivid Account of the Extreme Length to Which the Roads Went to Accommodate Prospective Passengers

IT WILL probably never be known just how many pilgrims journeyed to Chicago from all parts of the world last month to attend the 28th International Eucharistic Congress of the Catholic Church, but that the transportation agencies played a conspicuous part in the success of the elaborate program will never be gainsaid. So efficient was their functioning, in fact, that had it not been for the outdoor services and mammoth pageants, which drew anywhere from 150,000 to 300,000 persons to the downtown district every morning of the four-day conclave, the casual observer would have been wholly unaware that the city's population had suddenly been increased by more than one-third.

At no time during the great religious conference were there fewer than 600,000 delegates in Chicago, and from the time the spectacular ceremonies opened in Grant Park Stadium on June 20 to the celebration of the final mass at Mundelein on June 24, it is estimated that close to 1,000,000 visitors bent on acclaiming the Eucharist had been in the city —the greatest assemblage of people for a single event in the history of the world.

The task of transporting this vast throng from every corner of the city to the various sectional meetings and diurnal services in the downtown stadium taxed every available resource of the combined surface and rapid transit systems. In anticipation of the unprecedented travel, all painting and repair work on the equipment of both lines was suspended, and on the day the congress opened the surface lines and elevated system reported 99.8 per cent and 98 per cent of their respective equipment in service. Monday, June 22, was the biggest day in the history of the Surface Lines, more than 5,087,000 revenue passengers being carried. On the same day the Rapid Transit Company announced that 1,800 cars were in service—the greatest number ever moved at one time in the annals of the elevated organization. Not even during the memorable days of the Columbian Exposition in 1893 or at the time the Armistice was signed could officials recall an occasion when the transportation companies had been called upon to render such a mighty service. Most remarkable of all, however, was the fact that, in spite of the greatly multiplied load, the lines managed to handle their regular patrons with a minimum of inconvenience and delay. Some retardation of service was, of course, inevitable, but Chicagoans were generally philosophical and little trouble was experienced.



A Typical Crowd Awaiting Its Turn at the North Shore Ticket Booths on Wabash Avenue, Chicago

If the problems of local transportation were momentous, still more colossal was the burden imposed on the electric railways when officials of the congress announced that the culminating exercises would be held at Saint Mary's-of-the-Lake Seminary in Mundelein, a tiny village 40 miles to the north of Chicago. To study the situation and perfect plans for the gigantic movement of pilgrims to this shrine, a transportation committee was appointed on which three steam railroads and the Chicago Rapid Transit Company and Chicago, North Shore & Milwaukee Railroad were represented. Many months before the pilgrimage was to take place this committee set about to divide up the city into districts co-extensive with the several church parishes in

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which the great host was to be quartered. The expected rail traffic of 300,000 was allocated according to the facilities and accessibility of each railroad. From its downtown terminal, the Chicago & Northwestern Railroad was asked to carry as far as Lake Bluff a total of 60,000 visitors quartered in parishes adjacent to its right-of-way in the northern half of the city. At Lake Bluff the Mundelein branch of the North Shore Line was assigned this load for haulage direct to the seminary grounds. The Chicago, Milwaukee & St. Paul Railroad was charged with the responsibility of hauling another 30,000 passengers from a large area in the northwestern part of Chicago to Libertyville, 2 miles east of Mundelein. Pilgrims billeted in the west and south sides of the city were allotted to the Soo Line terminal at Forest Park on the outskirts of Chicago. It was decided that by pressing every available car into service this last road might transport a possible 15,000 direct to Mundelein. The maximum capacity of the three steam lines was thus placed at 105,000.

In the belief that much of the travel to Mundelein would be by motor nine state highways, with a capacity of 1,000 cars per hour each in one-way traffic, were designated as official routes and barricaded at every intersection to prevent interference with the steady flow of vehicles. Each of these main arteries led directly to a parking space of 100 acres each a short distance away from the seminary grounds. On the basis of four passengers to each car, it was estimated that in eight hours of travel a possible 350,000 might reach Mundelein by automobile. That this number proved to be far in excess of the bare 75,000 or 80,000 who actually motored to the Catholic seat on June 24, however, could in no way be attributed to faulty planning or to precautions neglected. The great mass of pilgrims simply found it easier and more convenient to use rail service.

Because of their matchless facilities, convenience of connection and direct route, by far the heaviest share of the traffic by rail necessarily fell to the Chicago Rapid Transit and the Chicago, North Shore & Milwaukee Railroad. By concentrating all equipment in the movement, it was estimated that the electric roads could jointly carry 175,000 from the south, central and northeast parts of Chicago. In addition, the committee asked accommodations for the 60,000 transfer passengers from the Northwestern steam line at Lake Bluff and for the thousands of others who were expected to be attracted to the Mundelein ceremonies from North Shore suburbs and Wisconsin cities served by the Milwaukee division of the North Shore Line. As a result of this allotment, the electric lines faced the overwhelming prospect of transporting 250,000 delegates, virtually two and one-half times the aggregate load of the three steam roads and nearly 60 per cent of the total migration. It was probably the greatest problem that has ever confronted any transportation system on earth, exceeding even the task of the steam railroads in Great Britain at the time of the exposition at Wembley.

The Rapid Transit Company was enabled to operate its own cars in local service to the downtown districts, take on passengers there for Mundelein and transport them direct to the seminary over the tracks of the North Shore Line without transfer.

Anticipating the day when its facilities would be put to this severest of tests, the North Shore Line hastened to complete its new Skokie Valley route begun in June, 1925. Without this high-speed air line with its heavy roadbed and minimum of grade crossings the movement of such a large percentage of the traffic to Mundelein would have been seriously hampered, if not altogether prohibited.

But the staggering problem was practically solved long before the influx of churchmen began. Preparations for their travel to Mundelein were on a vast scale. Rapid Transit and North Shore officials offered every assistance possible to Eucharistic representatives to insure the success of the climax day of the congress. No trouble or expense for the comfort and convenience of delegates to the magnificent festival was spared.

Out in the fields which surround the little North Shore Line station of St. Mary's-of-the-Lake six special sidings with a capacity of 52 cars at one time were constructed. Alongside, five loading platforms were built, two of them 335 ft. long and 16 ft. wide and three 420 ft. long by 24 ft. wide. By this arrangement, it was possible for eight trains of six and eight cars each to be loaded or unloaded at the same time. An overhead control bridge, spanning the network of tracks, was also erected to insure speedy and efficient operation of trains in and out of the temporary terminal. At the head of each platform a loading chute with a comfortable capacity of 1,000 persons was built. Entrance into these chutes was from an enormous stockade completely encircled by a high picket fence. It was planned to admit only from eighteen to twenty trainloads, or roughly 9,000 people, into the stockade at one time in order to forestall the chaos which would naturally result if the surging thousands all attempted to "catch the first train back to town."

THE Chicago Surface Lines carried the greatest transportation load in its history on Tuesday and next to the greatest load on Monday, and did it without undue crowding or congestion. The Tuesday load reached a total of 5,087,481 rides on the system, an increase of 665,000 over the corresponding Tuesday of the year before.

Sunday, with 3,443,904 rides, was the biggest Sunday in the company's history. On Monday there were 4,993,000 rides. The rides on Wednesday totaled approximately the same as on Monday.

Practically every car on the system was available for service. Vice-President Richardson said that the millions of street car riders benefited materially from the elimination of parking in the downtown district, and that this, together with the very efficient co-operation on the part of the Police Department, made possible a freer movement of cars than under ordinary conditions. There was no confusion of traffic and there were no accidents during the three days.

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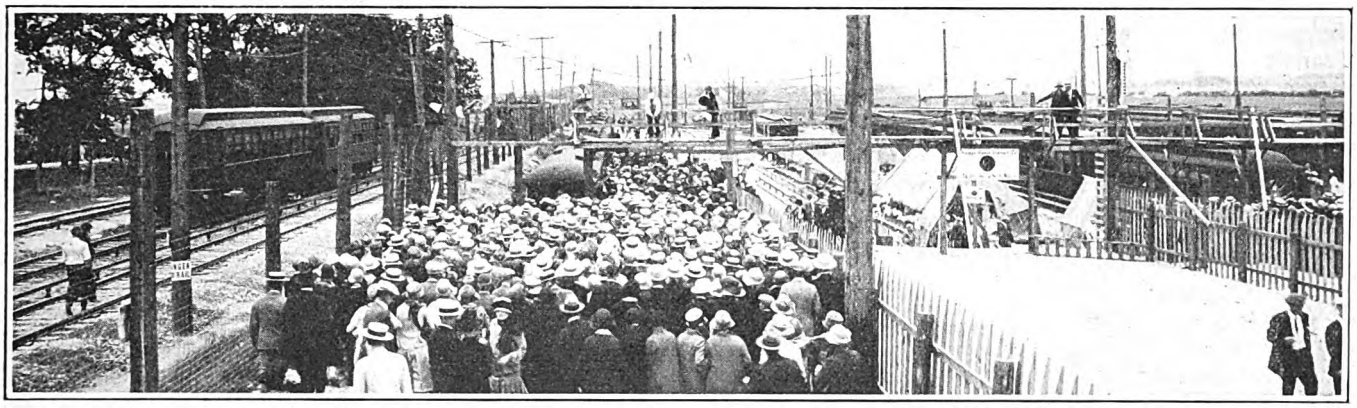


One of the Six Loading Chutes at Mundelein Terminal. A Train from Chicago Is Seen Unloading 600 Passengers into Adjacent Chute. Returning Crowds Awaiting Chance to Board Train for Chicago

At Lake Bluff, 8 miles east of Mundelein, where the Chicago & Northwestern Railroad, the Milwaukee division of the North Shore Line and the Mundelein branch of the latter converge, two enormous loading platforms close to 400 ft. in length were installed to provide for the speedy transfer of steam road and shore line passengers to the thirteen eight-car trains of the North Shore Line that were operated in shuttle service at three-minute intervals to Mundelein.

In the shops of the Chicago Rapid Transit Company scores of cars were equipped with trolleys that previously were able to operate only over the third rail divisions of the elevated lines. A large number of trail cars were also equipped with motors.

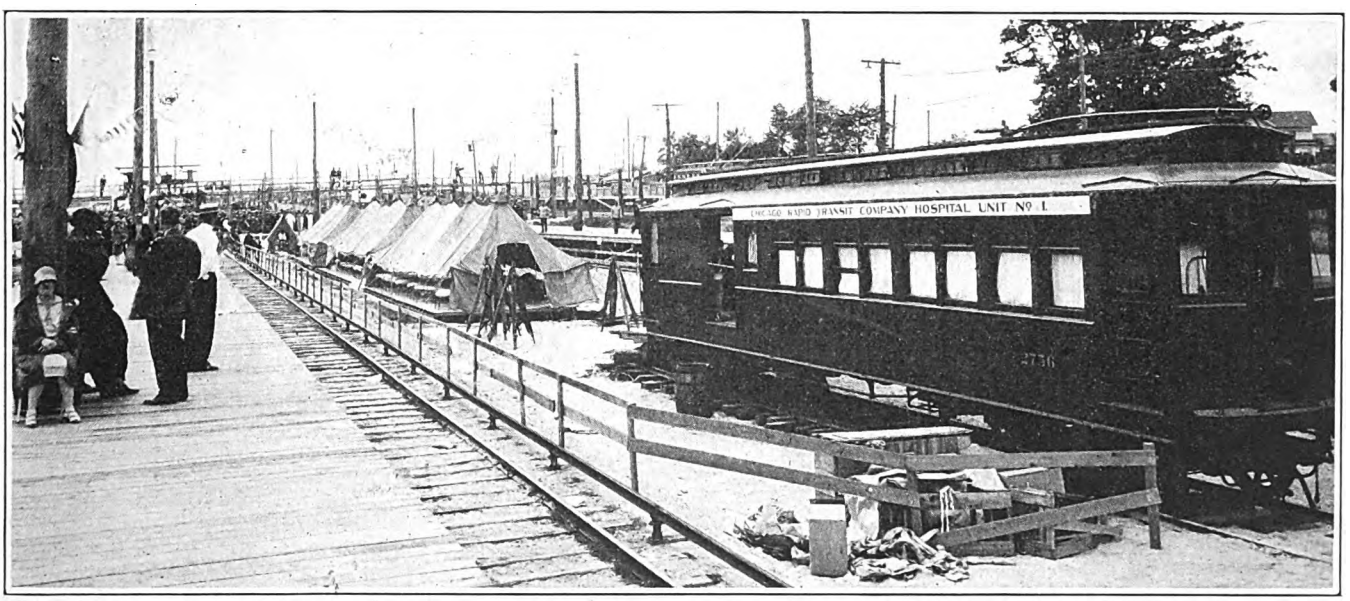
Even Dining Facilities Were Provided

Expanded operating facilities, however, were not the only preparations made. To help feed the army of hungry pilgrims, the North Shore Line invested a large sum in the erection of a lunch stand with some 700 ft. of serving space. The kitchen forces for this concession alone numbered over 300. To remove the possibility of a sudden rush for the trains at the conclusion of the day's program and to facilitate the orderly loading of trains, the company also arranged a series of band concerts and motion pictures. The total cost to the North Shore and Rapid Transit Lines for this single day's traffic in temporary platforms, tracks and other facilities is believed to have been in excess of $150,000. Although this section is becoming increasingly popular among suburban home seekers, it will be many years before an actual need for these enlarged facilities will arise and their only value to the company at present is the salvage which can be made of them.

Railroads Furnished Hospital Facilities

Further illustration of the splendid support which was given church officials by the Rapid Transit and North Shore management may be seen in the extensive arrangements made by the two roads for the care of persons requiring medical aid while attending the fête at Mundelein. Two hospital centers, each consisting of a fully equipped hospital car; three hospital tents of 25 beds each, a surgical dressing tent and a motor ambulance were established at the Mundelein terminal and at Lake Bluff by the Rapid Transit Company. Along the route from Chicago to Mundelein eighteen special first aid stations in charge of trained staffs were set up at frequent intervals.

At 3 o'clock on the morning of the appointed day every employee of the two systems, from chief executive down to platform men, was at his post, ready for the



Completely Equipped Rapid Transit Hospital Car at Mundelein Terminal
The first aid tents located between loading platforms had a capacity of 25 beds each. Across the terminal tracks in the background is the control bridge from which railroad officials directed the movement of trains

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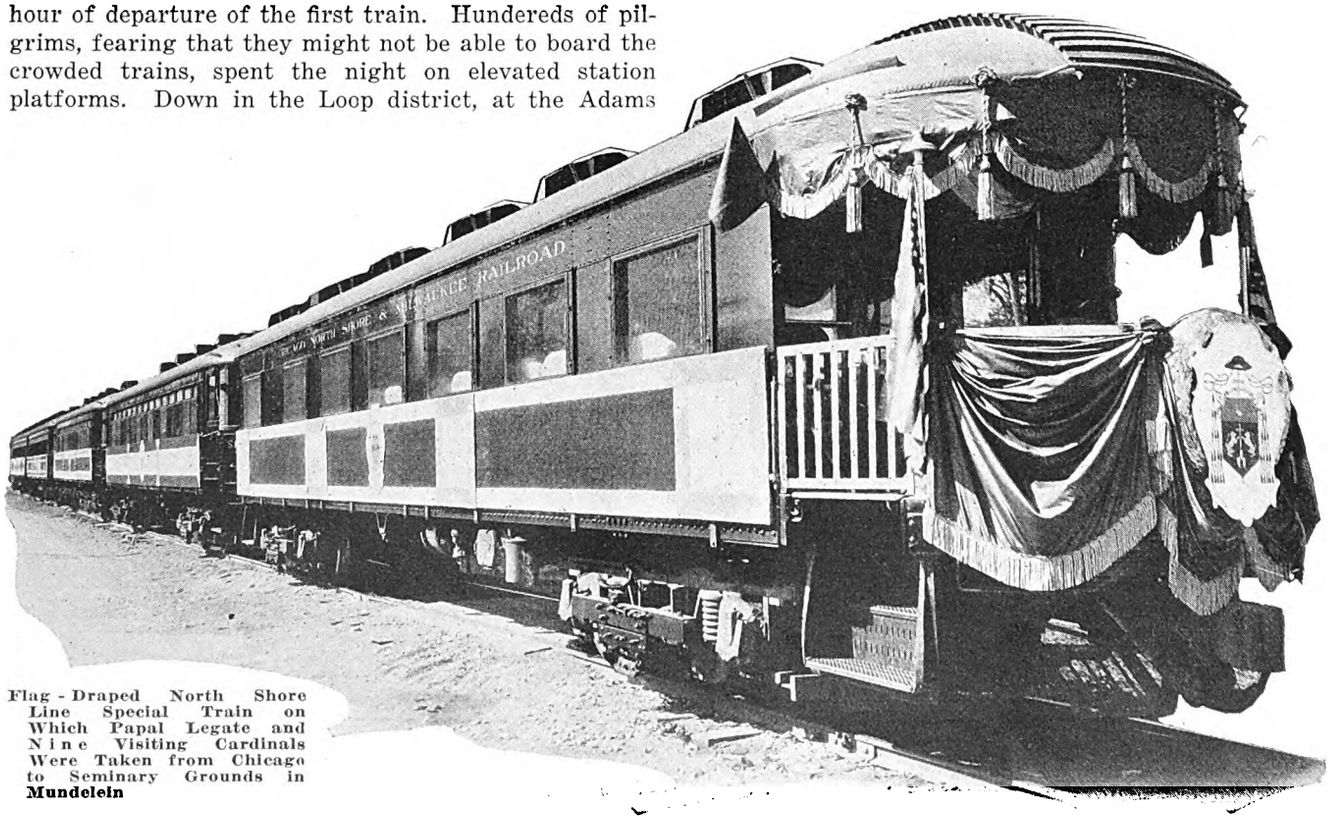
supreme test. For the day the personnel of the Rapid Transit Company had been increased by 1,500 men, the majority of them employees of other Chicago public service organizations. One man was assigned to every 900 ft. of the right-of-way for the entire distance between Chicago and the terminal at Mundelein, and at the latter point something like 700 additional company representatives were on duty.

First of the endless procession of trains to arrive in Mundelein from Chicago was the magnificently appointed North Shore Line special bearing Cardinal Bonzano and other dignitaries of the church. Appropriately draped in national and papal colors, the train reached the seminary on the eve of the great day.

More than one-half of the entire equipment of the Rapid Transit Lines, or 932 cars, was assigned to the Mundelein service, and at 4 o'clock the next morning trains of six cars each had begun operating out of the Jackson Park and Loomis Street terminals in Chicago at four-minute intervals. From 58th Street, where the two elevated divisions converge, a special train left for Mundelein every two minutes. Responding to the exhortations of railroad officials to start early, excited crowds had gathered at every station long before the hour of departure of the first train. Hundereds of pilgrims, fearing that they might not be able to board the crowded trains, spent the night on elevated station platforms. Down in the Loop district, at the Adams Street terminal, the lines of waiting pilgrims and clergy frequently extended for blocks. The same surging crowds met the flag-bedecked trains at every stop to Howard Street, where, switching over to the Skokie Valley route of the North Shore Line, the heavily loaded trains continued on to Mundelein without further haltings. Where safety is a prime consideration, as it was in the handling of these 150,000 or more people of all ages who sought transportation from Chicago by electric line, speed was not a factor, and the 40-mile trip to Mundelein, ordinarily requiring an hour, was made on that day in the average time of two hours and a half.

By distributing round-trip tickets to the various parish headquarters several days in advance and advertising their sale at conveniently located booths throughout the city the Rapid Transit Company hoped to eliminate much of the congestion at regular stations on the day of the trek to Mundelein. A definite hour for starting was given to each ticket purchaser. Up until the very eve of the pilgrimage, however, only 60,000 tickets had been sold, and in consequence considerable delay was experienced in boarding trains at many stations on the morning of the 24th.

IN NEARLY ten hours of uninterrupted loading the entire throng of more than 225,000 who had arrived on 372 Rapid Transit and North Shore trains and an additional 50,000 who forsook motor cars and other means of transportation by which they had come, to return by way of the more convenient electric lines, were hauled away from the Mundelein terminal. The three steam railroads, carrying a joint load of only about 75 per cent of the original estimate, were able to handle only 85,000 passengers, or less than one-third of the traffic over the Rapid Transit and North Shore Line. Counting each trip made by a Rapid Transit car, and each one made at least three round trips that day, it was estimated that 15 miles of electric cars were employed in carrying the great mass of pilgrims from and to Chicago. The last train, heavily loaded with company employees and policemen, many of whom had been on duty for upward of 24 hours without relief, left the Mundelein terminal for Chicago at 11:30 p.m.



Flag-Draped North Shore Line Special Train on Which Papal Legate and Nine Visiting Cardinals Were Taken from Chicago to Seminary Grounds in Mundelein

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All available equipment of the North Shore Line was consigned to the shuttle service on the Lake-Bluff-Mundelein branch and to the transportation of pilgrims from points north of Chicago on the old lake shore route. Simultaneous with the early morning service from Chicago, five-car trains were operated out of the North Shore terminal in Milwaukee on a fifteen-minute headway. In the course of ten hours an estimated total of 25,000 passengers were transferred from these trains to the shuttle cars at Lake Bluff.

100,000 Storm Stockade During Storm

By 10 o'clock in the morning—six hours after the migration began—the North Shore and Rapid Transit Lines had delivered 130,000 at the gates of the seminary. Trains carrying anywhere from 600 to 800 passengers were arriving at the Mundelein terminal, discharging their load and started back to Chicago frequently in less than a minute's time. Including the shuttle trains from Lake Bluff, a trainload of pilgrims entered the terminal regularly every 40 seconds for eight consecutive hours. As late as 3 o'clock in the afternoon special trains were still leaving Chicago as fast as they could be loaded. Long before the incoming traffic began to dwindle, however, thousands of the more than 400,000 pilgrims at Mundelein, hopeful of returning to the city before the rush was on, commenced to storm the gates of the stockade. A sudden rainstorm which struck the seminary grounds just as the procession of the blessed sacrament around the shores of the lake was about to start brought a frenzied crowd of fully 100,000 down on the terminal. The situation was acute, and despite the heroic efforts of 600 Chicago policemen and several detachments of state militia and the pleadings of company officials the clamorous mob all but swept aside the walls of the stockade in an effort to reach the trains. Although several persons were injured in the mad dash, it is considered providential that not a single fatality occurred.

40,000 Dispatched an Hour

From the control bridge B. J. Fallon, vice-president of the Rapid Transit Company, and B. J. Arnold, assistant general manager, surveyed the menacing throngs and by speeding up the movement of trains through the "bottle-neck" entrance to the terminal finally succeeded in loading 40,000 passengers per hour and sending out one train for Chicago every 55 seconds.

The crowd, bedraggled from the rain and exhausted by the long trip and emotional setting of the occasion, was difficult to handle, but when the rain subsided and it could be seen that the railroad was doing everything in its power to expedite the return to Chicago and other points good humor again prevailed and the confusion was abated.

Safety Pays in Milwaukee

FIFTY PER CENT reduction in accidents of all kinds was made by the rolling stock department of the Milwaukee Electric Railway & Light Company during 1925. The department had a smaller number of lost time accidents to employees than ever before, and for the fourth year there was not a fatal accident, according to an article by A. W. Koehler, superintendent of accident prevention, in the May issue of *National Safety News*.

According to the writer, the department comprises 842 employees. Every accident is thoroughly investigated, the primary cause being determined and definite responsibility fixed. The foreman makes the original accident report, which is signed by himself and the safety committee man from his department. It is then passed on for review by the general foreman and the superintendent, who determine the kind and degree of discipline necessary to be administered. When the accident is due to gross negligence on the part of an employee, temporary suspension may follow. Habitual or willful violation of the safety rules is held to be reasonable cause for discharge.

Although every man is considered responsible for any accident in which he may be involved, the foreman is accountable for the general safety of all of the employees in his division. He is expected to be continually on the alert for any unsafe practices or questionable methods which may have been introduced. In each major division of the department there is also a safety committee man, appointed by the superintendent. These men hold office for one year, and memberships then rotate so that the influence of the active safety committee experience was spread through the department.

Energetic Campaign for Paving Relief at Wheeling

"STREET CARS do not wear out the paving. Place the expense where it belongs." Such is the slogan used by the Wheeling Traction Company, Wheeling, W. Va., in an energetic campaign to secure relief from paving burdens.

A series of advertisements has been published by the company in the local papers, appearing one week apart. Newspapers in neighboring cities have also been used in this campaign. Most of the advertisements have been featured by a drawing which showed the damage done to paving by heavy motor trucks. An accompanying reproduction of one of the advertisements used in the campaign shows this sketch. Mention has been made in the advertisements to the relief secured by electric railways in Massachusetts and Connecticut and in the cities of Indianapolis, Jackson, Seattle, Toledo and Cleveland.

Typical Advertisement Used by the Wheeling Traction Company in Its Campaign for Relief from Paving Burdens

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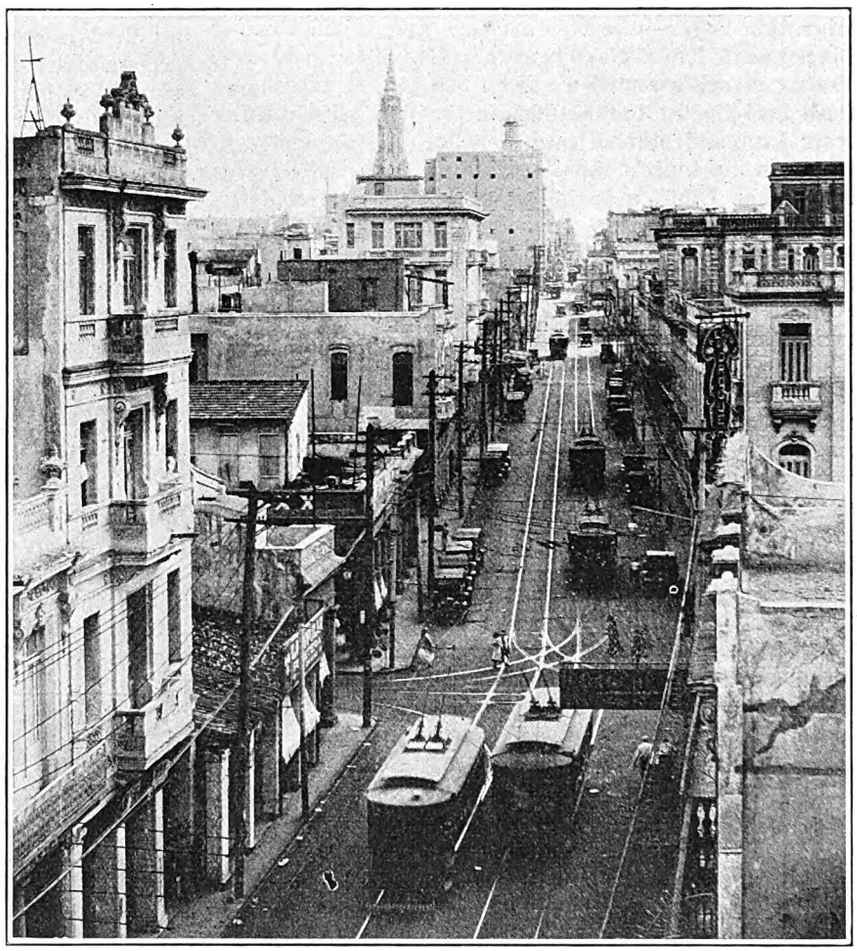
Havana Railway Operation Combines American and Cuban Methods

Extremely Narrow Streets and Close Spacing of Stops Create Operating Difficulties—Fares Are Low and No Standing Passengers Are Carried—Double Trolley Wire Is Used, Supported by Unique Overhead Construction

ELECTRIC railway operation in Havana, Cuba, during the 25 years of its existence has developed somewhat along the same lines as American operation, but it is characterized also by several peculiar local practices. Previous to 1900 local transportation was furnished only by horse cars. The operating company was owned and controlled locally. The present agency supplying transportation, however, the Havana Electric Railway, Light & Power Company, is a subsidiary of the Electric Bond & Share Company of New York. The system embraces some 96 miles of single track, 82 miles of which is in the city and 14 miles interurban. Interurban trackage is operated by a separate company, which in its turn is a subsidiary of the Havana Electric Railway, Light & Power Company.

Despite lively bus competition the railway carries on the average 10,300,000 revenue passengers per month. The fare is 5 cents straight for all persons more than four years old. Tickets are sold, but only to government employees. This is done merely as a matter of accommodation to do away with the necessity of their signing vouchers for each 5-cent fare paid. Transfers are issued free. Revenue per car-mile averages 30.5 cents and operating ratio is about 72 per cent.



Small Single-Truck Cars and a Double Overhead Trolley Wire System Are Characteristic Features of Electric Railway Operation in Havana

During the peak a maximum of 522 cars are in operation. In the middle of the day, however, this number falls to 320. In Havana employees are granted two hours for lunch, usually between 11 a.m. and 1 p.m. This enables them to go home, a privilege of which practically all make use. Thus there are four peaks in the traffic, one early in the morning, one about 11 a.m., another at 1 p.m., and the last and heaviest one about 5 o'clock in the afternoon.

In general the car routes come into the city from the outlying districts and make a loop around several blocks adjoining the harbor, returning by the same streets. A few routes do not come downtown, but connect the different suburbs. During the rush hours a headway of three minutes to five minutes is provided on all lines except those serving the smaller suburbs. In the non-rush hours the headways are sometimes as long as eight minutes to fifteen minutes. Most of the more densely populated suburbs, however, can be reached by more than one car line, so that the service is actually more frequent than would appear. Free transfers facilitate the use of different routes for reaching one destination. During the night 30-minute owl car service is maintained to most of the outlying districts.

Operation of the numerous bus lines has not seriously affected the revenue of the railway company. A majority of the buses are vehicles of inferior quality, having been imported second-hand from the United States and rebuilt. The fare is the same as on the cars and the buses are well patronized, passengers frequently hanging on to the steps or fenders in order to ride. They serve sparsely-settled suburbs lying so far out that up to the present it has not appeared profitable to extend the rail lines. The loss of revenue on the cars has been so slight that the company has not considered it necessary to take steps to combat this competition.

Free transfers are issued at all points where two or more car routes intersect. By the use of transfers it

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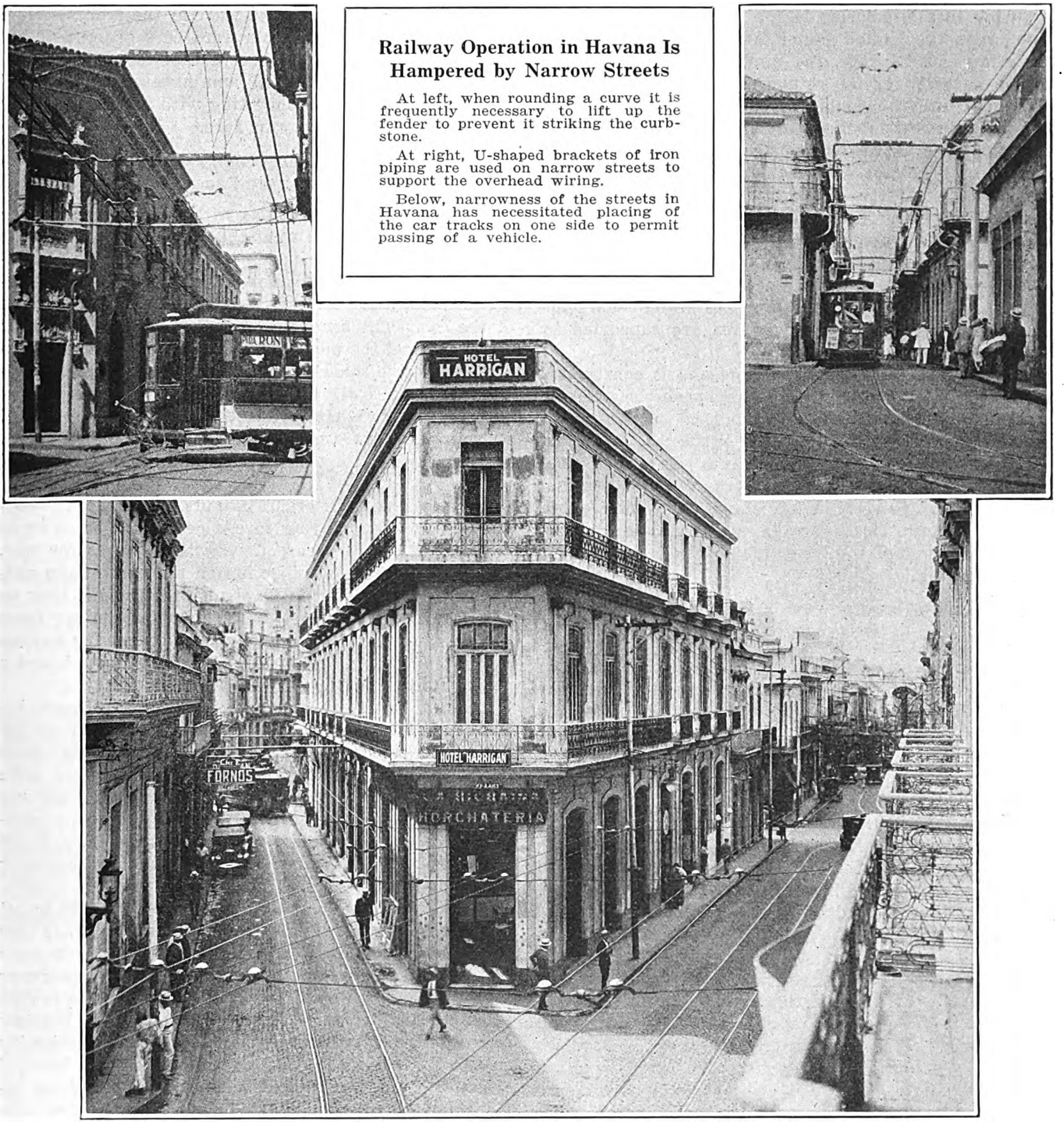

Railway Operation in Havana Is Hampered by Narrow Streets

At left, when rounding a curve it is frequently necessary to lift up the fender to prevent it striking the curbstone.

At right, U-shaped brackets of iron piping are used on narrow streets to support the overhead wiring.

Below, narrowness of the streets in Havana has necessitated placing of the car tracks on one side to permit passing of a vehicle.

is possible to ride from practically any part of the city to any other part for 5 cents. Inasmuch as the city is rather closely built up and several of the suburbs on the west lying outside the city limits are served by the separate interurban company, the longest ride possible for a single fare is not much more than 5 miles. Many city cars operate over the tracks of this subsidiary, but an additional fare is collected when crossing the city limits.

Narrow Streets Make Operation Difficult

The older sections of Havana have many extremely narrow streets and sidewalks. Although traffic is permitted only in one direction on such streets, space must be provided for an automobile or horse-drawn vehicle and a street car to pass. This has necessitated the placing of the tracks at one side of the street rather than in the center. To provide sufficient radius to enable cars to turn a corner the tracks must be on the outside of the curve. This makes necessary a frequent shifting of the tracks from one side of the street to the other. At corners where two or more lines meet many simple and reverse curves are required.

Another difficulty in turning corners is that the fenders run up on the sidewalk. Great care must be exercised by the motormen when rounding a corner not to upset pedestrians on the sidewalk. In many places the fender will jam against the curb unless the motorman raises it before turning the corner. The switch iron is supplied with a hook at one end for lifting the fender. It is a duty of the conductor to ring the gong almost continuously to warn pedestrians.

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Owing to a stipulation in the franchise made at the time when the United States Army was in control of the affairs of the city, the company is not permitted to use its rails for the return electrical circuit but is obliged to use the double overhead wire system. On narrow streets it has been found advantageous to support the trolley wires by inverted U's of 3-in. wrought-iron pipe. The legs of these supports extend into the ground alongside the buildings on each side of the street. The piping fits snugly against the buildings and reduces the obstruction in the street and sidewalk to a minimum. That part of the piping which crosses the street overhead furnishes the necessary lateral strength to permit supporting the trolley wires in the usual manner. On wide streets trolley wires are supported by steel poles and span wires.

All trackage is of standard gage and is constructed of 89-lb. girder rail. The company paves between its tracks and for a distance of about 50 cm. (approximately 20 in.) on each side. As a rule the same material is used for paving the railway area as is used elsewhere on the street, whether granite blocks, asphalt or macadam. On certain streets paved with asphalt, however, granite blocks have been used for the railway area on account of the lower maintenance cost of this type of paving.

Narrow Streets and Close Stop Spacing Affect Car Design

Cars stop at every street corner, and as the streets in the older part of the city are very close together the average distance between car stops is not more than 60 or 70 yd. This makes it desirable to operate light-weight cars. Those used are of the single-truck type with inclosed or partly inclosed platforms, weighing from 18,000 to 19,000 lb., and seating 36 passengers. They are built by the company in its own shop, using Brill 21-E trucks. Native hard woods are used in the body construction. Some of the cars are equipped with two 25-hp. motors, while others have two 35-hp. motors. The latter type is gradually replacing the former.

City ordinances permit a maximum speed of operation of 25 km. per hour (approximately 15½ m.p.h.) on wide streets, and 12 km. per hour (7½ m.p.h.) on narrow streets. In spite of the narrow streets and frequent stops the city cars average about 8¼ m.p.h., and the suburban cars approximately 11½ m.p.h. There are few heavy grades on the system and those which do exist are short. Cars are equipped only with hand brakes, but these have been found to answer all requirements.

Power is generated in the company's own power plant, both oil and coal being used for fuel. Electricity and gas are furnished also to the general public both for light, power and heat. The company has a contract for illuminating all the streets and public parks of the city, both gas and electricity being used for this purpose.

Full advantage is taken by the company of every opportunity to sell advertising space. The demand for it has been such that not only the usual space along the inside of the car roof is used for this purpose, but also the front bulkheads and the upper half of the window sash. Advertisements are painted on the upper part of the windows, as shown in one of the accompanying illustrations.

To a stranger the first street car ride in Havana is interesting. Regulations require that the passenger enter the car at the rear and leave at the front. When you hand the conductor your fare he takes out of his pocket a small wrench, made especially for this purpose, and turns a square iron rod running along one side of the top of the car and connecting with the register. By this means he rings up your fare.

Spanish Customs Give Local Color to Operating Practices

There are no push buttons with which to signal the motorman. When you want the car to stop at the next corner you simply say "pst" (the favorite way of calling attention among Spaniards), and when the conductor looks at you, you wave your hand toward the front of the car. The conductor will then pull the bell rope once to signal the motorman. When you want a transfer, you do the same thing, except that instead of waving your hand toward the front of the car you wave it several times in whatever direction you want to proceed on your journey. Children like to give the "pst" sign, just as they like to push the signal button in the United States.

Newsboys and vendors of peanuts, flowers, etc., board cars and, without paying fare, ride a block or so while passing through the car offering their wares for sale. They do this without objection on the part of the conductor, who may even make change for them if they do not have it. They must, however, enter the car from the rear, for it is against the regulations for anyone but policemen and employees of the railway to board a car at the front end.

There are no straphangers in Havana street cars, because there are no straps to hang on. When all the seats in a car are taken, the conductor usually closes the gates of the rear platform and admits no more passengers until some seats become vacant. He will refuse admittance to women especially. Women wanting to board a car and seeing that it is crowded call "Hay asiento?" (Is there a seat?) to the conductor before trying to enter.

During the rush hours, when everybody wants to get home as quickly as possible, people sometimes enter cars the seats in which are all filled and stand on the rear platform. If the person is a woman, the conductor may even permit her to stand in the aisle, a thing he seldom permits men to do. On such occasions it happens only infrequently that a man will get up and offer his seat to the lady who is standing. On the other hand, if a man occupies a seat alone and a woman sits down beside him, he will jump up like a jack-in-the-box, take off his hat, bow to her, and offer her the seat next to the window, that being considered the more pleasant one to occupy.

Scrapped After Twenty-one Years of Service

AUTOMOBILE competition has destined four of the fleet of the Lake Minnetonka passenger steamers of the Twin City Rapid Transit Company, Minneapolis, Minn., to a 70-ft.-deep watery grave. Two were sunk recently and two more are to go, after 21 years of service. These boats for years met the electric trains and carried passengers to points off the line, and also carried sightseeing loads around the lake. Private automobiles and bus lines destroyed the usefulness of the boats.

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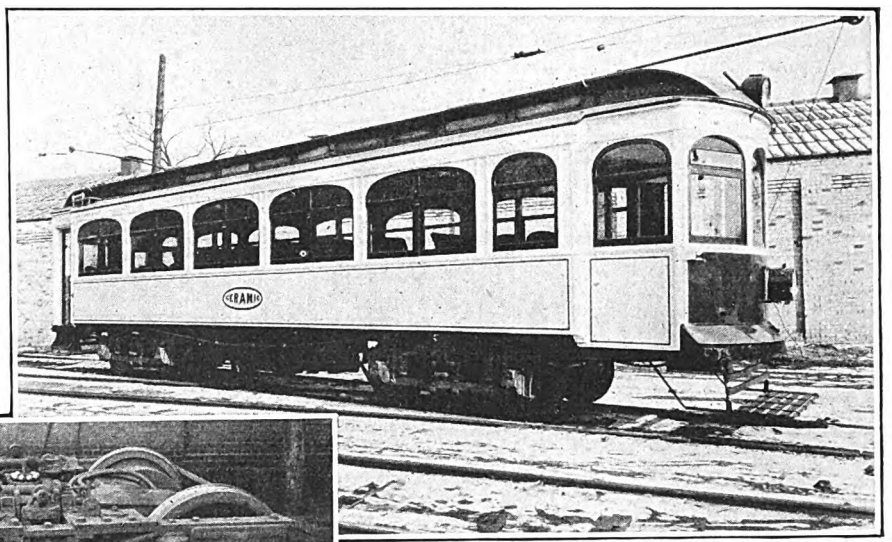
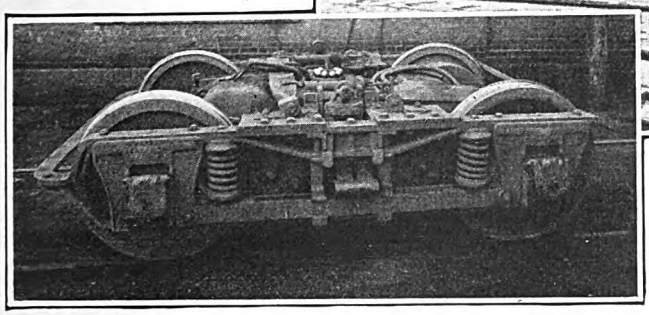
One Owner's Faith in the Trolley

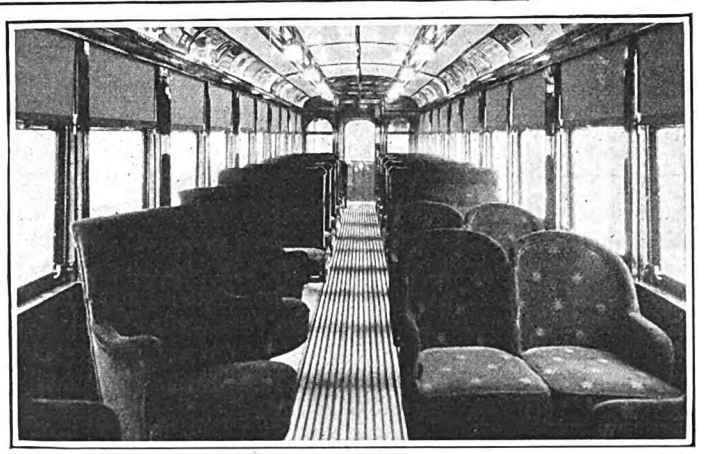
SECOND ARTICLE

In the Rehabilitation of the Steubenville, East Liverpool & Beaver Valley Traction System Particular Attention Was Paid to the Rolling Stock—New Cars Were Purchased and Old Cars Rebuilt to Give Better Service

WHEN the rehabilitation of the Steubenville, East Liverpool & Beaver Valley Traction Company was decided on by C. A. Smith, it was found necessary to put the rolling stock in such condition that it would be suitable for the projected service. Purchase of 25 Brill safety cars, the first step toward a program of more service at less cost, was undertaken during 1923. These are of the standard 32-seat capacity with double-end equipment, but differ in several important respects from the Birney model. The body design is of the double-door rather than single-door type. The trucks are J. G. Brill No. 79E-1. Since the principal use of these cars would be on the very hilly local routes in East Liverpool, Chester and Steubenville, they were also higher powered than ordinary Birneys. Two GE-247-A motors with K-63 control, Nuttall helical gears, GE electrolytic arresters and the Safety Car Devices apparatus are the main elements of the propulsion and braking equipment. The motors are geared for a maximum speed of 28 m.p.h. to take care of operation over the better levels of the main line.







The "Ceramic," a Car that Is Proving the Public Is Glad to Ride the Electric Line When Speed, Spaciousness, Safety and Comfort Are Combined

The trucks of the "Ceramic" were rebuilt to provide for easy riding.
The circle bar is now mounted inside instead of outside.
Ball center bearings and roller side bearings are used.
The bolster is suspended from gusset plates instead of the transom.
Pillow block suspension of the spring ends is used.
In the "Ceramic" you make your choice of seats. They're all good.

There are now passing through the shops fifteen center-entrance cars of Pittsburgh type purchased in 1916. These are not only being converted to one-man, two-man operation, but are also being reconstructed to secure greater strength and more passenger comfort than they possessed when bought. The trucks, of the Brill diamond-frame type, are being strengthened. To eliminate nosing due to the bolster coil spring becoming lopsided, the spring was replaced by a spring-borne iron block filler.

Standard turnbuckles are being substituted for the dead lever type of brake rigging, and because of this change, a floating center bar is replacing the original rigid bar. The net result is expected to be a truck that will remain square and journal boxes that will not tilt under hard service.

Early in 1925 high upkeep and lack of need for train operation led to the replacement of type M control with type K-35-JJ control and line switch. The four GE-247-A motors, geared for a maximum running speed of 35 m.p.h., remain, except that they will be used with 26-in. diameter instead of 24-in. wheels to secure better clearances and higher speeds.

In altering the car body, the front-exit single-folding door with 29-in. clear opening is being replaced by

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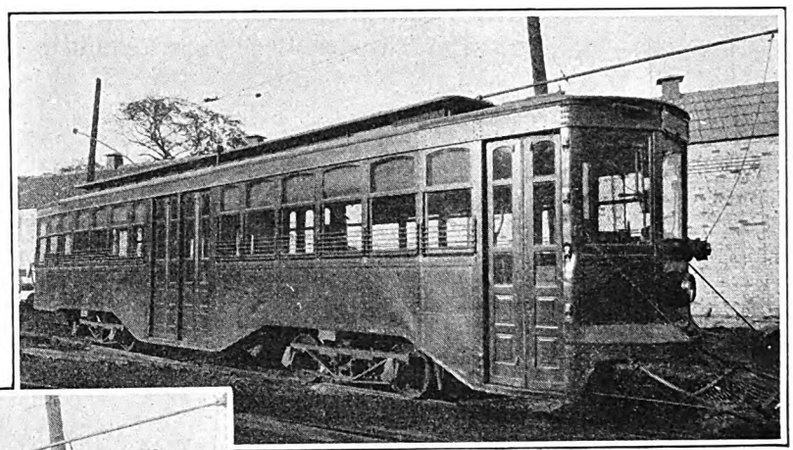
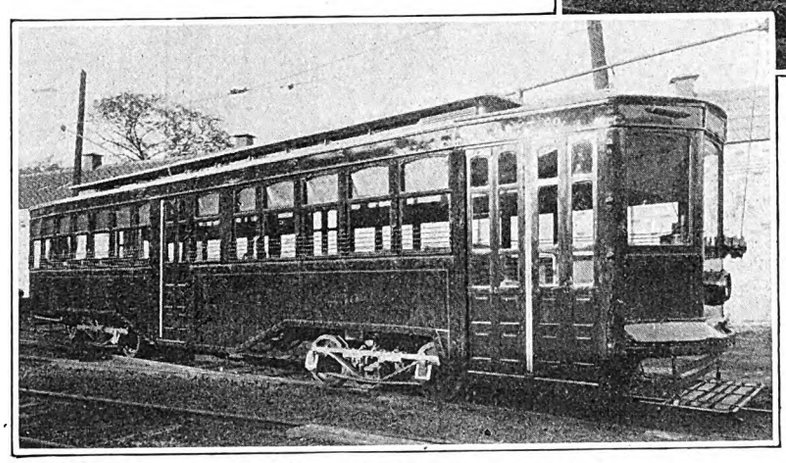
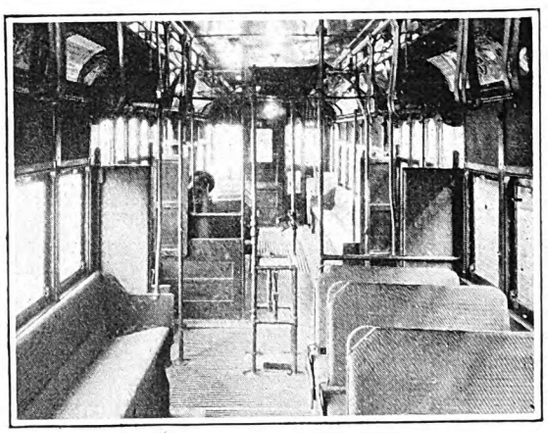
double folding doors of 52-in. clearance. This change necessitated cutting back the underframe, but without interfering with the diaphragm. Only a 4-in. channel bar of greater thickness replaced the original pressed-steel channel in the hood to offset the structural weakening caused by lengthening the front platform.

As in the Pittsburgh center-entrance cars, one side is taken up by a longitudinal seat. The original No. 14 gage sheathing on this side is being backed with No. 12 material to strengthen the body, but an air gap of 2½ in. permits better heating also. Car warmth will be further promoted by adding a second floor at right angles to the original single floor. While this work is in progress, the motor openings are reduced from four to two for the sake of noise reduction. Kass safety treads are being added on the steps and landing platforms.

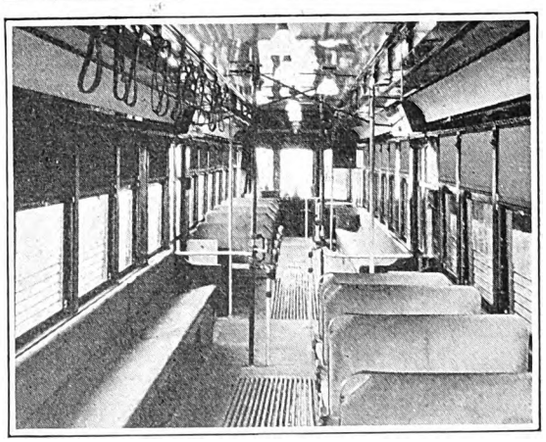
One of the center doors on each side is being paneled, still leaving a clearance of 31½ in. On occasions when these cars are used in two-man operation, the conductor will be stationed with his farebox in front of the new panel. The remaining double-leaf door on each side will be manually operated, either by a conductor or by a street inspector, according to whether two-man or one-man operation is in effect. The doors at the front or operator's end are being fitted with individual National Pneumatic engines. When these doors are open, vestibule lamps burn; when they are closed, the lights go out automatically. The line switch is interlocked to prevent the car from starting with doors open. Each of the two doors at the front is independently controlled, but can be operated simultaneously.







Upper right, before the change. Above, the front passageway has been changed from a single 29-in. door to a double 52-in. door, while one of the center doors has been changed. Right, the interior before remodeling. Below, rattan upholstery has been replaced by Kemi-Suede; electric heat takes the place of hot air; the center well has been simplified, and the lighting has been improved.



The Side Door Cars of This Type Have Been Converted for One-Man Service

VARIOUS FEATURES CATER TO PASSENGER COMFORT

Passenger comfort has been increased by replacing the stove and motor-blower heater with Westinghouse electric heaters and Consolidated thermostats. Removal of the stove gives room for another double cross-seat. The seats are being covered with Kemi-Suede. Another feature for the passenger's comfort is the use of extended flush-type direct lighting fixtures with shades instead of bare lamps. The use of ten 56-watt lamps on two circuits will give more satisfactory illumination than the old-style lamps on three circuits. Crouse-Hinds headlights of 150-watt capacity replace an older C-H design.

With the operating economies which have been made possible by this reconstruction for normal one-man operation, the management of the company has been able to undertake a program for shorter headways, as will be recounted later in this series of articles.

To bring its interurban rolling stock up to the standards of speed and luxury demanded by an automotive-trained public, the management has begun the thorough rebuilding and reupholstering of its existing interurban cars, aside from plans for eight entirely new cars.

The first rebuilt car, named "Ceramic," went into service on Jan. 10, 1926, and made such a hit that plans were immediately begun for like work on a second car to be called "Fort Steuben," after a prominent regional name in Steubenville. The following account will show how thoroughly the interurban cars are to be overhauled and modernized to appeal to a discriminating public:

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The new "Ceramic" was a 48-ft. wooden car. Its body was reinforced with No. 14 gage steel. Then it was painted in Packard cream on the sides, but with yellow for the dashers for maximum visibility. The striping is uniform with the dashers. The roof is light buff with black striping leading therefrom.

The original seating consisted of eighteen double cross-seats and four double longitudinal corner seats in Pantasote, totaling 44. These seats have been replaced by plush-upholstered seats of four different designs to get an idea of what the public likes best. The central section of the "Ceramic" has ten double cross-seats of standard design but rebuilt and upholstered in plush. Adjacent to these at each end is a pair of swiveling twin-bucket seats, believed to be the first of their kind on an electric railway. Next to each set of these double seats is a pair of individual swiveling bucket chairs, and, finally, fixed twin bucket seats in each corner. The total seating capacity has been cut from 44 to 40. The more important point is that the car as a unit is earning more money.

Roominess of Seating Arrangement Gives Opportunity for Sociability

Perhaps the most pleasing feature of the bucket seats is that a party up to ten persons can arrange themselves so as to be almost face to face, whereas in other seat arrangements they could be comfortable only in twos. For sociability, this arrangement is decidedly superior to personal motor cars or to a motor coach with transverse seats. Another advantage is that more convenient spaces are left for the grips and suitcases of the many traveling men who use this railway between Beaver, East Liverpool and Steubenville. These cars were not built with parcel racks, but coat hangers have been added in the "Ceramic."

There are no rods or bars to obstruct the vision or diminish the roominess of the car to the eye, except for a signal cord. The cord hangers are covered with plush to match the seat upholstery.

One of the questions before the management was whether the "Ceramic" and similar de luxe cars should be run during hours when they would be carrying loads of begrimed workmen to and from their jobs. It was decided that the money of these regular riders was certainly as good as that of any casual and that the best was none too good for them. To meet the situation in the right spirit, towels are placed on the backs of the swivel chairs twice a day. These towels, it may be added, were embroidered with "C" or "Ceramic" by the girls at the office because of their pride in this development.

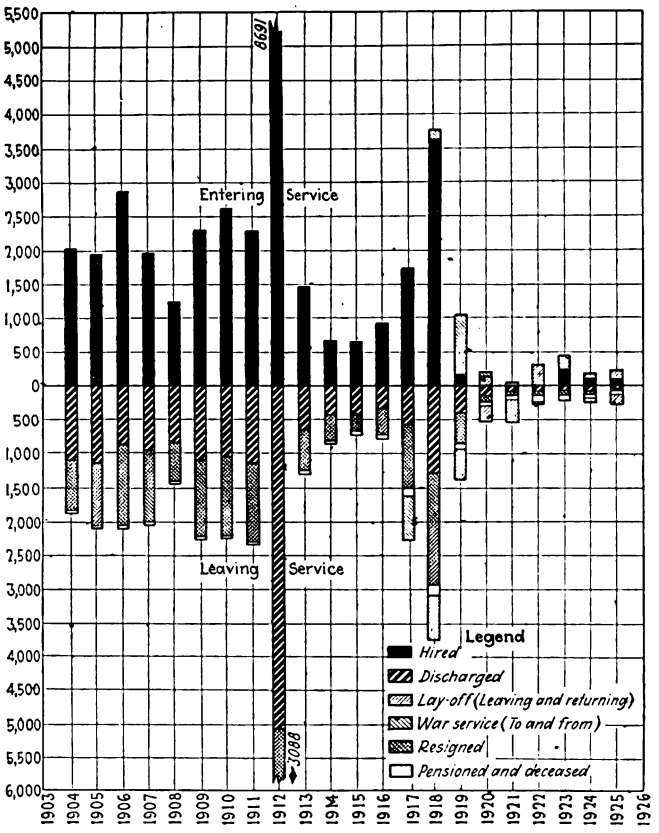
The Taylor high-speed trucks originally under this type of car have been greatly strengthened. While the side frame and journal boxes were retained, M.C.B. standards now apply to the levers, brake beams, center brake bar, swing links, etc., to permit interchange with M.C.B. trucks of Brill and Baldwin make. The new axels are 5½-in. A.E.R.E.A. standard instead of 5 in. as previously used.

Formerly, the sand supply for the pneumatic sanders was in boxes under the seats, which, of course, was more or less discommoding to passengers. Sand is now carried in narrow, deep (4 in. x 30 in.) compartments built between the end seats and the bulkheads.

As regards the electrical equipment, while the original Westinghouse No. 93-A-2 motors remain, they have been tuned up in every part. The control has been changed from K-14 to HL. Piping has been made as inconspicuous as possible by being laid neatly against the car paneling. All wiring is concealed. Headlight, lighting and other auxiliary switches are mounted in a vestibule compartment under which is a chamber for the governor, jack and trolley pick-up.

Improved Employment Record in Boston Reflects Good Condition

SIX years of comparative quiet have passed on the Boston Elevated, as far as the turnover of the blue uniformed men is concerned. The accompanying chart shows the marked change that has taken place in this class of employment since 1904. For many years it was quite customary to employ from 1,500 to 2,000 men each year, not for expansion of service, but



Boston Elevated Record for Its Blue Uniformed Employees Shows Marked Improvement During the Last Six Years

to take the place of men who were discharged for cause or who were otherwise laid off or resigned.

For the years 1919, 1920 and 1921 no men were employed. In the year 1923, 237 men were employed. In the year following that, 99, and for the last year only 83 new men were taken on. Likewise the number of men who were discharged has been very greatly reduced.

Many factors contribute to this desirable condition; the increase in wages, provision of an eight-hour day, introduction of one-man operation, and the operation of elevated trains with guards operating two cars each, and last, but of greatest importance, the many efforts of the management to build up the spirit of co-operation on the basis of permanency of employment.

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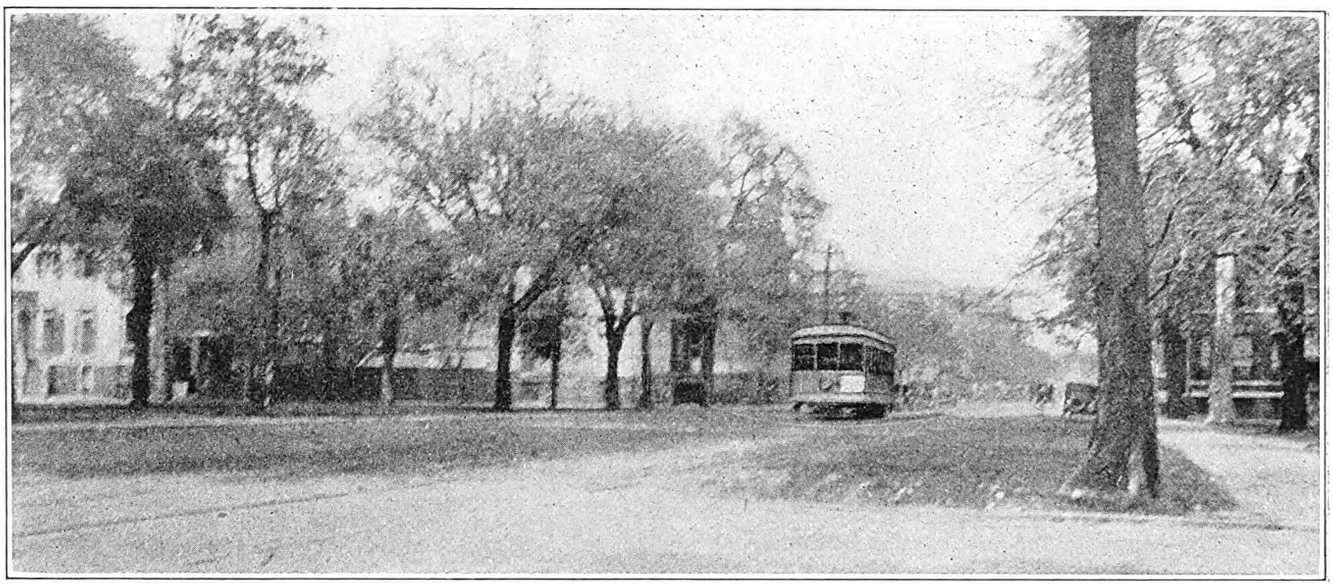
Notable Safety Work in Savannah

The Company Was the Winner Over Two Competitors in a Railway Safety Contest—An Account Is Given of the Methods Followed in Promoting Safety Through Team Contests, Maintenance of Individual Records of Trainmen and Careful Analysis of the Causes of Casualties



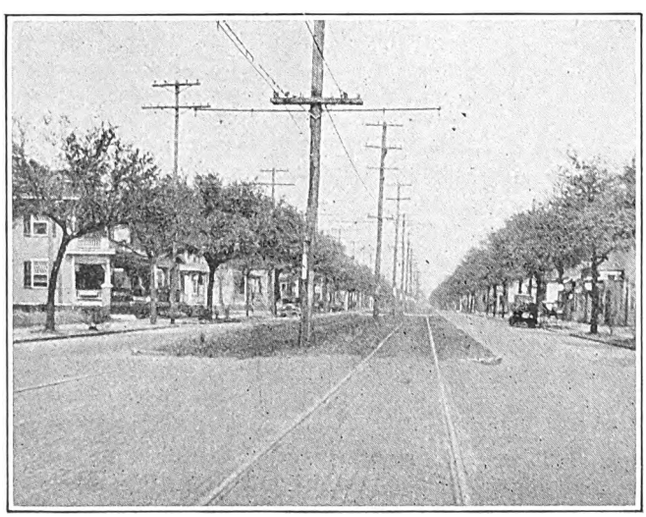
In Savannah There Are Many of These Small, Open Grassed Squares in the Main Streets. The Roadway Passes Around Them, but the Electric Track Passes Through Them

ON LAST Easter Sunday all the trainmen of the Savannah Electric & Power Company blossomed out in new straw hats. The reason was that through the care exercised by them the company was winner in a six months accident contest in which Savannah, Jacksonville and Tampa participated. The losers paid for the hats. The final score showed that in the six months ended March 1, 1926, the record of the Savannah company was the large number of 2,946 miles per accident.

The record just quoted is even more notable than might appear at first sight because of the very strict definition used of the term "accident." The accidents recorded are not confined to casualties in which some degree of responsibility attaches to the company. Any occurrence to persons or property, other than ordinary wear and tear to the car and the track, caused by the movement of the car on the street is counted as an accident. Thus, if an automobile should run into the rear of a standing car, it is called an accident.

The fine record of safe operation in Savannah made during this contest was not the result of chance nor mere superficial attention to the usual safety precautions. For a number of years the company has paid a great deal of consideration not only to developing cordial co-operation by all employees in safe operation but to a study of the causes of accidents. In this way it has been able to learn how and where most of the accidents on its system occur. The adoption of methods to avoid accidents has thus become much more easy.

An essential feature of the means to encourage the employees in safe operation is a continuous contest between selected teams of the trainmen as to low accident records. The layout of the Savannah property is such that all of the cars operate from one depot. Hence, it was not possible to organize these team contests between men in various divisions. Instead, six captains are chosen, and these men select in rotation the men to compose their teams. At the end of each month members of the team having the best record are the guests of the company at a dinner given at one of the local hotels. This event is made the occasion to a considerable extent of talks on safety. If the same team wins three months in succession each of the men on the team receives a motor-



A Considerable Part of the Track in Savannah Is on Reservation or Neutral Ground

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man's cap as an extra reward. Up to the present three teams have won this crowning prize.

At the end of each year the men have the privilege of electing new team captains, though three of them have remained as captains since the plan was started.

In these interteam contests each accident counts as two points against the crew of the car involved in it. That is to say, if the car involved is a one-man car, the operator is penalized by two points. If it is a two-man car, the conductor and motorman are penalized by one point each. The company has only two routes on which two-man cars are used, these being suburban lines. All the rest of the operation is with one-man cars. The lines with two-man cars do not constitute a large proportion of the car mileage of the company, as on one line cars run only every half hour and on the other line only every hour.

In a sense, it might be considered unjust to charge against a crew unavoidable casualties, or those in which no negligence by the trainmen has been shown. This plan is followed for two reasons. One is that if an attempt were made to grade responsibility in the penalty attached, a very difficult problem would exist. The second reason is, it is found that with the reduction of all accidents the unavoidable ones also seem to grow less.

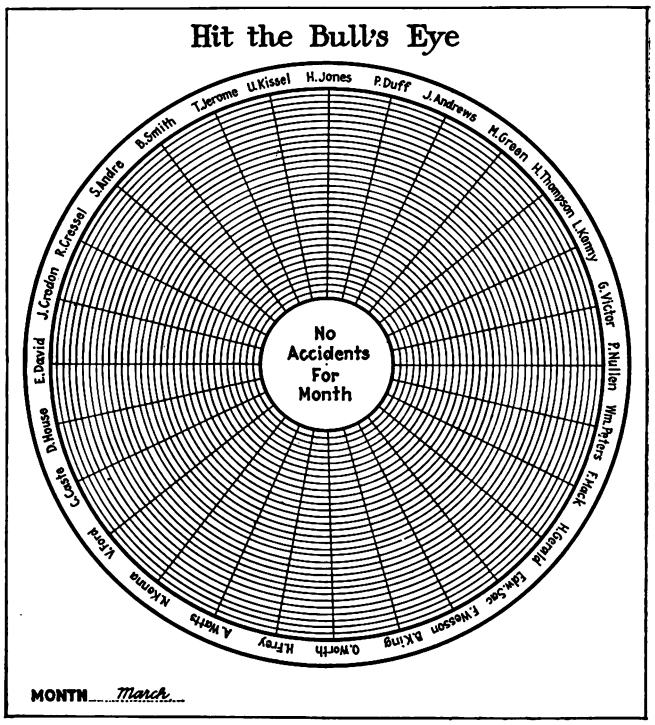
Comparison of Records

This plan means that some comparisons of records must be made daily so that the men may know the number of accidents charged against them. There are two records of this kind, one by teams and the other by individuals. The record by teams is plotted daily in the form of graphs, of which several copies are made. One of these is posted in the main office. Another is posted in the trainmen's waiting room. In the chart in the main office the record of each team in number of points charged against it cumulatively for the month is plotted in lines of different colors to represent the different teams. The one in the trainmen's waiting room also shows the number of accidents by teams cumulatively for each day of the month, but it is on a much larger scale and the lines are shown by strings of different colors rather than by being drawn in ink. The background of the board is black.

The daily records of the men of each team are recorded on what is known as a target. There are six of these, one for each team. The diameter of each target is about 36 in. The targets are mounted in a row in the trainmen's headquarters. Each target has 31 concentric circles to represent the days of the month and as many radii as there are men on the team whose records are being shown by the circles. The radii are marked with the names of the men composing the teams. The advance of each man toward the "no accident" center is indicated by a plug which is moved along his particular radius one circle each day he has no accidents. If a man has two accidents on the same day he is not moved forward one step for two days.

As explained, different colors are used on the charts to distinguish the several teams. These same colors are used for the centers of the several bullseyes.

These targets are painted on beaverboard. At the top of each are the words "Hit the Bullseye." By these targets it is possible for every man to know exactly where he stands and where every member of every



Centering Attention on Safety at Savannah

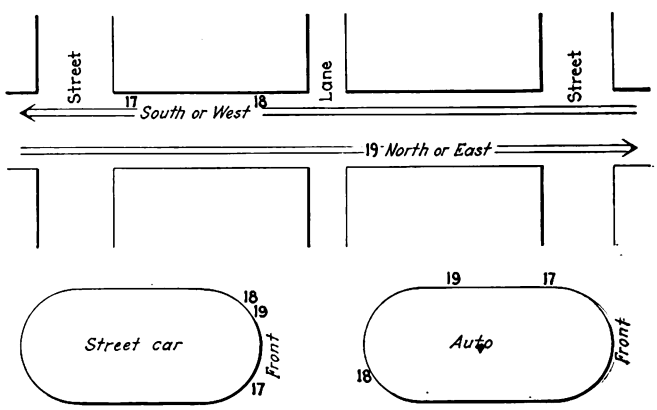
The train force is divided into teams and daily records of the individuals and each train are shown by pegs on a chart like this in the trainmen's headquarters. The object of each trainman is to hit the bullseye on the last day of each month by means of a perfect safety record.

other team stands in the monthly contest. There are about 26 men on each team.

Of course, in a contest of this kind, questions will always arise as to what should be called an "accident," even with the very specific rules which the company has on this point. For this reason there is a standing committee on disputes. It is made up of Fred C. Morton, general superintendent of the company; A. F. Solms, claim agent, and G. A. Webb, superintendent of transportation.

Other Posted Records

Besides the bullseyes or targets, there are a number of other records on safety in the trainmen's headquarters. One is the chart of records by teams, already mentioned. Another is a map of the system showing the location of automobile accidents. The purpose of



Charts Aid in Visualizing Causes of Accidents

Graphical records are kept monthly of the comparative locations on a typical block where automobile accidents occur and of the parts of the electric car and automobile hit. The numbers indicate the kind of accident. In the original charts two colors of ink are used, one to indicate that the car hit the automobile, the other that the automobile hit the car.

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this map is to show the men the places where experience indicates this kind of accident is liable to occur. The map shows in red ink the locations of the accidents during the first six months of 1925 and in green ink those during the first part of 1926.

Another map of the same kind, but changed monthly, is kept in the superintendent's room. Adjoining it is a representation of the dial of a clock, but drawn to represent twenty-four hours. On this pins of different colors, each color representing a different kind of accident, are used as markers, so that with this clock and map there is a visual record of the place and time of each accident for the month. At the end of each month the data are transferred for comparative purposes to smaller maps and charts. By this method dangerous street crossings, etc., can be detected and arrangements made to protect them.

Records Help Safety

It is impossible through lack of space to present all of the records and the studies made by the company to determine where and how accidents occur most frequently, but a few of the principal forms will be mentioned.

A monthly record is kept with 20 classifications of kinds of accidents and 23 headings of vertical columns to indicate the part of car hit, type of car, etc. The classifications used follow:

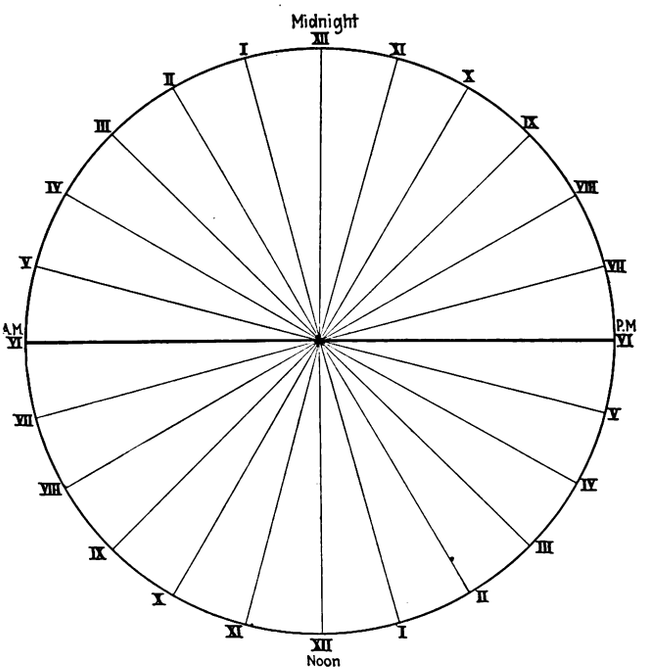
Collision with pedestrians	Alighting from car
Collision at railroad crossings	Injuries on car
Collisions between cars	Injuries by doors
Collision, auto hit car	Ejectments and disturbances
Collision, car hit auto	Broken windows and doors
Collision with other vehicle	Split switches
Collision with animals	Fenders torn off
Derailments	Broken trolley poles
Damage to equipment	Broken trolley wire
Boarding car	Miscellaneous

The headings for the vertical columns read as follows:

Part of car hit: Front, moving
Part of car hit: Front, stopped
Part of car hit: Rear, moving
Part of car hit: Rear, stopped
Part of car hit: Side, moving
Part of car hit: Side, stopped
Type of car, Birney, safety, one-man
Type of car, reconstructed, d.t. one-man
Type of car, old type
Type of auto, passenger car
Type of auto, truck
Kind of driver, white man
Kind of driver, negro
Kind of driver, woman
Length of service of operator—Less than six months
Length of service of operator—Six to twelve months
Length of service of operator—One to two years
Length of service of operator—Two to three years
Length of service of operator—Three years or over
Responsibility—*A*
Responsibility—*B*
Responsibility—*C*
Responsibility—*D*

In connection with these final four columns, the company designates as *A* accidents those in which the operators were entirely responsible; as *B* accidents those where the responsibility of the operator is open to question; as *C* accidents those where an employee other than a trainman is responsible, as with bad equipment, and as *D* accidents those in which outsiders are wholly responsible.

A special record is also kept of all automobile accidents, because in Savannah, as in most cities, they constitute a very large proportion of all of the accidents. In the written records on automobile accidents full particulars are given of the nature of the accident, place of occurrence, time, cause, line, car number, etc. In addition, a diagrammatic record is kept, by months, of the positions in a typical block of the locations of all automobile accidents as well as the part or place on the car and auto which came into collision. Such charts, much reduced, are shown on the preceding page. In these charts the numbers "17," "18," "19" refer to the classification of these accidents used by the company,



One of Several Charts Used by the Savannah Electric & Power Company in Its Safety Work

A clock dial with space for 24 hours, like that above, and a map of the city are used to plot the place and time of every accident. Pins of various colors, each color representing a different kind of accident, are used as markers. These records are made daily. At the end of each month the data are transferred to maps and charts for comparative purpose. By this method dangerous street crossings, etc., can be detected.

while the positions of these numbers on the chart show the part of the vehicle or place where the accident occurred.

Hearty co-operation in this safety campaign has been received from the Police Department of Savannah, and that department has adopted several of the company's methods of locating hazardous corners and locations. Maps and charts are also kept by the department for the information of the patrolmen and traffic squad. As a result of these studies the police traffic department has installed many safety and boulevard stops, not only at hazardous street railway crossings but at many other blind and hazardous street crossings in the city. These studies have also disclosed points where traffic men should be located for short periods only, both weekdays and Sundays.

This aid to traffic accordingly has been supplied. In fact, it has been possible for the Police Department, through the information thus obtained, to locate its traffic squad properly and to gain far greater use of the men available by limiting their time to the points of greatest need and moving them to hazardous points as traffic conditions change.

With these methods of analyzing accidents it is not surprising that good records in safe operation are being made in Savannah.

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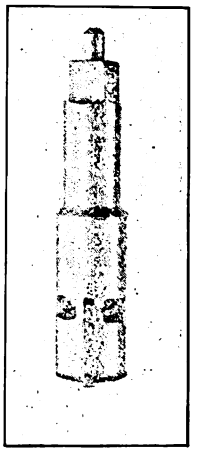
Maintenance Notes

Special Tools for Compressor Maintenance

GRINDING in valve seats in an air compressor valve head is no easy job. A special device, however, was developed in the Dallas Railway shops that has almost the touch of the human hand. This device was first mentioned in ELECTRIC RAILWAY JOURNAL for Aug. 8, 1925, page 210. The machine has been in continuous use since then, greatly lessening the cost of valve grinding. M. S. Crouch built the machine that does this work automatically. Both the machine and Mr. Crouch are seen in one of the accompanying illustrations. The machine is adjustable and can be swung in any position. It is driven by the small motor shown at the right. When once centered over a valve opening, the valve is dropped in place with a little grinding compound put around the valve seat. The clamp of the grinding machine is attached to the valve stem and the machine set in motion. The machine makes half a dozen reciprocating motions similar to those of an operator doing the work by hand. Then the valve is lifted slightly, allowing the grinding compound again to cover the valve seat and the reciprocating process is continued for another half dozen or more revolutions.



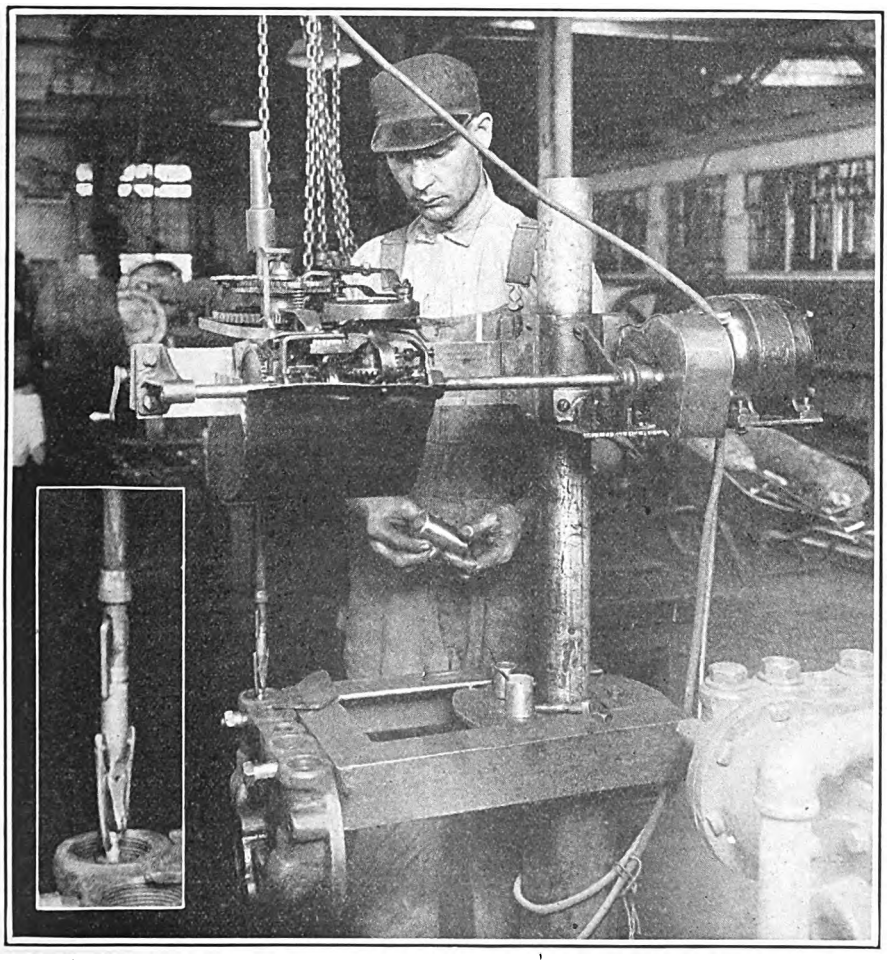
Valve Seat Cutting Tool

The blades are expanded after the tool has been inserted in the valve chamber

A new device has been added to the air valve maintenance equipment of the Dallas Railway through the use of this extremely handy tool. As maintenance ment know, the seats of air compressor valves become worn in a grooved or conical shape, and it is then desirable to remachine the valve seat in order to establish the correct taper. The difficulty is to get a machine through the hole, since it is necessary to cut the seat back a distance slightly greater than the upper end of the valve chamber.

To accomplish this Mr. Crouch has built the tool shown in one of the views. The cutting edges of the tool consist of four hardened blades which are set in the stem. Each blade is pivoted around the center, as can be seen in the illustration. One blade was pulled out as far as possible to show the construction while the others are in their normal positions.

This tool can be inserted into the valve chamber with the blades compressed inwardly. When it is inside, the stem at the upper end can be turned from left to right, which screws down a taper that forces out the blades in an even manner. When they have been extended sufficiently, the tool is clamped in a drill press and the valve seat is remachined. The process of unscrewing the stem and closing in the blades is necessary to remove the tool from the valve chamber after the machinery operation is completed.



Mechanism for Automatically Grinding Air Compressor Valve and Seats Used in Dallas. The Cover Over the Glass Has Been Removed to Show the Details of Construction. Inset Shows Detail of Clamp that Engages Valve Stem

Metal Cutting with Illuminating Gas

ILLUMINATING gas to replace acetylene, hydrogen and other fuel gases in combination with oxygen for metal cutting has been adopted at the Schenectady plant of the General Electric Company, following a comprehensive study of the economic needs of the various classes of work. A special oxy-illuminating gas torch was developed for the purpose, and is now being used for the cutting of risers in the steel foundry of that plant, varying in thickness from 1 to 20 in. This method is also used on machines in cutting intricate shapes from steel plate.

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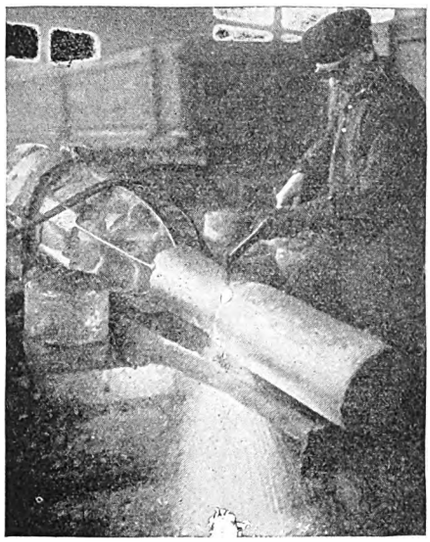
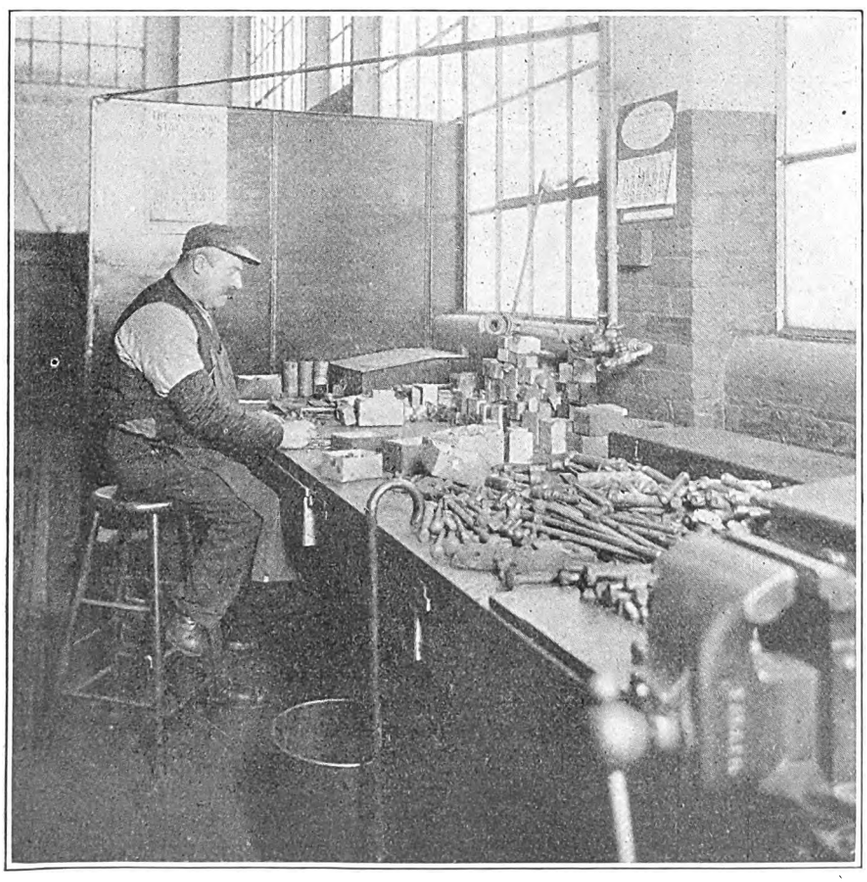


Cutting Riser from Large Rotor Casting

As a result of tests, it was found that illuminating gas is cheaper in machine cutting than either hydrogen or acetylene, while the speed of cutting after one starting is approximately equal for all gases. The advantages of the use of illuminating gas were found to be (1) availability; (2) elimination of delays and handling of tanks; (3) low cost; (4) safety, and (5) chemical and physical properties, permitting its use in a torch, equipped with a super heater, thus effecting marked economies in the amount of oxygen required by the cutting jet.

General Salvage Man Reclaims Much Material

VARIOUS small parts such as screws, nuts, bolts, rods, nails, fuses, lighting sockets, etc., used by electric railways are sorted and reclaimed in the shops of the Department of Street Railways, Detroit, Mich., by a man who devotes his entire attention to the work. This man visits the various departments of the shop and picks up miscellaneous material, also outside shops send in their accumulations for sorting and testing. The salvage man goes over these accumulations of material at his bench, located in one corner of the shop. The various parts are placed in boxes so that uniform sizes are brought together. Poorly threaded screws and nuts are rethreaded or tapped. Fuses are tested and where labels are defaced or missing new labels are supplied. Various other parts are repaired where necessary. Work done in this way has proved of great convenience to other departments as well as being made profitable to the company.

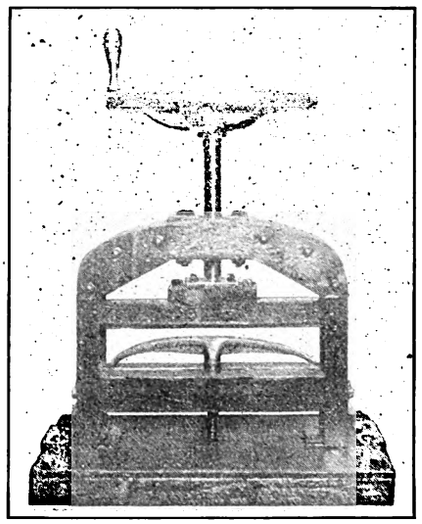


General Salvage Man in the Department of Street Railways, Detroit, Sorting Machine Screws and Placing Them in Proper Boxes

Press Reclaims Slightly Used Trolley Ears

BY JAMES SCOTT
Superintendent of Overhead Cleveland Railway, Cleveland, Ohio

POLE relocation, span rearrangement, and removal of temporary and permanent trolley wires make necessary the removal of a surprisingly large number of trolley ears long before they are worn out on the lines of the Cleveland Railway. These ears are in good condition except for the half-moon bend which results from removal by the stripping iron. This bend cannot be removed satisfactorily or economically by hand, but the saving possible by reclamation of these ears warranted the construction of a special machine to perform this operation. Such a machine has been developed in our shops and by means of this an ear may be straightened quickly and accurately. The machine used resembles a letter press in appearance. A die is fitted into the base which is shaped to conform with the upper side of a new trolley ear. The movable element of the press consists of a metal block connected on the top by a ball and socket joint to a screw. This screw passes through the upper frame of the press. The lower face of this movable block consists of a metal strip which is shaped to conform to the under side of the groove of the ear.



Ear in Position Previous to Straightening

To straighten the ear it is placed in the press with the boss resting on a coil spring, which extends up through the center of the lower die. The handwheel is then turned so as to close the press and force the ear into the die. A moderate force

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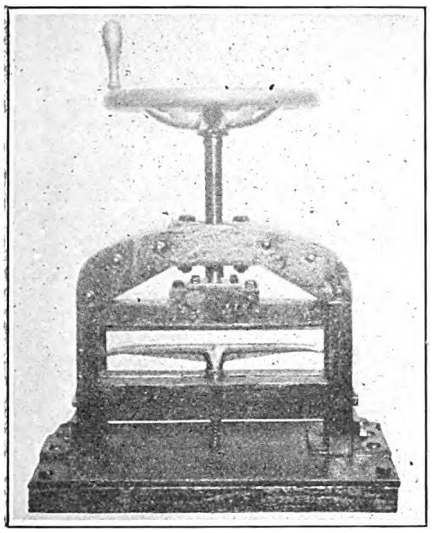


Reclaimed Ear Ready for Reuse

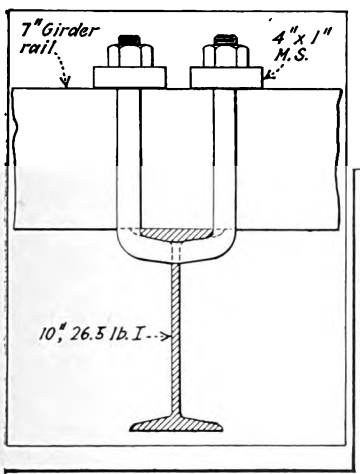
applied to the wheel is sufficient to accomplish desired results. Upon opening the press, the spring in the base raises the ear clear of the die so that it can be removed readily. The entire operation can be completed very quickly and an inexperienced operator can do the work so that the labor cost is very low. Ears reclaimed in this manner, with the exception of slightly worn lips, are equal to new ones.

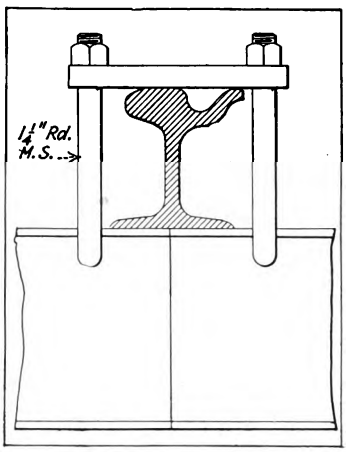
Another feature of this press provides for changing the lower die and straightening and reclaiming switch approaches in a manner similar to that used for the ears.

Monorail Installation Reduces Handling Cost

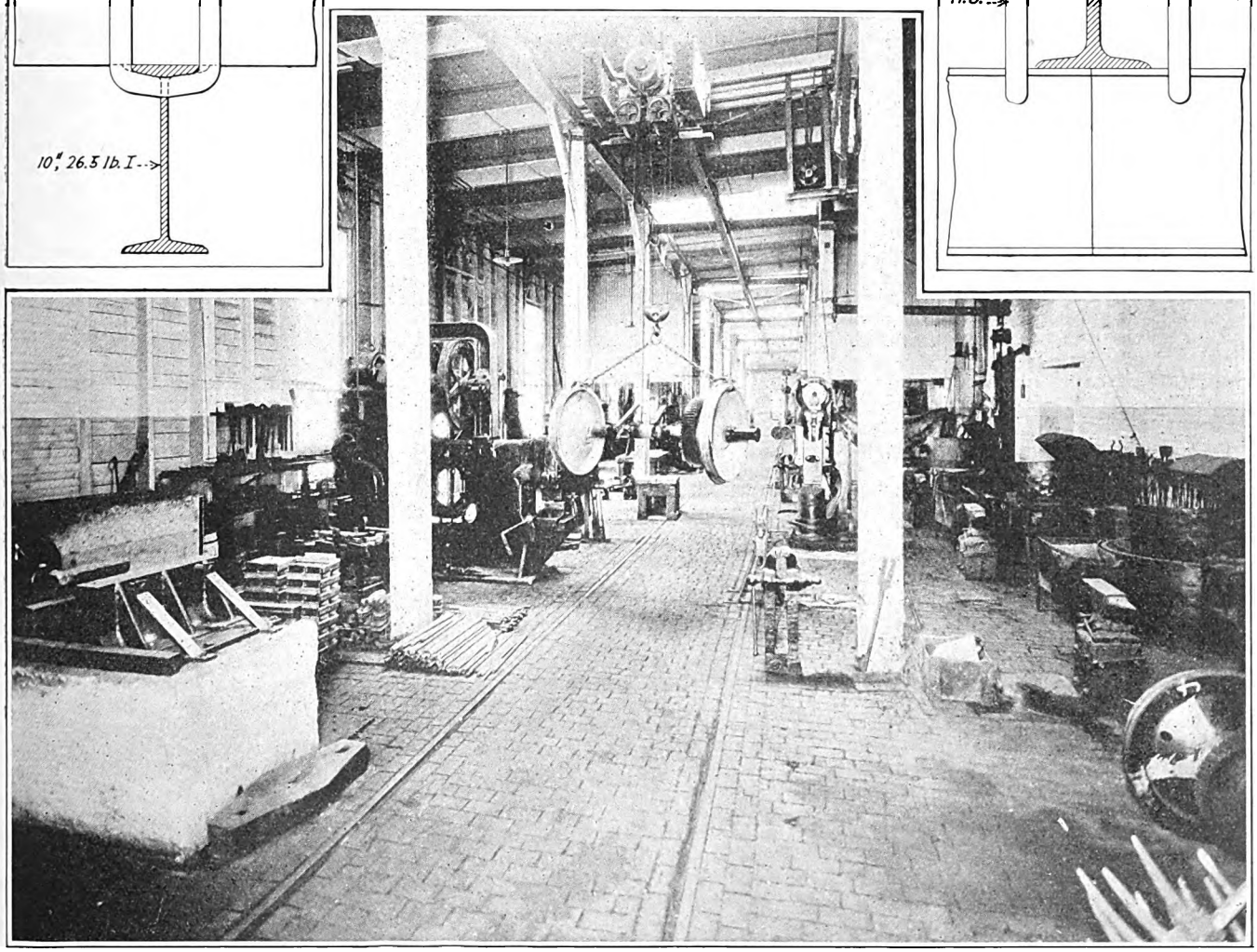
INSTALLATION of a 1½-ton monorail traveling hoist by the Eastern Massachusetts Street Railway in its Chelsea shops has speeded up production and lowered the cost of handling heavy materials between the various departments. Equipment such as axles, wheels and motors were formerly transferred on hand trucks, which was a rather slow and expensive method compared to the present one. The electric hoist is equipped with variable speed control operating by ropes from the floor. It has a full load lifting speed of 26 ft. per minute and a traveling speed of 250 ft. per minute. An automatic limit feature is in use to prevent over-traveling of the hoist hook. This is self-resetting after operation.

The hoist operates on a 10-in., 26½-lb. I-beam track hung on cross rails spaced 15 ft. on centers. Cross members consist of 7-in. girder rail 10 ft. in length and attached to existing uprights by means of forged hangers. The I-beam track is suspended midway between uprights and secured in place with 1¼-in. U bolts as shown in an accompanying sketch.





Electric Hoist and Monorail Arrangement Has Facilitated Handling of Material between Departments in Chelsea Shops of Eastern Massachusetts Street Railway. A 10-In., 26½-Lb. I-Beam Is Used for Monorail Track. Track Is Suspended from 7-In. Girder Rail Cross Members by 1¼-In. Bolts.



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Association News & Discussions

Bluff Point Meeting Well Attended

Many Phases of Bus Operation Discussed at New York Electric Railway Association Convention—Railway Operators and Manufacturer Representatives Gave Ten-Minute Talks on Live Topics in Their Fields

BUS operation occupied a prominent position on the program of the 44th annual convention of the New York Electric Railway Association on June 25 and 26. The meeting was held at the Hotel Champlain, Bluff Point, and was attended by about 350 persons. A feature of the program was a series of ten-minute talks by railway officials on live topics in electric railway operation. The subject in each case was left to the speaker. There was also a series of similar talks by representatives of manufacturing companies on recent developments in their particular fields. Two sessions of the association were held on June 25, and the annual banquet took place on the evening of June 26.

At the opening session on June 25 President W. J. Harvie called the meeting to order at about 9:45 oclock and reviewed the progress made during the year in an address. An abstract follows:

Presidential Address

Mr. Harvie first briefly reviewed the work of the legislative committee and the program committee. He then emphasized the need of the companies, in considering new problems, like that of the motor bus, not to relegate to second thought the consideration of the electric car. "We still have it with us," he said, "and will have it for many years as the *pièce de résistance* of the business of transportation. We must, therefore, give it much more of our attention. None of us will deny that difficulties of successful operation do not diminish as the years go by, and that our problems require more alertness and acumen than formerly. Some of our burdens have become so heavy that they require special attention at our hands. Failure to correct them will inevitably result in inability to operate a much-needed service—a calamity due entirely to causes inherent in electric railway operation itself, and not due to the entry of the motor bus into the field of transportation." In conclusion, he said:

"A very considerable responsibility rests upon each of us to put our best thought on the problems that confront us, relieve our industry of unjust burdens, obtain an adequate return for service rendered, adopt new methods if necessary, and render service of quality and sufficiency to please our industry so that it will retain its place as a constantly helpful factor in the progress of our various communities. Only by so doing may we hope to make our business a profitable one."

Committee Reports

The treasurer's report showed disbursements for the year of $22,324 and balance now on hand of $7,428.

The accounting committee reported efforts made to induce the State Tax Commission to accept the reports made by the companies to the Public Service Commission and the Rapid Transit Commission. This would save the labor required to prepare two sets of reports. The committee also spoke of its work in endeavoring to get these two utility commissions to adopt the same classification of accounts.

A nominating committee consisting of the past-presidents present was appointed by President Harvie.

The legislative committee reported through Gen. Charles D. Newton of efforts made at the recent session of the State Legislature to reduce the paving burden and the gross receipts tax on electric railway companies. Though both bills introduced failed of passage, the prospects for securing some relief at the next session of the Legislature are good.

Three papers were presented as follows: "Motor-Vehicle Operation" by Roy R. Hadsell, New York State Railways, Rochester; "Legal Phases of Street Railways and Buses" by Alfred T. Davison, Third Avenue Railway, and "Taxation" by Ralph Norton, Interborough Rapid Transit Company. They will be found in abstract elsewhere in this issue.

In answer to an inquiry, Mr. Davison quoted from a decision in a recent case where a car of his company had collided with a bus operating unlawfully on the streets. The court held that gross or willful negligence of the operator of the trolley car would have to be proved before the railway company would be held responsible. In this case the question was one of property damage only, as no passengers were injured. The decision had been appealed by the bus owner.

Ten-Minute Talks on Operation

A feature of the meeting, as explained, was a series of ten-minute talks on operation by transportation men, and on new manufacturing kinks by representatives of manufacturing companies.

R. E. Danforth, formerly general manager Public Service Railway, Newark, N. J., said motor vehicle transportation was not a big element in city service in the near future, but it seemed large to the public because of a popular impression that the electric car was being superseded. Buses should be provided for those who want to ride on rubber, but it is just as important, if not more so, to keep the railway service up to date. Both public and trainmen must be educated, the latter in their duties and in ways to attract traffic. One of these is to wear a smile, as a grouchy operator repels passengers. Publicity also is needed.

W. E. Thompson, vice-president Third Avenue Railway, said that two of a transportation man's most difficult problems are how he can cut down the losses on lines that do not pay operating expenses and how he can take care of the peak loads on heavy lines. Experience with the bus during the last few years shows that in newly developed or sparsely settled territory, where the travel offering would not justify the construction and operation of an electric railway line, the bus can be used to advantage. Where a line has been operated for years at a loss and requires considerable rehabilitation is often another place where the trolley can be abandoned and service in the territory given with buses. In small towns, where the peak loads are not a factor, buses are also found useful. But for carrying large numbers of persons in and through congested centers, the use of the bus adds to the traffic congestion, gives slower movement and requires a higher fare.

An observation made in New York City in May of this year shows that on Fifth Avenue during the peak of the rush in the afternoon between Fourteenth Street and 57th Street, a distance of 2.1 miles, the average running time for a bus was 47 minutes or 2.7 m.p.h. The buses served an average of 75 passengers per unit and at nearly all of the stops prospective passengers were left standing on the corner. On the same days and at the same time on Third Avenue the average running time for an electric car was 18.2 minutes or 6.9 m.p.h. The average number of passengers served per unit was 118 and the electric car was taking care of all of the travel that offered. Fifth Avenue has a rapidly moving light traffic with good police regulation, while the traffic on Third Avenue is largely of trucks.

Mr. Thompson also referred to a national survey just completed by the American Electric Railway Association, showing that the cities where the trolley has been abandoned are small and in many instances are in places

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where street car service would never have been attempted if buses had been available when the rails were laid. On the other hand there are now in daily operation 2,658 more closed electric cars in regular service than there were in 1919.

Continuing, he said that the dependability of service by the street car in all kinds of weather should be enough to convince anyone of its advantage over the bus, if there was no other reason. This was notably so in New York City last winter, where, during a heavy sleet storm, in a good many localities bus operation was completely suspended but the trolley cars were kept in operation.

On the more economical use of the streets by the car, Mr. Thompson said that at Broad and Market Streets, Newark, N. J., a recent two-hour traffic count showed that of the 44,000 persons transported 3,500 passenger automobiles carried 6,000, 826 buses carried 17,000 and 670 street cars carried 21,000 passengers. In other words, of the 44,000 passengers, four out of five were riding in street cars and buses, the street cars leading by a wide margin. In Chicago, according to a recent report, nearly 75 per cent of the passenger traffic in the central business district is carried by surface cars, which are only 10 per cent of the vehicles using the streets. In Atlanta, a check showed that 75.8 per cent of the people are carried by street cars, which form less than 9 per cent of the traffic in the street.

In conclusion, Mr. Thompson said recent railway reports from Philadelphia, Kansas City and the Public Service system in New Jersey show that their bus services were being conducted at a loss.

H. B. Weatherwax, vice-president United Traction Company, Albany, said that company now has 30 buses (including four trackless trolleys), is adding 25 buses now and may add 25 more before the end of the summer. The bus lines on this system are not profitable, but in general have been put where trolley lines would not be or had not been profitable. Buses have proved especially popular with women passengers and have increased the off-peak riding. Elderly people also like their ability to make stops at the curb. The speed is usually higher than that of the trolley line replaced, and the gross receipts per vehicle-mile are often higher.

T. C. Cherry, vice-president and general manager Rochester & Syracuse Railroad, urged the need of giving good service but at a remunerative fare. He thought, in general, the city bus fare should be 10 cents, and the interurban bus fare should be 5 cents a mile.

J. F. Hamilton, president New York State Railways, Rochester, which operates a number of bus lines, said these lines were paying operating expenses including a fair rate of depreciation. He does not contemplate at present any material bus extensions. Bus operation is financially not a great asset, but it is very helpful in improving public relations. Mr. Hamilton then spoke of the good results following three years' work in safety on his property. Safety competitions are being held between different divisions of the trainmen. They have been of great value.

George MacLeod, vice-president and general manager Buffalo & Erie Railway, spoke of the novel features of the interurban cars on that property. These cars have been described in issues of this paper. He also spoke of their noiseless features, including rope suspension for trolley bases and air compressors. Within the last two or three months, 28-in. wheels have been installed instead of 26-in. wheels to secure greater speed. The company is also experimenting with a magnetic track brake operated from the trolley circuit. It functions with the air brake and reduces the distance and time required to stop cars by at least 25 per cent. He believes the public ready to support with their patronage cars which operate on a fast schedule and are comfortable.

In conclusion, Mr. MacLeod gave some interesting figures on economies gained with the light one-man cars on the Buffalo & Erie Railway, as compared with two-man operation. The saving in total operating expenses in 1925 over 1924 was approximately 20.2 per cent, despite the fact that the car-miles were increased 16.7 per cent. By the use of one man instead of two a reduction of 60 cents an hour was obtained. Another saving was in power. The total power cost in 1925 was 3.3 cents per car-mile and the power consumption, excluding heating, was 2.02 kw.-hr. at the car. The equipment maintenance was 1.1 cents per car-mile. On the Lexington property of the same company, after five years use of light-weight cars, this charge is still less than 1.8 cents. Finally, track construction and maintenance costs have been reduced by a wider spacing of ties, made possible by the lighter cars. In Lexington, where no freight trains are run, the spacing is 3½ ft. except at joint ties, as against the old spacing of 2 ft. On the Buffalo & Erie Railway, where a freight service is run, the spacing used is 3 ft. as against the 2½-ft. spacing previously employed.

C. E. Morgan, vice-president and general manager Brooklyn City Railroad, said the initials of the words Electric Railway Operation also stand for Education Responsibility is Ours. He thought it especially the duty of railway managements to explain to city officials and the public the public need for good street railway service. Merchants also should be shown that most of their patrons come by electric car and not in private autos and taxis. A recent check on this subject was made at a large department store in Brooklyn. Between 8 a.m. and 6 p.m. 33,000 patrons visited this store. Of this number 4.8 per cent walked there, 8 per cent came in private automobiles or taxicabs, 2.2 per cent came from the station of the Long Island Railroad, 31.3 per cent came from the subway, 20.3 per cent were delivered by elevated railway and 33.4 per cent by surface railway. Mr. Morgan spoke of a Pittsburgh merchant who thought most of his patrons came in private autos and taxicabs. To prove to him that he was wrong the railway company early each morning for three days parked autos around his store and left them there all day. The sales increased. Mr. Morgan also quoted figures from a recent study made by the B.-M.T. Corporation on the comparative use of the streets by private automobiles and street cars.

The series of ten-minute talks on "New Kinks," by manufacturers' representatives, was initiated by Bertram Berry, Heywood Brothers & Wakefield Company, New York. Mr. Berry said, in part:

IMPROVEMENTS IN SEAT DESIGN

One of the more recent demands in passenger transportation is for greater comfort. Some years ago, with the advent of the single-truck safety car, many of the electric railways adopted wood slat seats for their city service because they weighed less and were more economical in first cost and maintenance than upholstered seats. As the cars ran on rails, a not uncomfortable ride was had, providing the roadbed was kept in proper condition.

When motor buses started to haul passengers, the old style of seating was found to be inadequate. Uneven street paving and the sudden starts and stops of the vehicle brought a call for deep, soft cushions and high-yielding backs. Electric railway managers, noting that the riding public appreciated and was attracted by comfortable seats, are giving the subject careful consideration. The seat manufacturers, in turn, have

COMING MEETINGS OF *Electric Railway and Allied Associations*

July 8-10—**Midwest Electric Railway Association, annual convention, Brown Palace Hotel, Denver, Col.**

July 8-10—**Texas-Southwest Railway Claim Agents Association, convention, Arlington Hotel, Hot Springs, Ark.**

July 22—**New England Street Railway Club, annual outing, Portland, Me.**

July 23-24—**Central Electric Railway Accountants' Association, meeting, Drake Hotel, Chicago, Ill.**

Aug. 12-13—**Wisconsin Public Utility Association, Railway Section, La Crosse, Wis.**

Oct. 4-8—**American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.**

Oct. 10-15—**Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.**

Oct. 25-29—**Annual Congress and Exhibit, National Safety Council, Detroit, Michigan.**

Nov. 16-18—**Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

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been studying how to meet the new demand and have developed reversible seats with deep, well-upholstered cushions and thick backs with light springs.

Seats with sub-spring cushions and spring air cushion top pads with form-fitting backs, either revolving or stationary, have been designed. They can be provided with frames of wood, steel, reed or fiber. Usually an arm rest or panel is used at aisle end only. If the width of the car will permit, seats with an arm should be 37 or 38 in. over all. In buses, chairs with arms are frequently made only 35 in. long due to restrictions in the width of the bodies.

Single revolving wood and reed parlor car chairs with double springs can now be secured. Genuine leather is generally used in upholstering the deep cushion seats, although mohair plush is favored for parlor cars.

The appearance of the interior of a car depends largely on the seats. Recently the Eastern Massachusetts Street Railway, desiring to improve the appearance of some of its cars with the expenditure of little money, had the slat seats covered with an embossed imitation leather. Hair felt was used under the imitation leather. The effect was excellent, some of the regular patrons believing the management had provided new cars. Money invested in attractive furnishings and in adding to the comfort of electric cars will bring returns in the form of good will and increased patronage.

A. Frank Paul, National Pneumatic Company, Philadelphia, discussed progress in the development of circulation in passenger movement. An abstract appears elsewhere in this issue.

Gives Recent Car Statistics

George Frey, the J. G. Brill Company, Philadelphia, referred to the report on cars recently compiled by the American Electric Railway Association and published in abstract in last week's issue of this paper. He urged all to read and study it. In commenting on it he said that records had recently been compiled showing cars ordered by electric railways from Jan. 1, 1926, to date, indicating a total number of 33 orders and 873 cars. Of this total 49 were single-truck city cars, 443 double-truck city cars, 80 heavy electric coaches and 301 for elevated and subway service. Of the 33 orders for cars mentioned, 21 orders, representing 289 cars, required new drawings. A further analysis of the 443 double-truck city cars ordered showed that 200 were in orders of 50 or more, and of the 243 remaining cars, 46 were represented by two orders. This left 197 cars on 21 orders, and these could have been uniform in all essential respects but were not. The speaker emphasized the desirability from the economic standpoint for companies ordering cars, especially the smaller companies placing small orders, of keeping to uniform dimensions.

Other statistics given by Mr. Frey relating to the city cars were as follows:

49 had 25-hp. motors
375 had 35-hp. motors
10 had 40-hp. motors
8 had 50-hp. motors
50 had 60-hp. motors

85 had plush seats
66 had leather seats
170 had cane seats
168 had wood seats

79 had rubber floor covering
49 had linoleum floor covering
367 had plain wood floor covering

12 had pressed steel trucks
74 had arch bar trucks
18 had built-up trucks
391 had solid trucks and of this number 191 car sets were maximum traction trucks

John F. Craig, Westinghouse Air Brake Company, New York, gave particulars of that company's latest type of variable load brake for surface cars. He pointed out its advantages in increasing the braking rate of loaded cars and in reducing the number of flat wheels.

This portion of the program concluded with a discussion by R. Krienberg, Electric Service Supplies Company, New York, who referred to the effect on car design and equipment of buses, particularly in the direction of changes which added to the comfort of passengers. This is being evinced by more comfortable seats, better illumination, more attractive decoration, better destination and route signs, more efficient headlights, etc. Modern tendencies in car equipment, he said, are decidedly in this direction.

During the morning session, at the request of President Harvie, the delegates stood for a half-minute in silence in memory of J. E. Duffy, whose death occurred recently. Mr. Duffy was general superintendent of the New York State Railways, Syracuse.

A Message From the West

The second session of the association was held in the evening of June 25 to permit the display of slides and moving pictures with two papers.

Mr. Harvie called the meeting to order about 9 p.m. and said that Myles Lambert, Westinghouse Electric & Manufacturing Company, had a "message from the West" to present.

Mr. Lambert said he had spent considerable time recently in the Central West and had received many inquiries there about the electric railway situation in New York, particularly in New York City. The New York papers had published statements that the substitution of buses for a number of important electric railway lines was being seriously considered in New York City. These rumors were having a very disturbing effect throughout the country. He urged the electric railway interests of New York State to see that the facts in the case should be made public through a bureau of public information and in other ways. He particularly urged co-operation in this matter with the interests in New York representing the security holders of properties elsewhere in the country.

Papers by Leon R. Brown, safety engineer New York State Railways, Rochester, on "Traffic Problems in Rochester," and by H. L. Andrews, General Electric Company, on "Electric Drive for Gasoline Buses" were presented. Both were illustrated by moving pictures. Abstracts of these papers will be found in this and a subsequent issue. The views shown by Mr. Brown had been taken with the approval of the Commissioner of Public Safety, Chief of Police and captain of the Traffic Squad in Rochester and depict congested street conditions in Rochester, proper methods of making right and left-hand turns, violations of traffic rules, etc. They had been shown at a meeting for automobile drivers in Rochester under the auspices of the traffic committee of the Rochester Engineering Society. Later they will be exhibited at the theaters in that city.

Election of Officers

The concluding portion of the session was devoted to the election of officers. The report of the nominating committee for officers for the ensuing year, presented by R. E. Danforth, was unanimously adopted. It was as follows:

President, William W. Foster, Rochester.

First vice-president, William G. Gove, Brooklyn.

Second vice-president, William E. Thompson, New York.

Third vice-president, Ernest Murphy, Albany.

Secretary-treasurer, William F. Stanton, Rochester.

Executive committee, the officers and Frank Hedley, New York; Harry B. Weatherwax, Albany; James F. Hamilton, Rochester, and Slaughter W. Huff, New York.

At the conclusion of the election, Mr. Foster and the other newly-elected officers who were at the meeting were installed in office.

Large Attendance at Banquet

The annual banquet was held Saturday evening. This gave opportunity to those in attendance to participate in golf and other outdoor sports on Saturday. A number of sightseeing trips by buses were also provided and were enjoyed by those who participated.

There were many ladies at the convention, as is usual at Bluff Point meetings, and special sightseeing trips, bridge parties, etc., were arranged for them while the delegates were in session. They also attended the banquet, which was one of the most enjoyable ever held by the association. Mr. Harvie acted as toastmaster. The two speeches scheduled were of high grade and were well received. Hon. T. W. Wilson, Congressman from Mississippi, spoke of ideals in life and showed that the modern conception of aristocracy in this country is the aristocracy of service. Rev. John L. Davis was the other speaker and won great applause by his humor.

Importance of Truthful Advertising by Public Utilities

POINTING out that public utility advertising should be at all times based upon unassailable facts, Louis Wiley, business manager of the New York *Times*, delivered a most illuminating talk on "Newspapers and Public Utilities" before the Public Utilities Advertising Association, at the conven-

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tion of Associated Advertising Clubs of the World, held in Philadelphia, Pa., on Tuesday, June 22. He declared it to be one of the greatest problems of the public utilities to cultivate and maintain community good will toward their activities. Emphasizing the important part which the newspapers in the community may play in improving this good will through judicious advertising Mr. Wiley was emphatic in stating that it is better not to advertise at all than to advertise unintelligently. He went on to say:

> Poorly conceived advertising will fail to bring you results and will hurt the reputation of this powerful business influence among you. Until you are convinced of what advertising will do for you; until you are ready to understand that what you say in your copy must be only the truthful reflection of your company's character and that advertising cannot conceal or atone for mistaken policies of management; until you have a definite goal to be achieved by taking space, I would advice you not to advertise.

Mr. Wiley took the attitude that proper advertising will have a very beneficial effect upon the attitude of public utility employees. The public utilities may learn something in this direction from the great department stores. In such stores the employees are required to know what the company has advertised in the daily papers, both merchandising and institutional copy. The managers find that the employees take the keenest interest in the public advertising of the stores' policies and goods. Mr. Wiley believes that public utility advertising in the newspapers should be carefully prepared to have the right effect upon the employees as well as upon the public. He also pointed out the necessity for proper discrimination in the use of copy. Public utilities as well as merchandising institutions must deal with widely differing classes of patrons and the taste and characteristics of these various types must be carefully analyzed before a successful advertising program may be carried out.

Mr. Wiley looks for the greatest advance in public utility advertising in the future in the institutional form of copy. He said:

> See to it that your institutional advertising is scrupulously honest with the public; and if it is not backed up by performance it will be in vain. The most pious protestations in advertising in the world may be just as untruthful as the cheap copy which intelligent persons can tell at a glance is false. I cannot think of anything so vital to a public utility, whose prosperity must be bound up with the persons in the community it serves, as public confidence. Advertising alone will not beget this confidence, but truth in advertising will.

The Circulating Load in Passenger Movement*

Though Not New in Idea, This Principle Has Received Great Impetus Recently Through the Use of Large One-Man Cars— Possibilities Along This Line

By A. Frank Paul
National Pneumatic Company, Philadelphia

THIS is not a new system in car operation, but the phrase sounds new to us in that it has been recently popularized through the extension of one-man car operation, on larger car units, such as the turnstile car, the treadle car and the double-truck one-man car, where the passengers enter at the front and leave at the rear or vice versa. So many of us have come to think of it as a new scheme of operation. Nevertheless, the original "pay-as-you-enter" and "pay-within" types of car were fundamentally circulating load cars. When the "pay-within" car was introduced we endeavored to persuade the railway operators to insist that the public follow this method, but were unable to do so, because the officials felt that such a hard and fast rule would create more unpopular feeling and dissension than it would do good. The "pay-within" car had a chain across the rear exit, which the conductors were instructed to unfasten only in extreme cases, when the car was crowded during rush hours. Otherwise, there would be a delay if passengers had to force their way through crowded aisles to exit at the front. Another type of circulating load car is the Peter Witt "pay as you pass."

There is certainly much to be gained by an orderly systematized method of passenger movement, in comparison with the haphazard plan which results in a tangled knot of people trying to get through a small aperture at one time, and in many cases obstructing the flow of another group of people coming in the opposite direction.

In England, at all heavy loading points, the passengers are arranged in systems of queues. There are two lines to the queue as the platforms of the car have two passageways, one to the upper deck and one to the lower deck. In this way cars holding 74 to 76 passengers are loaded in an astonishingly short time. One car which we timed with a stop watch loaded in 45 seconds, and the average of a number of cars was 55 seconds. American managers say that the American public will not stand for this scheme. However, it was used to a considerable extent during the war, and is still in operation in some places. Personally, I believe that this system could be applied to the elevateds and subways of our large cities to great advantage, especially where there are railings on the platforms to control the passenger movement, and the cars are stopped with the doors in front of the openings in these railings.

As stated, the phrase "circulating load in passenger movement" is thought of in connection with the more recent double-truck one-man cars. We shall now pass to a consideration of the subject in this relation.

In a one-man car everything possible must be done to help the operator and to increase car mileage. The safety devices equipment was designed especially to facilitate the work of the one-man car operator. This was comparatively simple on the original Birney car, which had only one passageway for loading and unloading. But as larger cars came into use in one-man operation, on lines of heavier traffic, the duties of the operator increased proportionately. It then became evident that some additional facilities were necessary, so the longer platform car having a separate entrance and exit door, side by side at the front right-hand corner, was introduced and found of decided advantage. Simultaneous loading and unloading resulted.

With the front-entrance front-exit type of car the difficulties of aisle friction (passenger movement in opposite directions in the aisle), congestion at the pay point (passengers unwilling to move away from close proximity to the exit doors) and street friction (passengers massed at the entrance on the street, delaying the egress of passengers) immediately were evident and offset largely the advantage gained by the two doorways.

Perhaps the next step in the development was the turnstile type of circulating load car, in which the passengers board at the rear and leave at the front. This car has been operating very successfully in a number of cities. In others the turnstiles have been abandoned, the cars being operated as front-entrance rear-exit without turnstiles. A number of cities operate cars in which the passengers either enter at the rear and leave at the front, or vice versa. Among them are Albany, Scranton, Altoona, Knoxville, Fairmont, Springfield (Ohio) and Dayton. While this type of car is an advantage over the other types mentioned, it is not all that could be desired. The treadle rear exit supplies the need.

With a front-entrance rear-exit treadle type of car all of the difficulties in the movement of the passengers are eliminated. There is no street friction, no aisle friction, no congestion around the pay point, no hesitation on the part of the passengers to move away from the entrance door, as they are naturally anxious to move toward the exit door so as to alight more quickly at their destination. There is no street friction, because the passengers getting out do not encounter any of the boarding passengers. A description of the operation of this car will illustrate the advantages.

In the operation of a one-man car the car operator is both the motorman and the conductor, but these two duties are entirely separate and distinct. While the car is in motion the operator is a motorman, looking ahead and having his hands on the controller and brake. Coming to a stop where there are passengers to board, he applies his brakes and opens the front door. He is then finished as a motorman and assumes the duties of conductor. He collects all fares, makes change, issues transfers, answers questions, assists passengers

*Abstract of paper at annual meeting of New York Electric Railway Association, Bluff Point, N. Y., June 25, 1926.

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and does the complete work of a conductor. When this is finished, he turns to the brake and controller, having in the meantime had no thought or consideration for the passengers who may have been exiting from the car. These are leaving through the automatic treadle door at the rear. Having resumed the duties of motorman, he looks in the signal light to see whether the automatic conductor on the rear has closed the rear door, as he would do on a two-man car. As soon as he gets the signal light that the rear door is closed he releases his brakes and proceeds.

The great advantage of this system is that the two functions of the man can be so clearly and completely defined and his mind is so entirely relieved of anxiety and concern for what may be going on at the rear of the car. The rear treadle is interlocked with the brakes, so that should the motorman become careless or neglectful, he could not start the car when any one was on the treadle or the step. Further, he could not close the door on a passenger who was alighting at the rear.

There are at the present time 1,165 treadle cars in operation, with 225 additional on order. The city of Toronto has been operating for the past year 10,000 car-miles per day, at an average speed of slightly more than 10 m.p.h., with large double-truck treadle cars. These cars have such a capacity that frequently during rush hours from 100 to 120 passengers are on the car. Further, these cars are running on the same track through the down-town congested district with "pay-within" type two-man cars and Peter Witt two-man cars. They are able to keep their place in the schedule without holding up or delaying the two-man cars. Stop watch tests have shown that the treadle car in Toronto is the fastest unloading car in the city, it being faster than the Peter Witt two-man car. It is not quite as fast in loading, but the gain in unloading has offset this and enables it to make a schedule speed of slightly better than 10 m.p.h.

In every case where the treadle car has been thoroughly tried out it has been proved beyond doubt that larger loads can be carried and faster time maintained than with any other type of one-man car. Lines are being operated by the treadle car which previously were considered too heavy for one-man operation.

Illustrating the extent to which the treadle car has gained favor, to date this year 498 city service cars have been purchased. Of these 278, or 56 per cent, are treadle cars.

Tax Problems in New York State*

Injustice of Many Existing Burdens Admitted—Progress Toward Their Removal

BY RALPH NORTON
Of Counsel to Interborough Rapid Transit Company

"THE present taxes on public utilities are a complicated hodge-podge which are the despair of the taxpayer and an occasion for amazement and scorn of students of taxation generally. For a long time it has been generally appreciated that the taxes on public utilities were arbitrary, uncertain and complicated, but it has been assumed that the law did achieve a reasonable degree of equity in the distribution of the tax burden. Our statistical investigation shows conclusively that the net result of all the effort which we now put forth in assessing these intricate taxes is scandalous inequality and disgraceful discrimination."

These are not my words. They constitute the indictment found by the Davenport joint legislative committee in 1922 against the statutory provisions under which different classes of public utility corporations are taxed for the support of municipal and state governments. The statistical tables accompanying the committee report furnish ample justification for the conclusion that gross inequality and discrimination prevail. The committee found that public utilities as a group pay a larger percentage of their net income in taxes than any other class of corporations doing business in the state, and that within the public utility group the street railway industry had to bear a burden nearly 100 per cent greater than other members of the group.

For a ten-year period, from 1911 to 1920, inclusive, the Davenport committee found that telephone and telegraph companies paid 16 per cent of their net income in taxes, gas and electric companies 23 per cent, steam railroads 27 per cent and electric railways 44 per cent. The comparison is all the more unfavorable to the street railroads because of the fact that the other public utilities have been able to raise their rates to meet their increased expenses. Undoubtedly, if the period under examination had been extended to later years the discrepancy would have been even grater. If any consideration had been given in the report to the paving obligation and its effect upon street railway finances the resulting discrimination and inequity would have been much more striking.

PAVING OBLIGATION UNJUST

The paving burden had its beginning in the horse car times, but under present-day conditions the obligation is as obsolete as the horse car itself, and it has been distorted by municipal authorities to cover requirements which, while they may come within the technical language of some particular franchise, were never within the contemplation of the parties at the time the contract was made.

In one case, the B.-M. T. system accepted a franchise for an extension through an old but unpaved street in Queens County connecting with one of its lines in Brooklyn. As a condition of the franchise the company paved the railroad area. That street has since become one of the main through thoroughfares, particularly for trucks, but the space outside the railroad area is still unpaved. In consequence, the movement of trolley cars is impeded at times by the public's use of the facility which the railroad company has provided. The pavement is of no benefit to the company; rather the reverse, but it paid the bill. Another case is that of a company which also operated in Queens County, but now has gone out of business, where the paving bills rendered by the city authorities for one year were in excess of 60 per cent of the entire year's gross receipts. Still a third case is that of another company, also operating in Queens County and now in receivership, where operation is continued solely as the result of a tacit agreement by the present administration not to press for payment paving bills amounting to more than $200,000.

In many instances local authorities will direct the substitution of new and more costly pavements for an existing one not in need of general repair. Where that occurs in a street occupied by a double-track street surface railway it generally means that a large part of the cost, sometimes as much as two-thirds of the total, must be paid by the company and the remainder borne by the municipality at large as a part of its general tax levy. Thus, the street railway company must pay not only the bills directly rendered to it for paving the street railway area but also its share of the general charge as a real estate owner and taxpayer.

With the ever-growing increase in vehicular traffic on the streets, there is no reason why the street railway, which is responsible for less wear and tear on the street pavement than other users, should be singled out for a continuance of the old horse car time obligation. Theoretically, a special tax is premised only upon a special benefit or privilege. Destroy or remove the benefit and the tax should fall. Certainly, in any comprehensive readjustment of the tax burdens and imposts throughout the state, provision should be made for the entire elimination or amelioration of the existing paving obligation.

IMPROVEMENT SLOW

With accumulation of state and local taxes upon these public utilities—gross earnings taxes, excess dividend taxes, corporate franchise taxes, special franchise taxes, real estate taxes, percentage payments and car license fees—and with the insufferable paving burden on top of them all, naturally the question arises: What can be done about it? The somewhat indefinite program of the Legislature's committee four years ago contemplated a constitutional amendment as a necessary preliminary to getting rid of the special franchise tax. As yet, not a single constructive step for the correction of the outrageous tax conditions affecting public utilities generally, and this industry in

*Abstract of paper at annual meeting of New York Electric Railway Association, Bluff Point, N. Y., June 25, 1926.

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particular, has been taken. Committee bills have been introduced from time to time since the 1922 report, notably those paving the way for the constitutional amendment incidental to the effort to get rid of the special franchise tax, but they get nowhere. Only this year the special joint committee on taxation and retrenchment reaffirmed its 1922 recommendation "that the taxation of public utilities be completely revised." But nothing is done.

If anything in the way for betterment is to be accomplished it must be germinated, nourished and brought to full and vigorous fruitage by the untiring efforts of those most vitally concerned. That means us.

For a number of years this association, functioning through its executive committee, has been making every effort to secure from successive legislatures the passage of a remedial measure which would substantially reduce the paving bills of street railroad companies by limiting the area to which the obligation would attach, and by clearly defining the proposition that the obligation is one to repair and not to repave, as the changing desires of the people or city administration might dictate. A measure of this character, cutting down the obligation rather than one seeking to remove it entirely, was considered wiser from a practical point of view because of the solidified opposition of the cities throughout the state which a bill entirely eliminating the obligation would be sure to bring forth. The wisdom of that course seems to have been amply justified by the progress which the Stevens-Thayer bill made at the 1926 session of the Legislature, drafted by and introduced at the request of this association's executive committee.

This bill proposed to amend Section 178 of the railroad law, which creates the paving obligation, so as to limit the street railroad area to what might be called ribbons of the street surface 16 in. in width with a rail in the center of each ribbon, and also by clearly specifying the street railway company's obligation to be one of maintenance and of restoration to the former condition of any part of the pavement of such street which should become in need of repair in consequence of the existence or use of the track. This bill was favorably reported in both houses and seemingly encountered little real objection. It probably would have passed if it had not been caught in the jam of the concluding days of the recently ended legislative session.

The successful culmination of such an effort would bring New York in line with Massachusetts, Connecticut, Calfornia and Montana, where similar drastic paving requirements to those now on our statute books have been modified. In addition, in many cities, scattered through 24 states, individual relief has been granted to different railway companies, varying between complete exemption from original paving, repaving and maintenance costs, requirement of only part of the cost of original paving and agreements stipulating annual flat amounts to take the place of all paving requirements. In some cases the relief granted is of a temporary nature, in others agreement for a specific number of years, and in many others it is permanent. It will thus be seen that a measure such as that which this association has sponsored, and which it will again present and urge for passage, is in line with a widespread attitude of fair treatment of this subject by different sovereign states and by many municipalities.

Franchise Taxes

This year the executive committee of the association determined for the first time to seek some other form of legislative relief from existing tax burdens in addition to the paving bill. After mature consideration, it was felt that the objective most likely to be obtained would be found in some amendment of the statutory provisions under which the corporate franchise taxes payable to the state are assessed. Accordingly, the committee caused to be introduced, in the 1926 Legislature, a bill attempting to do away with some of the discrimination which had been found to exist between different members of the public utility group. That bill, known as the Smith-Mastick bill, proposed to reduce the percentage of the gross earnings which operating street railroads are required to pay to the state as an annual franchise tax from 1 per cent to one-half of 1 per cent, and thereby place the street railways on a parity with steam railroads and certain other public utilities. To remove objections of the State Tax Department, the bill was changed so that the franchise tax would be a varying percentage of the capital stock of the company affected according to its degree of prosperity, as evidenced by dividends paid. With this amendment passage of the bill seemed assured until the closing days of the session, when it ran into the same situation which prevented the passage of the paving bill, although there was an additional consideration about the make-up of the state's financial budget, which would have been slightly affected had this bill become a law.

I feel sure that the amounts which the companies would be required to pay to the state under the law as it is proposed to be amended would be a smaller proportion of their gross receipts than they are now paying.

What Can the Association Do?

What can the association do, and what can its members do? They can see to it that their representatives in the Senate and Assembly are acquainted in a general way with the injustice and discrimination affecting street railroads under the existing law. They can call to the attention of those representatives the fact that bills to correct some of those inequalities and discriminations were introduced at the last session of the Legislature, and that similar bills undoubtedly will be introduced early in the 1927 session. They can enlist the support of such representatives to those measures when introduced.

In this respect ours should be a campaign of education, because we cannot close our eyes to the fact that measures such as these have no popular appeal and that their successful passage can be accomplished only by obtaining the intelligent interest of the members of the Legislature. That means being sure that the legislators learn what the bills are all about. That job is ours, and we should bend every effort to see to it that between now and Jan. 1, 1927, the necessary knowledge is imparted.

Some Legal Phases of Street Railway and Bus Operation*

Conditions Under Which Railways May Undertake Bus Service—Methods of Combating Installation of Competing Bus Lines—Control of Interstate Lines

By Alfred T. Davison
General Counsel Third Avenue Railway, New York City

MOST of the bus operation which has been initiated during the last five years in the city of New York and the territory immediately adjacent thereto is illegal and the buses involved in such operation are legal nuisances on the street. Probably the same situation to a lesser extent exists in other localities throughout the state.

Formerly the Public Service Commission, then as now empowered by statute to invoke the most summary processes known to the law—injunction and mandamus—was zealous in preventing the carrying on of a transportation business as common carriers by persons and corporations not legally empowered so to do. During the last few years the Public Service Commission and the Transit Commission, because of the increase of their own pressing duties and business and the prevalence of this illegal operation, have been unable to take the necessary steps to stop such illegal operation. If, therefore, this illegal operation is to be stopped the institution of legal proceedings to that end will largely, if not entirely, devolve upon street railways. Moreover, many street railways are finding it to their advantage to engage in bus operation in co-ordination with or as an auxiliary to their street car lines.

Within the limitations of the time which can now be given to this subject I shall discuss: (1) Requirements for the legal operation of buses; (2) legal proceedings and methods by which the establishment of legal bus operation may be opposed and defeated; (3) ille-

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gal bus operation and its effects and prevention; (4) interstate bus operation.

Requirements for the Legal Operation of Buses

Here we find that street railways are in a class by themselves. By Chapter 840 of the Laws of 1926 a new section known as Section 50-a was added to the public service commission law whereby the commission may authorize the substitution of buses or motor vehicles in place of cars or trains upon tracks on any portion of a street railway route, provided the municipal authorities of the city, village or town consent.

Assuming such consent the following are some of the legal corollaries or deductions resulting:

Compliance with the new section 50-a is the only method by which a street railway may directly operate buses. A street railway company can of course operate buses indirectly through the organization and stock ownership of an operating bus company or companies with the consent of the commission.

The order of the commission and the consent of the municipality for the substitution of buses for street cars can be so drawn as to authorize the use of buses for a limited period, with the privilege of resuming operation by street cars at the option of the street railway. Likewise the order and consent can be so drawn as to make it possible to operate street cars during part of the day and buses during the balance.

So long as the tracks remain in the street the paving obligations of the street railway will not be changed, but if the tracks are removed, then the street railway will be relieved of its paving obligation. This is true both under the paving obligation imposed by the railroad law and under the usual paving obligation sometimes embodied in franchise contracts. Our experience has been that unless the Public Service Commission requires as a condition of the abandonment an agreement on the part of the railway to remove the tracks and restore the pavement, the tracks can be removed at the same time the city repaves the street.

The obligation of snow removal is contained in the railroad law and is also sometimes embodied in franchise contracts. It is doubtful whether the following clause contained in Section 178 of the railroad law,

> and such authorities may make such reasonable regulations and ordinances as to the rate of speed, mode and use of tracks and removal of ice and snow as the necessity or convenience of the public may require,

is authority for the adoption of an ordinance requiring a street railway company which no longer has any tracks in the street and operates buses still to keep a given area free from ice and snow.

The street railway will still be required to pay the per cent of gross receipts called for by its franchise. If the tracks are removed the company is to that extent relieved from paying special franchise taxes.

We come now to the operation of buses by persons and corporations other than street railways. As stated above, a street railway can indirectly carry on bus operation by stock ownership of separate corporations. Buses can be operated by an individual or by a corporation, but if by the latter such corporation must, if formed after April, 1921, be incorporated under the transportation corporations law.

In villages and towns which have not accepted the provisions of Section 26 of the transportation corporations law buses may be operated without any franchise and without any certificate of convenience and necessity. One advantage of the operation by a corporation in towns and villages which have not made Section 26 of the railroad law applicable is that if after bus operation is commenced by a corporation organized under the transporation corporations law such village or town adopts a resolution making Section 26 applicable, nevertheless the corporation already operating buses has, I believe, a franchise right which is not affected by the subsequent adoption of such resolution. Until the adoption of such a resolution no bus operation in such villages and towns can be prevented, nor is any such bus operation subject to the jurisdiction of the Public Service Commission.

In all cities and in those towns and villages which have adopted the provisions of Section 26 no bus operation can legally be carried on unless (1) the consent of the local authorities of such city, village or town and (2) the certificate of convenience and necessity from the Public Service Commission have been obtained. The above requirements follow from Sections 24, 25 and 26 of the transportation corporations law. They must be met for all buses irrespective of the rate of fare charged and whether or not passengers are taken on or discharged between termini.

The transportation corporations law was amended generally by Chapter 762 of the Laws of 1926. The changes on the above provisions are with respect to numbering of sections only.

There is no distinction between a consent under Section 26 of the transportation corporations law and a franchise. A franchise, broadly speaking, is the privilege to do something which the public is generally not permitted to do. The right to operate a street railroad is always referred to as a franchise and yet the railroad law requires "the consent of the local authorities having control of that portion of a street or highway upon which it is proposed to build or operate such railroad." In other words, "consent" and "franchise" are synonymous.

When a franchise is granted by a city, the charter provisions of that particular city as well as provisions of the general city law and the second class cities law, in so far as applicable thereto, must be complied with.

In cities of the second class every franchise, and this includes a bus franchise, must be sold at public auction. The general city law, which relates to all cities not of the first or second class, also contains a provision requiring the sale of franchises at public auction, but this limitation only relates to those cities where the only power to grant the franchise comes from the general city law.

The procedure for the granting of certificates of convenience and necessity is familiar and no attempt will be made to outline the general principles except to say that in some states public utility commissions have preferred the operation of buses by existing transportation companies rather than by new transportation operators.

Opposing the Establishment of Competing Bus Operation

Assuming that a franchise has been granted, then the only method of preventing bus operation is the successful contesting of the granting of the certificate of convenience and necessity by the Public Service Commission or the Transit Commission. Obviously if the bus operation competes with an existing street railway operation the certificate of convenience and necessity should not be granted, nor should it be if the financial ability of the grantee of the franchise is not sufficient to insure the proper institution of bus operation. Therefore, in opposing the granting of the certificate of convenience and necessity, all facts which come under any of these heads should be fully brought out in the hearings before the Public Service Commission. One thing is certain, our commission, and in fact all public utility commissions, have repeatedly held that they will not permit a duplication of, or competition in, public utilities. The right of the state to regulate public utility companies is based upon the proposition that a public utility is a monopoly and must be protected. The basic theory upon which a certificate of convenience and necessity is required is that there shall not be competition or duplication of transportation facilities. We so often hear public officials thoughtlessly advocating competition in transportation facilities that no effort should be spared to show to the public and to official bodies not only the impossibility of competition but that competition of public utilities is diametrically opposed to regulation and control.

Assuming, however, that the Public Service Commission grants a certificate of convenience and necessity, then the only remaining step which can be taken in opposing such bus operation is by a *certiorari* proceeding in the Supreme Court. Such *certiorari* proceedings are in the nature of an appeal from the Public Service Commission and the determination thereof is based entirely upon the record before that body. While the court will not arbitrarily substitute its own judgment for the judgment of a commission, nevertheless it will set aside the granting of a certificate where it is clearly shown by a preponderance of evidence that its granting was not justified.

From this it will be seen that it is most important that in the proceedings before the Public Service Commission the case be most carefully prepared and that the record contain evidence of all facts which in any way tend to show

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that a certificate should not be granted.

The Public Service Commission is given power to invoke the summary process of the court by injunction and mandamus to prevent any illegal transportation operation. In the last few years, however, it has been very definitely established by the courts that illegal bus operation may be enjoined by street surface railroads.

There never has been any question concerning the right or power of a street railroad corporation to enjoin illegal bus operation, which competes with street railroad operation, and naturally the street surface railroad company is in a better position to show competition with its existing transportation lines than even the Public Service Commission would be. Personally, I believe that every additional means of transportation competes with all existing means of transportation, irrespective of the fares charged.

We have found in the prosecution of these injunction actions against illegal bus operation that the claim has been made, on behalf of the illegal bus operators, and even by municipalities, that the street railway had no standing to invoke the protection of a Court of Equity by means of injunction for the reason that the railway could not actually show that it was in any way damaged by such illegal bus operation.

The Appellate Division, Second Department, in Huff vs. City of New York, 202 App. Div., 425, has squarely held that:

> The action may be maintained by a common carrier of passengers with whom the bus lines come in competition, or by a taxpayer for injunction to restrain an illegal official act, and to obtain a judgment for loss to the city occasioned by such an illegal act of the officials, or by any citizen and resident of the city to secure the abandonment of a nuisance in the public streets.

Inasmuch as it has been held that a street railroad is a resident and citizen of every municipality in which it operates, it follows that a street railroad company can bring an action for injunction as a resident and citizen.

In a recent case by the Westchester Electric Railroad vs. Mount Vernon Sight-Seeing Company, Inc., Mr. Justice Taylor sustained the right of the railroad company to enjoin illegal bus operation without passing upon the question as to whether the illegal bus operation was in competition with the street surface railroad.

In the last few years we have brought upward of fifteen actions to enjoin illegal bus operations and have secured the injunction in each and every case. There is, therefore, little excuse for a street railroad permitting illegal bus operation in its territory.

Apart from the question of competition, street railways are very materially affected by illegal bus operation in that bus operation adds to the vehicular congestion of the street and, therefore, increases the danger of collisions with such vehicles.

Interstate Bus Operation

The operation of buses from one state to another is increasing rapidly and presents an interesting question under the interstate commerce clause of the Constitution of the United States. The courts have not yet definitely passed upon the right of an interstate bus to operate in a state without securing a franchise required by the laws of that state for bus operation in its public streets, but the recent decision of the United States Supreme Court in the Buck case should be considered. The court decided that an injunction should issue enjoining any state official from prohibiting such interstate operation. This decision, however, was made on the ground that the primary purpose of the Washington statute requiring a certificate of convenience and necessity was not regulation with a view to safety or the conservation of the highways, but was for the purpose of the prohibition of competition. In that case the statutes of Washington did not require, as do the statutes in New York, that operators of motor buses as common carriers must obtain a franchise from an agent of the state, namely, a municipality.

Until Congress passes a law asserting its authority to regulate interstate commerce of buses it seems certain that a state may conserve its highways, even against interstate buses, by requiring, as a condition precedent to such operation, a franchise grant for such use of its streets.

Congress has been considering the passage of a law with reference to interstate bus operation, and hearings on interstate bus and truck operation are to be held during the coming summer before the Interstate Commerce Commission. I believe it is important that both the municipalities and the street railway industry of this and other states should be represented at those hearings and endeavor to have incorporated in that law a provision whereby no interstate bus operation can be carried on in those states which require franchises for intrastate bus operation unless franchises are also obtained for interstate bus operation. Such a provision will certainly settle any question which now exists on that point.

Traffic Problems*

Street Congestion Is Becoming Constantly More Serious—Suggestions Made for Its Relief and for Reducing Parking

By Leon R. Brown
Safety Engineer New York State Railways, Rochester

THE public should be told of the importance of the street car; that today cars carry the bulk of the traffic on the streets; that the street car is the safest means of transportation on our streets today; that they occupy less area of the streets per passenger than any other transportation agency, and that no other means of transportation can approach the street car in the matter of low cost. Consequently the street car is here to stay for a great many years. We of the industry know that it cannot be replaced for mass transportation by the bus and that the sooner we convince the public of this fact the better it will be for every one.

When we tell the exact figures to the public they are astounded. In Rochester we made surveys during the rush hours and found that on Main Street 85 per cent of the riders were on street cars. The other 15 per cent riding in autos included the drivers. Similar percentages have been found to obtain in other cities. But none know it but ourselves.

The Safety Council in Rochester has about 100 bulletins on the streets containing safety slogans for autoists which they change each month. I asked the council recently if it would consider some slogans that would benefit car riders. I received little encouragement until I mentioned the fact that 85 per cent of the riders on our streets were street car riders. It was these people, while trying to get on and off cars, who were struck by autoists violating city ordinances, and this made up a sizable percentage of the killed and injured. As a result, the council at a recent meeting voted to use these slogans.

We should also educate the public regarding the traffic laws affecting the operation of automobiles in respect to street cars. Our police officials say that most of our traffic violations are due to the ignorance of drivers. These violations by motorists cause our accident lists to mount and slow up our service, thus discouraging our patrons and reducing our revenues. The motorist should be told that the street car has the right of way on the street or between cross streets (if that is the case in the city where you operate); that he must respect the rights of pedestrians about to board or alight from street cars; that he must not park opposite car stops, etc. Also, we can help shape the traffic laws in our cities, especially as pertains to the movement of funerals and parades.

Help Solve Traffic Problems

Traffic problems every day are becoming more acute. City officials and police, in most cities, are groping for possible solutions. We should help them to see clearly the relative importance of the various kinds of traffic and aid them in the solutions of their problems, thereby helping to solve our own problems.

We are fast approaching a point where there must be a restriction of traffic. In a recent issue of the *Industrial Digest* the results were given of a nationwide prize essay contest. The judges in this contest were all men high up in national highway safety affairs, such as general manager of the American Automobile Association, vice-president of the National Safety Council and a chairman of one of the national committees on Street and Highway Safety. It is worthy of note that both first and second prizes in this contest were awarded to contributors who pre-

*Abstract of a paper at the annual meeting of the New York Electric Railway Association, Bluff Point, N. Y., June 25, 1926.

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sented practically the same general ideas—that of the restriction of vehicles permitted to enter the most congested traffic areas. For the benefit of those who have not read the prize-winning essay and to give you an idea as to what the thinking public is thinking I want to read to you a portion of this essay. This plaint for the relief of traffic congestion is based on the following underlying principles by Howard Williams:

1. Public highways are for the use of all people, on which they have the right to travel freely.
2. They were designed primarily for the use of pedestrians and for the conveyance of goods.
3. That while private vehicles have the right to move on the streets, that right is subject to the superior right of pedestrians and public vehicles.
4. That when traffic becomes too congested and the public welfare thus diminished, the use of private vehicles ceases to be a right and becomes a privilege which must yield to the superior right.

If traffic congestion in large cities must be relieved, without resort to major surgical operations, such as the widening of existing streets and the demolition of buildings to make new avenues, it logically follows that traffic itself must be reduced and controlled in a way that will work out to the best public advantage. This can be done only by:

(a) The selective elimination of privileged vehicles from congested areas during certain hours.

(b) The rigid control of necessary vehicles operating in those areas.

Private passenger conveyances and certain classes of commercial vehicles certainly belong in the privileged category. For private exclusive advantage they occupy traffic space which is now desperately needed for more general public use and thus infringe on public right to a free flow of traffic. Public conveyances—trolley cars, buses and taxicabs—just as surely belong in the category of necessary vehicles. They offer varied types of conveyance—traffic available to all people and to the exclusion of none. It is therefore proposed that:

1. All private passenger conveyances be excluded from defined congested areas during designated hours.
2. All commercial vehicles be classified and their operation in the restricted areas be regulated to meet the need and conditions of their particular classification.
3. All public passenger conveyances shall have free access to the restricted areas at all times, but shall be under rigid control, especially as it relates to the cruising and parking of taxicabs.

The advantages are obvious and many:

(a) Elimination of private cars reduces congestion immediately and flow of traffic is consequently accelerated.

(b) Freedom from parked automobiles leaves the curb lanes open for quick discharge of bus and taxi passengers.

(c) There is more space in side streets, both for traffic and for taxicab stations, where waiting cars would be instantly available.

(d) Owners of private cars, whose present progress in traffic is tedious and inconvenient, would find the loss of their privileges outweighed by increased speed, release from parking worries and accident responsibility.

(e) Retail stores, instead of losing so-called "carriage trade," would find business stimulated by the greater ease and celerity of vehicular travel.

(f) The constant demand for taxicabs and the rapid turnover resulting in that business would lead to finer cabs and to lower fares. Increased use of taxis does not necessarily mean a great increase in their number.

(g) Routes connecting important city divisions and leading to bridges, ferries and tunnels would still be open to through traffic on avenues outside the restricted area.

(h) The regulation and partial exclusion of commercial trucks would also reduce the danger factor during hours of busiest traffic.

(i) The advantage to the pedestrian in great comfort and safety are too apparent to need elaboration.

If such an experiment were tried and proved successful it could be applied to other selected areas with acceptable modifications.

There are no physical reasons why such a plan could not be put into immediate effect. Existing traffic regulations can be easily altered to fit the new conditions if necessary. Present plans for the extension of traffic towers will not be affected. It involves no changes in curbs or road surface.

Efficiency of the Street Car

If it comes to a question of the selective restriction of vehicles, the street car can easily be proved to be the most efficient means of transportation, in so far as street area used per passenger is concerned. Taxicabs are the least efficient of any vehicle. Investigations made at various locations in New York City indicate that there are only 0.83 of a passenger in each cab. Nearly half the cabs were cruising without passengers. It is estimated that a taxicab occupied about 64 ft. of street area, so that the amount of space required for each taxicab passenger is 80 sq.ft.

Surveys made in many cities of the United States and involving a total of nearly a million private automobiles indicate that the average number of passengers in each automobile, including the driver, is 1.75. This means that the private automobile requires about 30 sq.ft. of street area for each passenger.

The average bus will accommodate about 25 people. Assuming that they carry half a load at all times, this would mean about 20 sq.ft. of street area required for each passenger as compared to 30 used by the private automobile. If used to replace the private automobile entirely, they would greatly increase the passenger carrying capacity of our streets.

Surveys made of the relative efficiency of the various modes of transportation place the street car far in advance of the others. Figures show that with a full load it requires less than 4 sq.ft. of space per passenger. Thus it is twenty times more efficient than the taxicab, eight times more efficient than the private automobile and five times more efficient than the bus. We should tell the public about this.

Our traffic problem and our parking problem have done one thing beneficial to the railways, and that is, called attention to the unjust paving charges which the railway companies have to pay. Parking and congestion force traffic onto the car tracks. If vehicular traffic won't keep off the pavement which the railway company pays for and maintains, then they should pay their share of the expense, which is really the entire cost, because the street cars do not use the pavement at all, but operate on their own rails.

Percentage of Autos Using Legal Width

Actual counts taken on various width streets in Rochester where there are car tracks showed the following results:

On one street where the width between curbs was 40 ft., out of a total of 4,579 vehicles using the street from 6 a.m. to 6 p.m. 4,259, or 93 per cent, had one or more wheels on the railway company's legal width. On another street, which was 60 ft. between curbs, 38 per cent had one or more wheels on the legal width. This check was made in 1922.

Another check made on the same 60-ft. width strip—the check made on June 4 of this year—showed 93 vehicles out of 100 using the legal width. This was because the pavement in the car tracks was much better than the pavement outside the car tracks. As an experiment, the following day we had the police place a white strip defining a clearance line about 2 ft. from the rail from one safety loading zone to another. This reversed the ratio of autos using the legal width, only eight out of 100 going on the car tracks.

The street cars, while not actually using the pavement, occupy some of the area. Just what space they did take up I figured out for Main Street, Rochester, over which most of the car lines run. During the rush hour there is a car every few seconds. But computations show that during that time in a half mile of its most congested section the street cars occupy only 5 per cent of the paved area, while they pay for and maintain about 35 per cent of the pavement. On many of the streets the railway pays for more than 50 per cent of the pavement.

The Parking Evils

The use of our streets for private garages affects the street railway in many ways. It narrows the effective width of the street, forcing other autos onto the car tracks, delaying traffic. Slow car service means more autos and still more congestion, because people want to get where they are going quickly. Parked autos increase the dangers of traffic. They make blind corners everywhere. A large percentage of our street accidents, especially collisions with pedestrians, are caused by the partially obscured vision due to parked autos. Now parking is of no benefit to any one.

As mentioned earlier, 90 per cent of the shoppers travel by street car. Anything to facilitate street car traffic helps the merchant. Where there is ten-minute, thirty-minute or one-hour parking in front of a store auto users cannot find a place to alight, and consequently get the habit of shopping at their neighborhood stores. This has been proved in Pittsburgh and elsewhere, where prohibition of parking in the congested districts aided business rather than injured it. This same prohibition of parking in the congested districts of Pittsburgh decreased the running time of all street cars—some as much as five minutes.

A prominent merchant of a large Eastern city recently said: "If merchants do not do something to relieve the present traffic situation within fifteen years there will be no down-town shopping districts of any importance." This fact is being recognized everywhere, and if brought about will mean a further falling off of street railway revenues.

The street railway and the merchants are in the same boat, so to speak, on this proposition and they should get together in remedying the situation. That the merchants have given little thought to the problem is shown by the fact that in a reply to a questionnaire sent out by the United States Department of Commerce to merchants throughout the United States

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3 per cent of the merchants gave the street car as one of the causes of traffic congestion, whereas we know that the street car in transporting people uses a minimum amount of street area, and it therefore remains the chief solution to our traffic congestion problems.

Automobilists deceive themselves if they think they are saving money by parking in the street. Just the cost of a paint job is equivalent to a year's car fare, and a new coat of paint would certainly be needed on a car parked in the street all day for a few months. Simply the purchase of a new mudguard or two crumpled by a parking neighbor who failed to leave his card would pay a year's car fare or the rental of garage space.

The autoist himself would save money and I believe time by riding the street cars. Evidence gathered all over the country and pertaining to various makes of cars indicate that the average person cannot hope to operate a car for less than 10 cents a mile, or about $500 a year. If the people knew the facts our traffic congestion would disappear. A recent ad in a Rochester paper read like this: "Save your car fare by buying one of our cars. Yearly car fare saved $50. Lunches saved $150. Total $200. You can buy many of our cars for this amount." The fallacy is apparent. A person would save little if anything on lunches; they cost about the same at home as they do downtown. A $200 car will have left in it only a one-year life. It will cost the user more than $300 a year for gas, oil and repairs, so that he would have to pay the $50 saved from car fare and $450 more a year for the privilege of riding in a rattletrap which shattered his nerves and congested traffic.

I believe, all things considered, a man can save time by riding to and from his work in the street car. When he drives his machine there is the time and trouble getting started in the morning. There are the traffic jams and delays on the way and the possible accident, and then, at the end, the parking problem. The man wasn't far from wrong who said that he often passed his own house on the way to the office after finding a parking place. A man who rides the street car is not wasting his time. He can read his paper, cultivate acquaintances or plan his work. If the public could only be educated to this fact traffic congestion would be reduced, parking problems would be over and street cars still further speeded up.

We Settle Too Many Unjust Claims

With each new automobile manufactured the traffic congestion is made worse and the possibility for street car accidents is increased. It is only through organized accident prevention work that they can be kept down. But hospital rates, doctors' fees and wages have increased so that our claim departments pay higher amounts for the same class of injury or damage than they formerly did. So even with less accidents it is barely possible to hold our own financially in accident prevention work. But there are several companies in the United States that are doing a wonderful work along accident prevention lines and greatly reducing the number of accidents.

A year's experience in accident prevention work has convinced me most accidents involve contributory negligence on the part of the other party, but railway companies settle because it is cheaper than a court action and they are afraid of a jury verdict. In this way the public has come to expect settlements. At the National Safety convention last year one electric railway reported it had collected more in claims than it had paid out. It had established a policy of paying nothing unless it was clearly at fault, and of suing to collect damages in every case where it was not at fault. The public there had come to learn that it would cost more to collect an unjust claim from the railway than it was worth, and that it was cheaper to settle a damage suit than to fight. Apparently no ill will was developed. The people respect the railway for ascertaining its rights. I wish every railway in New York State would do the same thing.

The best remedy to cure the ills that have been enumerated is publicity. When people know and understand the facts they are going to demand that the electric railway industry gets justice.

If the railways want the traffic laws enforced they should help enforce them by co-operating with the police. In Rochester each motorman and conductor is equipped with a traffic report blank. When they see a traffic violation by an autoist, such as passing on the left hand side of a street car or passing a standing street car while it is loading or discharging passengers, they fill in the blanks on the card showing location, time, license, number, etc.

This card comes to the Safety Director and is given by him to the police. There it receives the same attention as if it had been sent in by a police officer. The autoist is called in and then he is called down. If he admits his guilt his operator's license is given a police punch. Three such punches and the motor vehicle bureau will refuse to renew his license. If he denies the report, but the police think he is guilty, they have the option of having a warrant sworn out for his arrest and then the traffic violator has to tell his tale in court. This is one way in which the railways can help enforce traffic laws.

Motor Vehicle Operation in Rochester*

City and Interurban Buses Give a Variety of Services—Express and Freight Services Also Discussed

By Roy R. Hadsell

General Superintendent of Transportation New York State Railways, Rochester

OUR principal reason for operating buses in Rochester is to serve the public and protect our investments against competitors. As we have operated the old-established system of transportation we feel that we are better qualified to handle this new mode of service, together with all forms of public transportation. We have 50 motor vehicles and we give a headway averaging from five minutes on city crosstown lines to three trips per day on some of the interurban lines.

On our co-ordinated lines we use drivers taken from the trainmen in the trolley service and on our interurban lines experienced independent drivers. Many of the latter were employed on the lines before we acquired them and they are well qualified for their work.

Our method of fare collection on crosstown city lines is the same as on trolley cars; that is, fare box with p.a.y.e. operation, issuing transfers to city car lines.

On the lines operating into the suburban districts city fares are charged to the city line and zone fares to the line terminals. On our interurban lines our fare is prepayment, the operator issuing a duplex. The passenger holds this duplex as a receipt and the operator turns in the stub to the auditing department as a record of his passengers carried.

Other Sources of Motor Vehicle Revenue

The development of express revenue presents many problems, principally because anybody can establish a trucking line to do express business, whether in direct competition with an interurban railway or not. The result in many cases has been that the interurban railway express business has been ruined. In a certain case the railway company proposed to carry express and freight matter at a lower rate than the independent operator, but this policy was changed. A fair rate was established and the best service possible installed. The independent operator soon discontinued and the railway company found itself in possession of an auxiliary express business far larger than the sum lost by its interurban express line. This was because the trucks could give a direct collection and delivery service which formerly had to be performed by the individual industries. It is not at all difficult to secure a revenue of 75 cents a mile from this type of operation, most of which is business which the railway company never had before.

Most transfer freight between steam railroad stations is done by trail trucks. The truck backs up to a railroad station, the freight is loaded by the steam railroad, the truck is sealed and the transfer company hauls it to the other station, at which place the freight is handled by the steam railroad. There is no labor charge for handling the freight and it is not necessary for the transfer agent to assume the responsibility to bill it. It can, therefore, be done at a very low rate. As a rule, this transfer takes only two to three hours during the day, after which the truck can be used for whatever other express business the company may have. As there is a large volume of this business in the state and as it can be performed at a low rate and still give a good profit, it would seem to be

*Abstract of paper at annual meeting of New York Electric Railway Association, Bluff Point, N. Y., June 25, 1926.

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a source of auxiliary revenue which street railways should endeavor to get.

Another very profitable source of additional revenue is through chartered bus operation. The company with which I am connected has been unable to take care of all of this business which exists. In my opinion it is one of the most promising sources of auxiliary revenue for buses, as frequently it can be performed for short distances between the rush-hour periods. This tends to give a much better use curve of bus equipment.

Mail and package revenue, while not large in volume, is almost clear profit.

DETAILS OF PASSENGER SERVICE

In conclusion I will give a few details of our passenger operation.

The Rochester bus system consists of fifteen lines, totaling 238 miles in length. The longest is 70 miles and the shortest 2.7 miles. An average of 3,800 miles is operated daily, giving five types of passenger service:

1. A crosstown city service, providing means of transfer between twelve trolley lines.

2. A suburban service from the present trolley line terminals into the sparsely settled suburban districts.

3. A de luxe service from certain sections in the city to the down-town district. The fare charged is 15 cents or more without a transfer privilege.

4. Interurban service from outlying cities and villages into the city, providing a service similar to that on the electric interurban lines.

5. Service during the summer season to various lake or summer resorts from the city or car line terminals.

In one instance two lines give service to a section along the lake shore where the Rochester & Manitou Beach Railway was previously operated but was abandoned in 1924.

During 1925 we carried 3,500,000 on the bus lines mentioned.

In addition to the regular service, we have given a chartered or special service which to date has proved very successful. During the past year we made 190 of these trips, operating to Atlantic City, Philadelphia, Baltimore and Washington, as well as to nearer cities.

American Association News

Brady Safety Award Resumed

RESUMPTION of the Anthony N. Brady Safety Award has been announced by Arthur Williams, president of the American Museum of Safety, at the request of the American Electric Railway Association. This award was established in 1914, but was discontinued during the war. The award, consisting of a gold medal, was won in 1914 by the Boston Elevated Railway, in 1915 by the Union Traction Company of Indiana and in 1916 by the Connecticut Company. Included with the award is a silver replica conferred upon the officer or department head who has contributed most to the successful record of the company and a bronze replica to the employee whose services have been of signal value in the promotion of safety and health.

The resumption of the award has been made possible by the generosity of Nicholas F. Brady. It is distinctly an award of merit which is offered each year to the electric railway company making the best record in the safeguarding of the life and health of its patrons and employees.

The value of this competition in initiating a friendly rivalry among electric railway companies for the establishment of the best record in the conservation of human life cannot be overestimated. It focuses the attention of each company on the need for an intensive and continuous campaign among its employees and the public in safety matters. It tends to establish a very much higher *esprit de corps* among the employees of the various companies and it is of inestimable value to all competitors as an instrument for securing public good will, whether they win the award or not.

The announcement of the restablishment of the award came too late to open the contest during the present association year. Plans are being made, however, to review the conditions of the contest immediately to ascertain if any modifications are necessary to meet changed operating conditions of today. At the beginning of the 1926-27 association year the conditions of the competition will be publicly announced and all companies will be invited to enter the contest.

Fire Protection Discussed

MR. SCHOEN, Atlanta, Ga., chairman of the committee on carhouses of the National Fire Protection Association, presided at a meeting of those interested in carhouse and garage fire protection held at the office of the American Electric Railway Association on June 30. Several people connected with the insurance profession attended, also a number of railway operators who run buses, among them Charles Rufus Harte of the Connecticut Company, Adrian Hughes, Jr., of the United Railways & Electric Company, Baltimore, Md., and Alexander Shapiro, Washington Rapid Transit Company.

The meeting was devoted largely to outlining points to be taken under advisement by garage operators when considering the question of fire protection. Among the topics discussed were the maximum number of buses which should be stored in any one space, bearing in mind the number of entrances and the accessibility to the street; the question of building construction; whether there should be pits; whether tanking should be done inside or outside; the effectiveness of sprinkler protection; extent to which smoking should be permitted; fire-fighting apparatus, and a number of other matters made the subject of reference in the 1925 report of the committee on carhouses and car wiring of the A.E.R.A.

Mr. Schoen will have the committee compare relative standards to be discussed further.

Arc Welding Processes

WELDING wire was the subject of a meeting of special committee No. 6, arc welding processes for repairs to rails, of the way and structures committee of the Engineering Association. The meeting was held at Hotel Champlain, Bluff Point, N. Y., on June 26. Members present were C. F. Gailor, chairman; H. E. Bean, R. B. Fehr and A. L. Donnelly. Replies received to a questionnaire sent out on this subject with the purpose of determining the possibility of preparing specifications for welding rods were discussed. It was concluded that it would not be well to draft specifications of this kind during the present year, as the experience data available are not sufficient. It was decided to submit a brief report telling the aims of the committee and recommending that the work be continued by next year's committee.

Special Bulletins Available

FOLLOWING is a list of special reports that have been prepared by the bureau of information and service of the American Electric Railway Association and are available to member companies upon request:

Bulletin No. 87. Operating Costs of Motor Bus Operations of Electric Railways.—1925. A study of the average operating costs of 92 electric railway bus undertakings in 1925 and a comparative study of the operating costs of 44 bus operations in 1925 and 1924. For each group, the operations have been classified as city, interurban, or combination city and interurban service. The depreciation methods adopted by each company are presented in tabular form and all of the data are illustrated by graphic charts.

Bulletin No. 88. Zone-Fare Systems on Electric Railways in the United States. Gives list of companies that have adopted the zone system; detailed description of how the zones were laid out, including maps; methods of fare collection; how the public was educated to the new plan; attitude of various public utility commissions toward the zone system; and results of operations compared with the previous flat-fare system.

Bulletin No. 89. Accident Statistics of Electric Railways—1925. A comparative summary and analysis of statistical data on accidents reported by 184 electric railways for the years 1925 and 1924. Some of the items shown are as follows: Total number of accidents; number of accidents involving motor vehicles; number of car collisions; number of persons injured; number of fatalities; total cost of claims; ratio of total cost to gross earnings; number of car-miles and number of passengers carried per accident, etc.

Bulletin No. 90. Trend of Material Prices. A new edition of the association's compilation, bringing down to date the trend of prices of material used by electric railways and furnished by the manufacturers of those materials.

Bulletin No. 91. Traffic Ratios—1925—*Part 2—Interurban Lines.* A tabulation of data for interurban lines similar to that given in Bulletin No. 82 for city lines. For interurban lines the data include the average speed, revenue passenger per car-mile, per mile of track, per car operated, operating revenues, revenue per mile of track, and operating income per mile of track.

In addition to the above, the following supplements have been prepared, bringing the information they cover down to July 1, 1926:

Supplement No. 4 to Trainmen's Wage Bulletin No. 69.

Supplement No. 4 to Busmen's Wage Bulletin No. 70.

Supplement No. 10 to City and Interurban Fare Bulletins Nos. 40 and 41.

Cost of Living Studies (Bulletin No. 92).

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The News of the Industry

Talk of Settlement in Toledo Soon

Steps will be taken at once to draft a new franchise ordinance for Toledo, Ohio, embodying the principles recommended by Prof. H. E. Riggs of the University of Michigan following his survey of a year ago.

This action is prompted by receipt of a telegram from Henry L. Doherty from Mexico City by Mayor Fred J. Mery in which the traction head declares he is favorable to working out a new proposal. Mr. Doherty said:

I am desirous of co-operating with you in working out the city's transportation problem, using as a basis the principles set forth in the reports of Professor Riggs. I suggest that you have an ordinance drafted which will provide for carrying out those principles and then send the ordinance to me at New York. I will examine the ordinance and will promptly advise you of any suggestions I may have.

Professor Riggs has conferred with the Mayor and law department officials several times recently. Dewey C. Bailey, counsel for the Doherty interests, is also in the city, looking after legal matters. It is probable those interested in the ordinance will have a tentative draft ready soon.

The Riggs report suggests maintaining the general service-at-cost plan of the Milner ordinance, providing funds for improvements, inaugurating a city-controlled monopoly of bus and street railway operation by the Community Traction Company, maintenance of present 10-cent cash and three-for-25-cent ticket rates of fare, relief for the company from paving obligations and a change in financial sections of the ordinance so as to divert the present sinking fund-city purchase funds into a rehabilitation fund.

Under the financial plan the company would have 4 per cent depreciation reserve annually available for renewals and betterments.

It is estimated that nearly $2,860.000 would be required in new money to secure the necessary economies and bus equipment to operate under the Riggs recommendations.

Concessions in power rates are also a part of the agreement reached in the supplementary report between Riggs and Doherty engineers.

Rensselaer Sticks to the Trolley

The Common Council of Rensselaer, N. Y., has defeated the ordinance permitting the Capitol District Transportation Company, a subsidiary of the United Traction Company, which operates in both Albany and Rensselaer, to supersede trolley service with bus service. Sentiment expressed by a rising vote in a public hearing was opposed to the bus project. Despite this the Albany *News* regards the action as regrettable. That paper said:

The trend now is against laying any more trolley tracks in city streets and few trolley companies anywhere are extending their lines. There may have been a feeling in Rensselaer against the company for service that residents felt was not satisfactory. Yet service would have been improved through bus lines and this attitude hardly improves the situation in Rensselaer.

It is probable that Rensselaer will see this attitude was shortsighted and that eventually bus service will be permitted. Rensselaer is bound to grow and develop with the port. It will need better transportation.

Wage Agreement Ratified in Boston

An agreement has been reached by the board of trustees of the Boston Elevated Railway, Boston, Mass., with the carmen's union over wages and working conditions for another year, beginning July 1. This is the first time for some years that the matter has not gone to arbitration.

There is no change in the basic rate of pay to the uniformed carmen, except the motormen of the subway trains, who will receive 76 cents an hour, an increase of 1½ cents. The carhouse repair men, of whom there are about 1,000 in the employ of the company, receive an increase of 4½ cents an hour, making their pay 80 cents, but their week is reduced from seven to six days. The uniformed carmen receive no more pay, but each one will receive a uniform free.

Edward Dana, general manager, says that both sides made concessions.

The agreement has been ratified by a special meeting of the union.

New St. Louis Franchise Made Public

Mayor Sees the Transportation Problem One of Great Concern and Importance—Wants General Discussion of Measure—Several Vital Points Left Open—Summary of Grant's Provisions

MAYOR VICTOR J. MILLER of St. Louis, Mo., on June 25 made public the official text of the proposed service-at-cost franchise ordinance under which the St. Louis Public Service Company will operate when it takes over the properties of the United Railways.

The Mayor proposes that there shall be a general public discussion of the measure prior to its passage by the Board of Aldermen or through a vote of the people. With this end in view several vital points were left open in order that the public might express its desires for the guidance of the city officials.

In general the tentative draft guarantees the company a fair return on its investment, through a sliding scale of fares, based on the cost of service, in return for the surrender to the city of control of its service and provisions in its contract which will make possible co-ordination of the street car lines with any existing transportation lines (including buses) or any future rapid transit system, with the possibility of universal transfers and the right of purchase by the city.

Mayor Miller also gave out a personal statement in which he tentatively approves the measure, but points out that before the ordinance as finally drafted can become effective it must be approved by the Board of Aldermen or the voters at an election, then approved by the Missouri Public Service Commission and accepted by the company.

The important points left open in the bill for the present are: The rate of return to which the company shall be entitled, the question of official recognition of labor unions, rules governing use of one-man cars and the preference to be given in payment of special taxes.

These special taxes are fixed at 3½ per cent of the company's gross revenue and take the place of the present mill tax. The bill also provides that the back mill taxes now due, $2,396,321, unpaid since Jan. 13, 1919, shall be met in six annual payments with interest.

A summary of the provisions of the service-at-cost franchise follows:

Fares—To be automatically fixed on a basis of a fair return upon valuation, after deducting cost of operation.

Valuation—To be agreed upon by city and company and approved by the Public Service Commission. With a rate of return commonly allowed by the Public Service Commission and under present operating conditions it is probable the rate of fare will be 7½ cents. The present rate is 7 cents, but Receiver Rolla Wells recently applied for an 8-cent fare with two tokens for 15 cents.

Service—The city to designate how many cars shall be run, how often and upon what routes. It may have any quality of service it is willing to pay for.

Extensions—City may order extensions to serve new districts, with the restriction only that they be self-supporting to a degree that the company may have an adequate return from the entire system.

Method of Control—Through a transit commissioner appointed by the Mayor but paid by the company, who shall have full authority to exercise all of the rights of the city.

Buses—The company is not required to operate buses, but may do so.

Life of Franchise—Thirty years if passed by the Board of Aldermen or 50 years if approved by a vote of the people.

Taxes—Company agreed to pay back mill tax judgment of $2,396,000 out of earnings in six annual installments, with interest. Mill tax and other present franchise taxes are abolished and replaced by a flat tax of 3½ per cent of gross revenues. This is in addition to regular property tax of state and city.

Disputes—All disputes to be settled by arbitration. If city and company agree, Missouri Public Service Commission shall be the arbiter. If either declines to accept that office, the city shall select one or two and the company one or two arbiters and the odd arbiter will be designated by the senior Judge of the St. Louis Court of Appeals.

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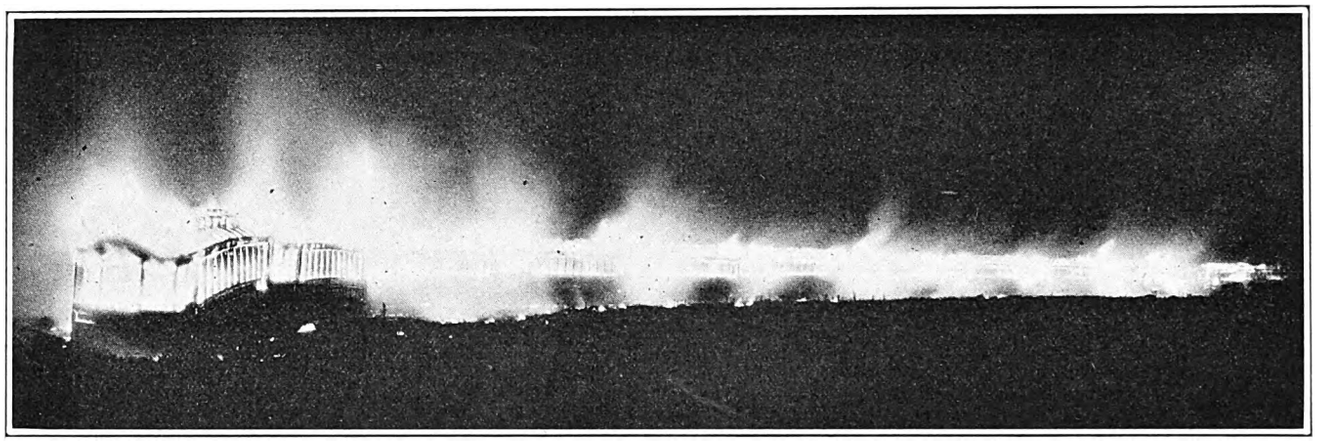


It Was a Good Fire and Raged Savagely

Grand Rapids Has a Bonfire

50,000 Rejoice at the Sight as Flames Relegate to the Realm of Limbo Antiquated Equipment Which Has Been Replaced by 27 Coaches that Are the Last Word in Sumptuousness

ALL OF its old, rickety, rattletrap street cars were consigned to the flames by the Grand Rapids Railway, Grand Rapids, Mich., in a huge bonfire at the West Michigan fair grounds Thursday night, June 24, while cheering throngs welcomed the advent of the modernized electric rail coach service and the passing of the antiquated equipment that had outlived its usefulness. The event was one of the biggest jollifications and night celebrations ever held in the history of the city. It was attended by nearly 50,000 people.

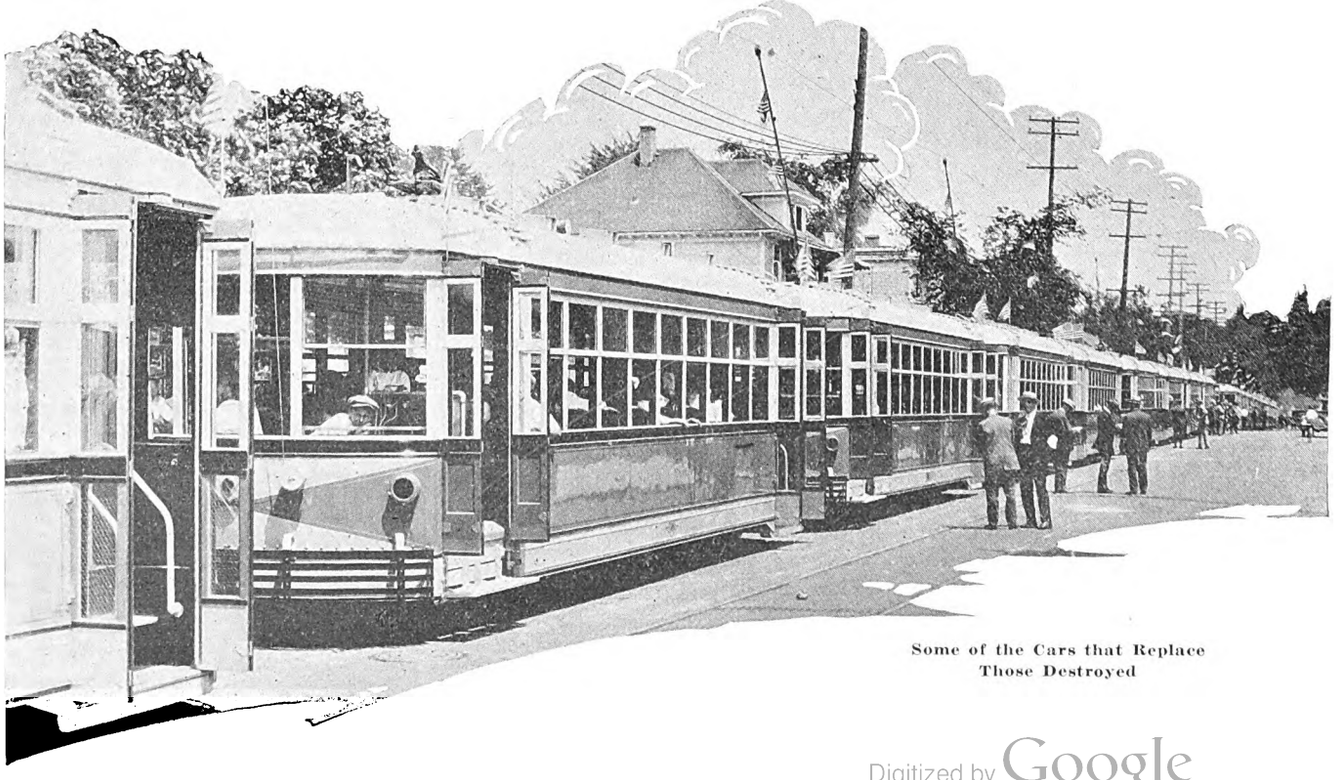
The bonfire, first of its kind ever held in the United States and the largest ever held in Michigan, and probably the entire country, because of its novelty and also because of its importance to Grand Rapids, proved a wonderful magnet in drawing a record attendance. Advance advertising by the railway announced the affair as a jollification—and it was. The vast crowd seemed happy that the cars, some of which were nearly 30 years old, were to pass out of existence and be replaced by equipment as fine as that possessed by any other railway.

Mayor Elvin Swarthout had the honor of touching off the great bonfire. Surrounded by other city officials and prominent citizens, the Mayor applied the torch at one end of the long string of cars, while Louis J. DeLamarter, general manager of the railway, in the presence of visiting street railway officials, distinguished visitors and invited guests, simultaneously touched off the other end.

When the crowd saw the flames begin to lick their way through the cars a great cheer went up and continued for several minutes. As the lurid glare from the oil and grease soaked cars grew brighter, illuminating the grounds so that a newspaper might easily be read anywhere, the people showed their happiness in many noise-making ways, auto horns predominating.

Primed with plenty of straw, grease, oil and parts of broken up cars, the fire was quite different from the one two years ago which made the use of these rickety and antiquated cars necessary. No fire engines responded to this blaze.

Within five minutes after the torch had been applied to the ends of the long line of cars, which stood in a semicircle within the paddock in front of the grand stand, great jagged tongues of flame were shooting 100 ft. into the air. The flames were visible for miles around, while the lurid glare on the



Some of the Cars that Replace Those Destroyed

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clouds could be seen from many surrounding towns.

Spectators loudly cheered for the new coaches as the flames rapidly devoured the old equipment.

Pathé Weekly and Universal and local movie men cranked their cameras as Mayor Swarthout and Mr. DeLamarter started the great fire and continued their cranking at intervals until it was nearly over. It did seem peculiar, but car No. 198, so old that railway officials were fearful of hazarding a correct guess as to its age, was the last car to cease burning. This veteran car was rebuilt in 1902.

Long before 8 o'clock the big grand stand was filled to capacity. By 8:30 every available parking space on the grounds was taken. The crowd lined the paddock fence and each side of the stand. Autoists, caught in the jam on the highways leading to the fair grounds, parked their cars as far as 2 miles from the grounds and walked to the bonfire.

While the crowd was assembling and until the program started, there was an enjoyable concert by the Grand Rapids Commercial Drivers Safety Club Band, of 100 pieces, which donated its services for the event to show its appreciation to the railway of the new coaches and improved service. The band played a funeral dirge when the cars were set on fire, a few moments later swinging into the appropriate notes of "There'll Be a Hot Time in the Old Town Tonight."

Promptly at 8:30 Mr. DeLamarter gave the signal and three giant aerial bombs soared skyward, exploded with war-like detonations and the big jollification was on.

When Miss Ruth St. Clair gave the word "Let 'er go!" her big balloon started skyward and things began to happen. She carried with her a large supply of fireworks and fuses which burned brightly as she sailed into the air. She landed in the Grand River, swam ashore and returned to the grounds, to be roundly applauded.

The ascension was followed by one of the most gorgeous pyrotechnic displays seen in western Michigan. Great aerial torpedoes carried the story of the event to the thousands in the grounds, while the reverberating echoes wafted the message to nearby towns. The fireworks were climaxed by big and special set pieces directly in front of the grand stand. When the company's well known slogan, "Don't Worry! Relax! Ride the Street Car. The Safest Place in Town," was emblazoned in letters of living fire, the colored words were greeted by an expression of public good will in long and continuing cheering and applause.

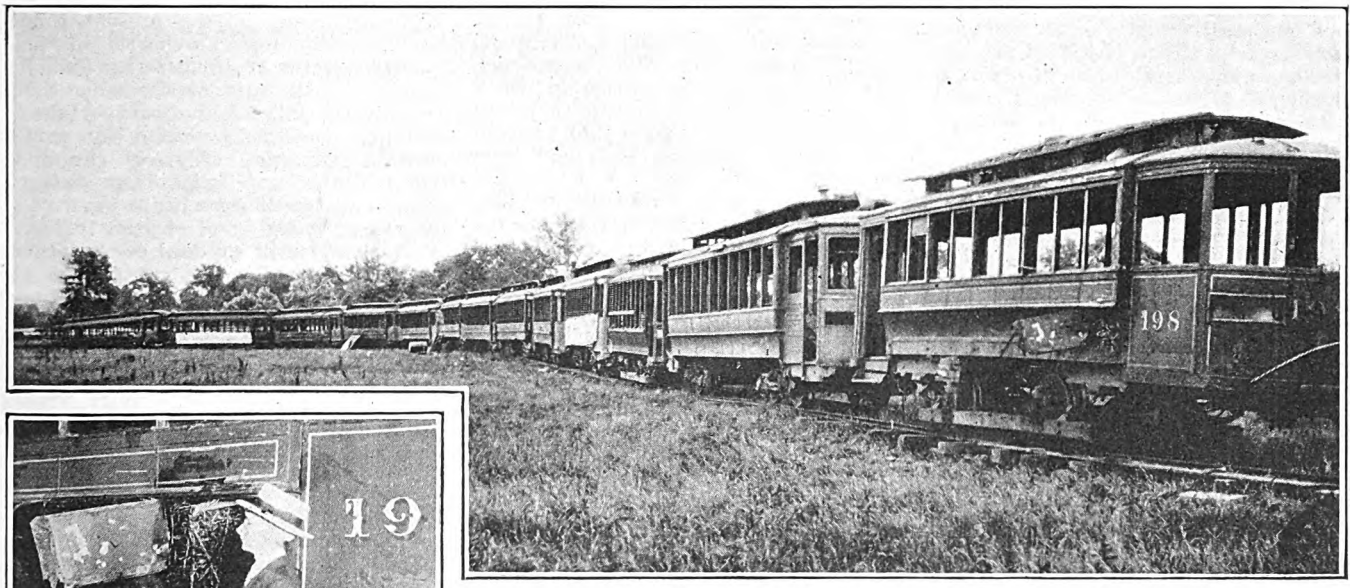
Then came the bonfire, the big event of the evening. Mayor Swarthout, torch in hand, was ready officially to start the conflagration. Turning to city officials and prominent citizens, he said that the honor gave him great pleasure because it marked the passing of the old-time railway service, ushered in the new and more modernized and blazed the way for a forward movement for the local railway and the industry as a whole. Dedicating the new cars to the people of Grand Rapids, he touched the fuse and history was in the making.

Jammed in every conceivable position, the thousands of autoists were unable at the conclusion of the ceremonies to extricate their cars from the maze for more than two hours. They sat and waited for an opening in the traffic within the grounds while idling motors burned up thousands of gallons of gasoline.

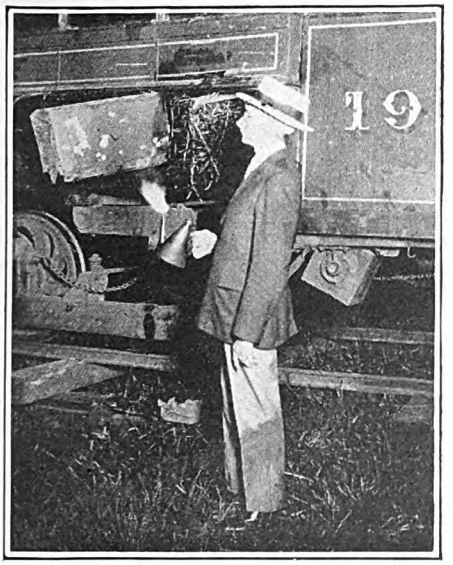
The railway had put extra cars on the line serving the fair grounds and at 10:30 the last passenger had left for home and was being rapidly carried back to town, while the autoists fumed and fretted.

Jupiter Pluvius sprang a surprise with a severe downpour 30 minutes after the jollification was concluded. The storm passed as quickly as it came.

Mr. DeLamarter was congratulated by city officials, business men and prominent citizens in the successful culmination of his aim to give to Grand Rapids and its residents the most modern type of electric rail coach and a railway service that would bring credit not only to himself and his company but to the entire railway industry.



Old Cars Lined Up on the Afternoon Before the Fire



Mayor Swarthout Touching Off the Fire with a Torch

The day preceding the jollification representatives of several other railways were guests of Mr. DeLamarter in an inspection of the new coaches in service. Among the visiting officials were R. S. Bull, superintendent of the shops of the Pittsburgh Railways, and T. E. Allerdice, superintendent of the Homewood shops of the same company; J. P. W. Brown, vice-president of the Nashville Railway & Light Company, Nashville, Tenn.; E. D. Reed, manager of the Chattanooga Railway, and J. J. Geringer of Evansville, Ind., general superintendent of the Southern Indiana Gas & Electric Company.

"Service that Is Service"

Within the covers of an eight-page booklet issued by the Northern Ohio Traction & Light Company is told the story of 670 lb. of forgings which went from Alliance, Ohio, to Detroit, Mich., in less than five hours. It is the story of the fastest freight service on record. The company asks consideration of this service when shipments in small or carload lots are made. In another booklet even smaller the company tells the story of a casting which journeyed from Peoria, Ill., to Alliance. One shipment will convince you, the company advises, of what this service supplied by the traffic department will do for you.

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New Jersey Board Approves Higher Fare

Just and reasonable are the increased rates of fare proposed to be put into effect by the Morris County Traction Company, Morristown, N. J., operating more than 50 miles of interurban line and running in Newark over the tracks of the Public Service Railway. The Board of Public Utility Commissioners of the state has so declared. In consequence, effective July 1, the rates will be 10 cents per zone for regular riders, and 5 cents per zone for school children. The old rates were 7 cents and 3 cents.

In the petition filed by the receivers of the company it was set forth that $180,250 was required to carry out improvement work deemed necessary. It appeared, further, that no interest had been paid on the bonds of the company by the receivers and that $101,893 was due for unpaid taxes prior to 1925. In addition $9,212 is due on taxes for 1925.

Revenue for 1925 was $541,109, and after deducting operating costs, taxes and rentals there remained a net revenue of $55,142 for 1925. The increase in fare is desired to provide additional principal for the improvements required. The petitioners estimate that the revenue obtained under the new rate, will be 15 per cent less than if the same number of passengers carried in 1925 at 7 cents and on a weekly pass is carried at 10 cents, and provided also that the same number of 3-cent riders carried in 1925 is carried at 5 cents. This would return gross operating revenue of $630,275, compared with $541,109 for 1925 under the present rate, an amount sufficient to carry out the improvements required.

Analysis of data submitted indicated that there was a general and material increase in the various items entering into the cost of operation and maintenance of the property from 1911 up to date including taxes; the cost per car-mile was less during 1924 and 1925 than the average of a large number of companies operating under similar conditions. The financial statement indicated that the net income during the past eleven years had varied from $18,452 in 1923 to $86,262 in 1916, the net income for 1925 being $55,002. These figures, however, do not include allowance for depreciation and taxes.

The board held that the company was now confronted with increased expenditures for improving its roadbed, and while it might be doubtful whether the increased fares would produce sufficient revenue for this purpose, the board believed the plan should be put in effect. The question of a reasonable return on the value of the company's property did not arise. The problem was one of earning operating expenses and raising funds for necessary improvements.

Only a few of the municipalities through which the company operates objected to the increased fare.

Wages Advanced in Duluth

An upward revision in wages of employees has been made by the Duluth Street Railways, Duluth, Minn., effective July 1. For motormen and conductors, the first year of service, the new scale is 46 cents an hour, 48 cents the second year, 50 cents the third year, 52 cents the foruth year and after. This compares with 50 cents now paid under the last wage change in 1922. One-man car operators will receive the above scale, plus 5 cents an hour. Mechanical department employees, permanent engineering and roadway department employees and all other employees paid on the hourly basis will receive a wage increase of approximately 5 per cent.

Hearings on Milwaukee Service

An ex-Alderman, Henry Bulder by name, a former opponent of the one-man car, appeared before the Railroad Commission of Wisconsin recently to make a public retraction of his statements concerning the use of one-man cars in Milwaukee. He said the trial period now in progress on the Walnut Street line had convinced him and the people he represented that the one-man cars were giving the section in which he lived better service than they had before—that there were more seats and that the wait for cars had been cut down.

About four months ago the commission conducted a public hearing on the application of the Milwaukee Electric Railway & Light Company for the introduction of one-man cars on the Walnut Street line as a measure of economy. The ex-Alderman was among a number of politicians who denounced the commission. He said at that time: "If the commission grants the request of the company each member of it should be hanged. A movement by the citizens will be started that will threaten violence."

During the week ended June 26, when the commission was conducting a public hearing on some general recommendations of its engineers, requiring the company to add 70 more cars, the ex-Alderman asked to be heard and made the statements quoted previously.

At the hearing on the general survey conducted by the Railroad Commission's engineers, the company introduced evidence to show that if the commission's rail extension and additional rolling stock recommendations were put in the form of an order it would cost the company $1,971,000 and would reduce the net income to 3.6 per cent. The company acknowledged that the commission's engineer's survey disclosed a number of discrepancies and that the company would remedy them.

The commission's engineer stated that he believed the company had taken the wrong attitude in refusing to make rail extensions into rapidly growing sections of the city now unserved. He said that if the company made the extensions more riding would result.

S. B. Way, president of the company, took direct issue with the engineer on the usefulness of the articulated trains. The commission's engineer stated the articulated trains distorted schedules on many of the lines on which they are used. Mr. Way contended that the articulated trains had proved themselves indispensable, particularly at rush-hour periods.

Mr. Way informed the commission that the company had made a proposal to the city for a complete traffic survey. The company, he said, would finance the expense up to $50,000.

25 per Cent Wage Increase Asked in New Jersey

Trainmen and affiliated workers of the Public Service Railway, Newark, N. J., have approved the proposed wage increase demand to be made Aug. 1. The demands will include a 25 per cent wage increase and various changes in present working conditions. At the time the rates now in effect were agreed upon the bus operators and their affiliated maintenance and construction groups did not have to be taken into consideration, as the buses were practically all controlled by independents.

In a lengthy statement which he made early in June, Mathew R. Boylan, vice-president in charge of railway operation for the Public Service Corporation of New Jersey, made plain the position of the company at the present time. His remarks were reviewed in the ELECTRIC RAILWAY JOURNAL for June 5, page 986. He said at the time that company officials felt the transportation situation can be corrected by complete co-ordination of street car and bus facilities and relief from paving obligations, combined with "a return to the rate of wages in effect prior to Aug. 1, 1923, and still greater co-operation from employees."

The agreement expires by limitation on Oct. 1.

Old Toledo Rate Renewed

Employees of the Community Traction Company, Toledo, Ohio, have approved a renewal of the wage and working agreement at the old rates of wages for a year from June 1, 1926. The men asked a flat increase of 10 cents an hour. The company submitted an offer of an increase of 2 cents an hour with elimination of payment for lapse time, meal relief and layover periods. This offer was rejected by the men by a vote of more than five to one. In a final offer the company withdraw the offer of an increase in wages and stated the last offer would be on the basis of the old agreement. This plan was accepted by a close vote. Under the new contract the company will provide $15, or about half the cost of each uniform in case the men are asked to change the style of uniforms this year.

Mayor Refuses to Rush Bus Franchises

Until he has determined what course is for the best interest of the city of New York, N. Y., Mayor Walker will not grant any bus franchises. This and more emphatic statements from him were his reaction to a large delegation from the Bronx Citizens' Bus Committee who went to City Hall on June 30 to urge speedy action on bus installation for that borough. The Mayor scored the threats made upon him in this matter of granting bus franchises and the false rumors to "rig" the stock market. Within the coming month he believed the Board of Estimate, which body has been considering 200 applications, would be prepared to bestow the franchises after having given thorough scientific study to the matter. He said he know the Bronx needed buses, but he was working for the entire city of New York.

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Union Request at Chicago Opposed

Demands of motormen and conductors of the Chicago Surface Lines for a blanket raise of 5 cents an hour in wages, a $1,000 insurance policy and a $20 a week sick benefit for each employee, which followed the expiration of their contract on June 1, are not likely to be granted. According to authentic reports, officials of the railway have refused to consider the signing of any agreement that extends beyond Feb. 1, 1927, the date on which the present franchises terminate. Heretofore, wage scales have been adopted for periods of one, two or three years. Union leaders say that negotiations will not be begun until August.

Traffic Experts for Newark Hired

Engineers of the firm of Parsons, Klapp, Brinckerhoff & Douglas, New York, will begin work immediately on a survey of traffic and transportation of Newark, N. J. This announcement was made recently by Chief Engineer Costello of the Department of Public Affairs, representing Mayor Raymond. Mr. Costello said the work of the engineers would consist of a survey of the needs of the transportation systen., both trolley and bus, including interstate and intrastate bus lines, a study of the co-ordination of trolleys and buses, recommendations for the correction of weaknesses and a study of the general traffic situation. Henry M. Brinckerhoff will be the directing engineer of the survey.

Atlanta's Suburban Cars Welcomed

Patrons of the Stone Mountain and Marietta electric lines of the Georgia Railway & Power Company, Atlanta, Ga., welcomed with fitting ceremonies recently the arrival of the first four of the new series of luxurious cars which went into service on the two lines on July 1. The new cars were presented formally to their patrons and accepted by city officials and civic leaders of the communities in ceremonies held in Marietta, at the court house square and in Stone Mountain near the railroad station.

The two cars, identical in construction and appearance with the others to be delivered shortly, were opened for inspection and an informal "house warming" by the patrons immediately following the presentation exercises in both places. Instead of numbers, the cars will bear the names of distinguished citizens whose public service in a former generation laid the foundation for the present prosperity and greatness of the sections they serve.

Cumberland Lines

The Cumberland Traction Company, Bridgeton, N. J., has taken over the lines of the Millville & Vineland Traction Company and the lines of the Maurice River Transportation Company. A new company will be formed, to be known as the Cumberland Lines, according to Clayton McPherson, general manager of the company.

The Millville & Vineland Traction Company has been operating the railway line between those two cities for a number of years. About a year ago negotiations were made with Mr. McPherson for the purchase of the line. However, the final steps in the deal were not taken until a few days ago. It is the plan of the Cumberland Lines to put new and modern cars on this route and to reorganize the system.

The Maurice River Transportation, another recently acquired property, has been operating a bus line from Vineland, Millville and Port Norris. New bus equipment will be placed in service on this route also. This company has sold its interest outright to the Bridgeton concern, while in the case of the trolley line the lease has been purchased for the remainder of the franchise time, which is 70 years.

The Cumberland Lines, the new operating company, will take charge on Aug. 1. The railway line of Bridgeton and the bus line running from Bridgeton to Philadelphia, which was recently started by Mr. McPherson, both come under the Cumberland Lines.

Newspapers Praise Late John E. Duffy

Opinion was general in Syracuse and vicinity that few men in electric railway work were superior to the late John E. Duffy, general superintendent of the New York State Railways, from the point of ability. Newspaper comment since his death has elaborated on his loyalty, his attention to duty and his ardent zeal. The character of the man, who long helped to direct the affairs of the New York State Railways in Syracuse, was summed up by one commentator as follows:

> He knew the business thoroughly from long association with it; he had the confidence of those who had their money in the enterprise and equally of the men on the cars; he was always courteous and cordial with his public; he was on the square.

New Tunnel Plan Advocated at Kansas City

At a meeting held in Kansas City, Mo., on June 22, the board of directors of the Business District League adopted a resolution indorsing the proposal of a new or enlarged Eighth Street tunnel, and favoring the proposal to permit the Eighth Street Viaduct to remain as it now stands.

Heretofore the Central Industrial District group has advocated an enlarged tunnel and a wider viaduct for Eighth Street. The Main Street body some time ago voted to urge the removal of the viaduct from Eighth Street. The resolution also urges the early resumption of through service by the Kansas City Railways over the Eighth Street lines through Greater Kansas City. On the following day a similar resolution was approved by the Club President's Round Table.

The questions arising out of the alleged unfit condition of the viaduct and the tunnel on Eighth Street have been the foundation of much contention. The approval of the sale of the Kansas City Railways' property under foreclosure has served to bring these problems before the public eye again.

Newspaper Indorses Proposed Louisville Grant

The *Courier-Journal* of Louisville, Ky., has gone on record as approving the new franchise grant for the Louisville Railway mentioned frequently in the ELECTRIC RAILWAY JOURNAL. That paper believes that in order to supply an urgent public need which could not otherwise be supplied public interest demands the passage of a new ordinance similar to the one submitted to the Mayor and the City Council of Louisville. That paper says in part:

> In briefest terms, Louisville needs more transportation facilities. The railway must borrow the money to supply these facilities. It cannot borrow this money under the present ordinance. It can borrow the money if the ordinance submitted should be adopted by the city authorities. Should the ordinance be adopted the people of Louisville will be protected against excessive rates both by their representatives in the City Council and the Mayor's office, and by the courts, in the same fashion and to the same degree that the company will be protected against rates so low as to be confiscatory. In the construction of the new lines now so urgently needed the city will have to rely, to an extend, upon the good faith of the owners and managers of the railway company, but the *Courier-Journal* believes that the city takes no undue risk in relying upon the good faith of the railway officials, and, moreover, that they should be credited with the ordinary common sense which would impel them to carry out these improvements with intelligence and with reasonable rapidity, since their own interest is primarily involved in doing so.

Every Day Episode Depicted in Unusual Movie

A convincing argument showing that it is cheaper, safer and far more convenient to use street cars for trips to and from the business section than it is to drive motor cars is made in a moving picture contributed to the Clarksburg, W. Va., Police Department pension fund by the Monongahela-West Penn Public Service Company. The screen flashes the trials of Mrs. Penn and her two children, who urged her to take them to the theater on a Friday afternoon. They are shown leaving their home in the mother's coupe and getting caught in a traffic jam in the theater district. Mama ignores a traffic signal and, ordered to "back up," becomes the cynosure of laughing crowds on the sidewalk. Best clothes are soiled through alighting over the fenders. When finally the party arrives at the box office the matiness has been in progress many minutes. The disheartened group then decides to return home. The next trial is finding the car tagged for parking too long and an order to report to the police court. Disgusted, mother and daughters return home, resolved never again to use the automobile, but to use the old reliable street car, ready and anxious on the screen and street, too, for its patrons.

Wage Scale Continued.—The Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., has concluded an agreement with its trainmen of the rapid transit lines, continuing for another year the existing wage scale. It was stated that present negotiations with other groups of employees indicated similar agreements for continuing the present wage for another year.

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Recent Bus Developments

Cities' Approval Necessary for Operation in Wisconsin

A decision of far-reaching significance with reference to the intracity operation of bus lines in Wisconsin by electric railways as well as independent bus operations was handed down by the Railroad Commission at a special hearing in Eau Claire on June 23. Under this ruling any company wishing to operate a bus line in a Wisconsin city hereafter must first have the city's approval of the route its buses will follow within the city before the commission will issue a permit. This new decision by the commission erases all doubts which prevail under the existing laws concerning the authority of a city to regulate buses within its own corporate limits.

The case involved was the application of the Motor Bus Company of Chippewa Falls for a renewal of its license, which expired on July 1, covering the use of the streets in Eau Claire by its Eau Claire-Chippewa Falls intercity line. The city opposed the application and based its fight on the ground that the buses as now routed in Eau Claire had added seriously to an already congested traffic condition in the business district. Last April the city attempted to regulate the bus routes in the city by an ordinance which was passed, and in the battle which followed the validity of the ordinance was set aside by a lower court. In this case the court held that the bus company received its permit from the commission and the city, therefore, had no authority to alter its route.

As a result of the commission's decision, which carried with it a flat denial of the new application for a license, the company finally agreed to operate hereafter in accordance with the routes and stops designated in the ordinance passed by the City Council last year. The decision apparently does not apply to existing lines which already have a license from the commission, but will be applied to companies seeking a renewal of their yearly license as well as prospective bus line operators.

Cities hereafter will be notified by the commission whenever an application for a bus line permit is made so that the community concerned may have an opportunity to object to or approve the route selected by bus lines.

White Rock Bus Line Opened in Dallas

The White Rock bus line, to be operated by the Dallas Railway, Dallas, Tex., will be started at once. The buses are of the coach type, seating 21 persons. They will run on a 30-minute schedule, connecting with the terminus of the Mount Auburn railway line at Lindsley and Monte Vista Avenues. From this spot the buses will traverse Blair Boulevard, Ash Lane Avenue, West Shore Drive, Warwick Avenue, Lake Shore Avenue and thence along a country road to the Garland road and then to a point opposite the White Rock Dam and return over the same route. The fare from the terminus of the car line to White Rock will be 4 cents, making the total fare from any spot in the city to the lake 10 cents for tokens or 11 cents for one cash fare.

Parade Celebrates Peekskill's Change from Trolley to Bus

With a celebration that anticipated the Fourth, Peekskill, N. Y., on July 1 ushered in its new bus system. At the same time, it said good-by to its electric railway. Many of the 16,000 inhabitants turned out to witness a parade of the old trolley cars and the new buses through the village. The Peekskill Lighting & Railroad Company tuned up three of its oldest cars especially for the occasion to lead the parade. They were followed by the nine new White buses which will take over the transportation service in the village. Fireworks and a band livened the procession.

The trolley system in and around Peekskill has been going by degrees. In 1924 a 3.5-mile line to Mohegan was abandoned. The 5-mile line to Oregon followed in 1925. Other bus operators took over these routes. Now the 7 miles of line which the company still operated has given way to buses to be operated by a subsidiary, the Peekskill Motor Bus Company.

Peekskill extends north and south, but its trolley tracks extend east and west. By substituting buses it made it possible to serve populous sections not reached by the railway. Instead of 500 car-miles operated daily the buses are traversing 1,300 miles. Instead of two railway routes aggregating 7 miles there are four bus routes totaling 14 miles. More buses to bring the total to fifteen will be added if necessary.

Stricter Motor Carrier Insurance Rules in Oklahoma

The Oklahoma Corporation Commission has called a hearing at the State Capitol on July 8 to determine what further rules and regulations should be made governing the issuance of insurance policies for the protection of the public and patrons of bus carriers. In Journal Entry 1471 the commission sets out several proposed amendments to Order No. 2219, which contains rules and regulations governing motor carriers. These amendments propose stricter regulation of the issuance of insurance policies. The regulations propose, in substance, that policies should provide that they cannot be canceled except upon 30 days notice to the commission; that they should not contain any clause stating that "delinquency in payment is a ground for nonliability" or any similar statement. Policies should contain a provision for the protection of personal property and hand baggage. It is proposed to eliminate from policies provision that they may be voided because of carelessness on the part of the driver. Policies should cover liability to patrons in any motor vehicle owned by the licensee.

The commission may refuse to accept any policy wherein it appears that the patrons of the motor carrier are not protected. The commission will consider whether or not the amount of liability insurance should be increased and in proportion to the number of persons carried. The commission proposes to grant only policies which show on their face that they are paid up for a period of at least one year, and will not receive so-called "binders" or other evidences of contract for insurance. Policies covering patrons of motor carriers should be continuous, and policies issued to licensees covering the period succeeding the current year should be filed with the commission at least fifteen days prior to the expiration of the policy now on file with the commission.

Peace the Objective in Tacoma

Officials of the Puget Transportation Company have acknowledged that the City Council of Tacoma, Wash., is within its rights in revoking the permits issued to it for the operation of buses on the Point Defiance line. This action has removed the possibility of friction from the attempts to settle the transportation problem. The bus operators declared, in short, that they had no desire to embarrass the city officials. The Mayor then wrote into the record the provision that if no settlement is reached with the Tacoma Railway & Power Company the Puget Transportation Company will have precedence in any restoration of bus service on the Point Defiance line. The loss of independent bus rights was referred to previously in ELECTRIC RAILWAY JOURNAL.

Extension of Service in Buffalo

The Delaware Avenue double-deck bus line of the International Bus Corporation, subsidiary of the International Railway, Buffalo, N. Y., has been extended from the Buffalo city line to the north village line of Kenmore, where it connects with a new single-deck bus line to the city of Tonawanda. Franchises for the operation of buses in the village of Kenmore, the town of Tonawanda and the city of Tonawanda were granted by the local boards and application for consents is pending before the commission.

Under the franchise with the village of Kenmore, the Delaware Avenue buses will charge a 5-cent fare within the village or commutation tickets will be sold in strips of ten round trips from Kenmore to any point in Buffalo for $2.50, making the single round trip fare 25 cents. An extra 5-cent fare will be charged from Kenmore to the city of Tonawanda. Passengers boarding the Delaware Avenue buses in Kenmore are permitted to transfer to Buffalo cars at the Buffalo city line upon payment of a 10-cent fare, which makes the bus fare in Kenmore 2 cents. The local fares in Buffalo are 8 cents or four tokens for 30 cents.

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Financial and Corporate

City and Suburban Traffic in Atlanta Grows

The gross revenue from railway lines of the Georgia Railway & Power Company, Atlanta, Ga., for the year ended Dec. 31, 1925, was $5,436,441, or 35.8 per cent of the total earnings. Extensions, improvements and betterments to the property completed during the year, or in the course of completion as of Dec. 31, 1925, involved total expenditures for the railway department of $1,442,120. During the year the company purchased 60 electric railway cars of the most modern type, including 40 one-man safety cars. The Atlanta Coach Company, all of the stock of which is owned by the Georgia Railway & Power Company, purchased and placed in operation during the latter half of the year fifteen double-deck gas-electric drive coaches, which are being used in supplementing the service furnished by the railway in Atlanta.

	1925	1924	1923	1922	1921
City and suburban system	94,636,746	92,029,437	95,357,117	92,172,664	91,358,379
Stone Mountain line	657,500	640,634	634,014	557,274	672,741
Atlanta Northern	962,496	1,202,985	1,218,697	1,131,278	1,178,852

The number of passengers carried on the city and suburban system, on the Stone Mountain line and on the Atlanta Northern Railway, which is the interurban line between Atlanta and Marietta, for each of the last five years is shown in the accompanying table.

The annual report to the stockholders does not segregate the railway earnings.

Fewer Passengers in Des Moines

Seventy-three thousand fewer revenue passengers were carried by the Des Moines City Railway, Des Moines, Iowa, during the month of May than in April, and total operating revenue for the last month was $191,705, compared with $198,690 for April. The gross revenue, less operating expenses and taxes of $153,314 and fixed charges amounting to $37,990, left $99.52 for the stabilizing fund, compared to the balance of $4,176 shown in the April statement. The stabilizing fund now stands at $12,957. Revenue passengers carried during the month totaled 1,958,463.

$200,759 Value Placed on Jamaica Central

The hearings before the New York Transit Commission pertaining to approval of the securities to be issued by the Jamaica Central Railways, Inc., were concluded on June 15. The commission reserved its decision. Aside from bringing out the story of the inception of this railway, referred to in ELECTRIC RAILWAY JOURNAL of June 19, 1926, page 1078, the principal feature of the hearings was the testimony of Ira W. Fisk of Fisk & Roberts, New York, consulting engineers for the company, relative to depreciation, working capital required and the value of the physical property.

Mr. Fisk testified that the present-day value of the property other than real estate and buildings was $200,759, based on the appraisal made by his firm. He advised that the company should set aside a tentative depreciation fund on the basis of 3.25 cents reserved per car-mile operated. Requirements for working capital were put at $20,000.

Surplus in Terre Haute

For the year ended Dec. 31, 1925, the Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind., reports a surplus of $167,733. After the consideration of sinking fund the company finished the year with a deficit of $59,780. Gross earnings for 1925 decreased $143,247 over 1924 due to the constantly increasing use of privately owned automobiles as well as bus and motor truck competition. Operating expenses increased $87,062 due to power plant equipment. The freight earnings for 1925 were $561,680, compared with $609,460 in 1924. These facts were brought out in the annual report to the stockholders, submitted on June 9.

There was expended and charged to capital account an amount of $123,453, which represents the grand total on owned and leased lines. On the Terre Haute division a single-track loop was constructed around the court house at Terre Haute, power lines were extended and ten buses purchased to meet the bus competition.

EARNINGS AND OPERATING EXPENSES OF THE TERRE HAUTE, INDIANAPOLIS & EASTERN

	1925	1924
Gross earnings	$4,852,170	$4,995,417
Operating expenses	3,847,397	3,760,335
Net from operation	$1,004,773	$1,235,082
Taxes	153,225	244,167
Maintenance expenditures:		
Maintenance of way and structure	$613,022	$706,501
Maintenance of equipment	358,573	304,558
Maintenance of power plant buildings and equipment	154,780	135,032
Total railway maintenance	$1,126,375	$1,146,091
Maintenance of light and power	203,694	235,165
Total maintenance	$1,330,070	$1,381,257

MISCELLANEOUS STATISTICS OF THE TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY FOR YEAR ENDED DEC. 31, 1925

Passengers carried—interurban lines	4,917,719
Passengers carried—city lines	19,137,310
Total passengers carried	24,055,029
Car-miles operated—interurban lines	6,572,607
Car-miles operated—city lines	3,650,567

Partial Abandonment in Joplin Announced

Abandonment of its Main Street lines in Joplin and all city transportation service is suggested by the Southwest Missouri Railway in a letter sent to Mayor J. F. Osborne and the City Commission.

The railroad contemplates rerouting its main line cars over West Fourth Street to McKinley Avenue and then south to its present main line in Joplin Heights, and would remove its present double tracks on Main and West Twentieth Streets.

Accompanying the letter was a proposed ordinance that would give the concern permission to build tracks across Seventh, Thirteenth and Twentieth Streets at points approximately where McKinley Avenue, were it extended, would intercept those streets. Application will be made to the Missouri Public Service Commission to make the change.

The letter states that the change of line and rerouting are contemplated "largely on account of the inability of the transportation company to pay a proportionate part of the repaving of Main Street in Joplin, an improvement which will become imperative within the near future and which, on account of the financial condition of the railway, cannot be assumed."

Augusta-Aiken Deal Approved

Stockholders of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., have voted the issuance of $2,000,000 in bonds, $1,500,000 of which will be sold immediately. A deal involving the purchase of the common stock of the Georgia-Carolina Electric Company by the Georgia-Carolina Power Company, a subsidiary of the Augusta-Aiken Railway & Electric Corporation, has also been consummated. Purchase by the Georgia-Carolina Power Company of the Carolina Light & Power Company of Aiken, S. C., was also confirmed. Transmission lines and distribution systems in Georgia, including part of the transmission lines constructed by the Georgia Railway & Power Company, were also purchased. These lines extend from Stevens Creek to Broad River, on the line from Stevens Creek to Toccoa, and involve an expenditure of approximately $380,000.

The bonds offered for sale are to be handled by Redmond & Company and J. G. White & Company, both of New York City. Of the $2,000,000 bond issue authorized only $1,500,000 will be sold now, leaving $500,000 in abeyance. The money acquired by the sale will be used in purchasing the properties outlined.

Traffic in Winnipeg Improves in 1925

A. W. McLimont, president of the Winnipeg Electric Company, Winnipeg, Man., in the 33d annual report to the stockholders, states that the hope that the added commercial and industrial activity noticeable in 1924 would assist the railway utility to register improvement in 1925 had materialized, and that as a result the decreases in traffic which

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had been experienced yearly since 1920 were checked. The street railway department carried 55,096,000 revenue passengers in 1925, which is a slight increase over 1924. Operating expenses of the railway were reduced largely as the result of extending one-man operation to a number of city lines. This was accomplished by slight alterations to a number of street cars and equipping them with special apparatus.

INCOME ACCOUNT OF THE WINNIPEG ELECTRIC COMPANY FOR THE YEAR ENDED DEC. 31, 1925

Gross earnings from operation		$5,211,665
Operating expenses before charging depreciation		3,301,903
Net operating income		$1,909,761
Miscellaneous income (Includes $54,000 interest charged subsidiaries in excess of earned fixed charges for the year 1925.)		157,604
Gross income		$2,067,365
Deduct:		
Interest charges on mortgage stock, bonds and bank loans	$872,914	
Extinguishment of discount on securities	26,764	
City percentage and car license	154,237	
Taxes	163,965	
Miscellaneous non-operating taxes	3,031	
Other income deductions	24,847	
		1,245,761
Net income before charging depreciation		$821,604
Deduct:		
Depreciation		201,050
Net income transferred to surplus		$620,554
Surplus brought forward from 1924 as adjusted		594,788
Net income transferred	$620,554	
Additional depreciation	173,000	
		447,554
		$1,042,343
Dividends on 7 per cent cumulative preferred stock	$210,000	
Dividends on common stock	220,000	
		430,000
		$612,343
Deduct appropriations:		
Sinking fund reserve	$73,100	
Deferred and undistributed charges such as stock discount and expenses	158,955	
		232,055
Surplus carried forward		$380,287

The company made substantial additions and improvements to its property in 1925, including new car tracks between Winnipeg and St. Boniface, permitting cars to make use of the fine Provencher bridge, and seven new buses. The alterations to street cars making them adaptable for one-man operation were also important.

Marion Company Gets Another Property

Agreement has been reached for the sale of the property of the Richwood Light, Heat & Power Company to the Columbus, Delaware & Marion Electric Company, Marion, Ohio. This action has brought a sudden end to a suit of the Richwood company against the Columbus, Delaware & Marion which had been won in the lower courts by the defendant company and appealed by the Richwood company.

The suit came up for hearing in the Court of Appeals at Marion during the week ended June 26, but before it was opened attorneys representing the companies, including the Ohio Edison, agreed to terms for the sale of the Richwood plant to the Columbus, Delaware & Marion. The terms of the agreement were not made public. The Columbus, Delaware & Marion Electric Company is a combined light and railway property.

Readjustment of Public Service Railway Finances Impends

Readjustment of the financial structure of the Public Service Railway of New Jersey and affiliated companies, which comprise the transportation system of the Public Service Corporation, is under discussion by a special committee.

According to the *Wall Street Journal* one of the main purposes of the proposed readjustment is financial unification of the entire transportation system, similar to that effected a few years ago when the electric and gas systems were consolidated into one company, the Public Service Electric & Gas Company. Any plan that is finally decided upon is likely to provide for the formation of a new company and exchange of the latter's securities for those of various operating subsidiaries and affiliated companies in the transportation division. About $75,000,000 bonds, all told, and about $73,000,000 stocks now outstanding would be involved.

Railway and bus earnings have improved each month this year over 1925 in that net losses have steadily been reduced; but the transportation system as a whole has shown deficits for a number of years.

Bonds Issued.—Authority to issue $235,100, par value, of first and refunding bonds bearing 5 per cent interest has been granted the Evansville & Ohio Valley Railway, Evansville, Ind., by the Indiana State Public Commission. It was announced that the bonds are to be exchanged at par for $235,100 in 7 per cent preferred stock of the company, which is now outstanding.

Presents Plea for Revaluation.—The Duluth Street Railway, Duluth, Minn., at a recent hearing before the Minnesota Railroad and Warehouse Commission in Duluth presented arguments on its petition for a revaluation of the company's properties for the purpose of obtaining an increase in fare. A. L. Drum, the company's engineer, and Herbert Warren, vice-president, presented statistics showing that the company was not making a proper return on the invested capital. The company is seeking an 8-cent fare.

Financial Status in Spokane Not Improved.—Deficits of $20,484 in April and $16,050 in May are reported in statements of the Spokane United Railways, Spokane, Wash. Because of increased competition from private automobiles the United Railways has not experienced the improvement that was expected with the increase in fares effective last February. The number of passengers carried dropped 215,019 in April and 227,953 in May, compared with similar months a year ago. April cash fares of 10 cents were about 10 per cent of the 7-cent ticket fares. In May the cash fares numbered 140,478, compared with 1,299,772 7-cent ticket fares.

Hears Discontinuance Petition.—A hearing was held before the Public Service Commission on June 29 on the application of the Fonda, Johnstown & Gloversville Railroad for permission to discontinue about 2.08 miles of its line in the city of Amsterdam, N. Y. The proof on the part of the company was to the effect that the operation of this portion of its line was not profitable and that this condition had continued for several years. Objection to the abandonment was advanced by the city of Amsterdam. A further hearing on the matter will be held on July 9.

Surplus in 1925.—The Bakersfield & Kern Electric Railway reports to the California Railroad Commission its 1925 operating revenue at $106,772, compared with $97,821 for 1924. The operating expenses, excluding taxes, for 1925 are reported at $99,268, and for 1924 at $96,108, leaving net operating revenue of $7,504 for 1925 and $1,713 for 1924. During 1925 taxes charged to operation amounted to $7,164 and for 1924 to $7,740. Deducting the taxes leaves operating income of $340 for 1925 and $6,026.81 (deficit) for 1924. Adding to the operating income the non-operating income of the company results in a gross corporate income available for surplus of $340 for 1925 and a deficit of $5,976 for 1924.

Heavy Loss on New Hampshire Line.—The Manchester & Derry Street Railway, owned by the Manchester Traction, Light & Power Company, Manchester, N. H., is seeking to abandon its 8 miles of line in Manchester on which $141,869 has been lost in recent years.

No Action on Worcester Dividend.—The Worcester Consolidated Street Railway, Worcester, Mass., at a recent meeting of the directors took no action on the payment of the usual semi-annual dividend. It is likely the payment will be passed at this time. Extraordinary expenditures for maintenance have cut greatly the net earnings of the road.

Net Income Lower.—The passenger revenue on the Brooklyn City Railroad, Brooklyn, N. Y., for the eleven months period ended May 31, 1926, was $10,430,556, against $10,402,860 for a similar period in 1925. The operating expenses and taxes fell off from $8,929,151 to $8,892,381 for the eleven months period ended May 31, 1926. After the consideration of income deductions the net corporate income was $1,321,424 for this year's period, against $1,388,163 for a similar period ended May 31, 1925.

Earnings Off in Akron During Strike Period.—In its report of earnings for May, 1926, the Northern Ohio Power Company, Akron, Ohio, attributes the decrease during that month as compared with May, 1925, to the walk-out on May 1 of some of the railway employees who returned to work on May 22. Gross earnings decreased from $941,541 in May, 1925, to $875,714 in 1926. Net income available for retirement reserve and corporate purposes in May, 1925, was $61,837, while in May, 1926, there was a deficit of $50,153. It is estimated that the decrease in passenger and freight receipts during May attributable to the strike amounted to $156,908.

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Legal Notes

ALABAMA—*Duty to Person Driving Automobile on Parkway*

A person driving an automobile along the track laid in a parkway or reservation was struck by a trolley car. There was a mist at the time. The driver was held to be a trespasser and that the company owed him no duty except the exercise of due care upon discovering his peril. As the motorman was under no duty to be on the lookout for a trespasser, no presumption could arise that he was looking ahead. The fact that the roadway on each side of the reservation was torn up for repaving was no legal excuse for the use of the track by the automobilist. [Snyder vs. Mobile L. & R. Co., 107 Southern Rep., 451.]

IDAHO—*Constitutionality of Auto Bus Law Upheld*

Idaho has a law requiring auto transportation operators to take out surety bonds for amounts depending on the capacity of the vehicle operated, to pay 5 per cent of their gross earnings to the state to be used for the maintenance of the highways and other provisions. School buses, motor cars or engines on steam or electric railroads, and companies operating exclusively within the corporate limits of cities are not included within the law. The constitutionality of this act was upheld by the Supreme Court. [Smallwood vs. Jetter, 244 Pacific Rep., 149.]

KENTUCKY—*Duty to Passenger Boarding Car at Terminal Station*

A carrier operating a terminal station to which passengers are admitted through turnstiles where they pay their fare before entering owes the same duty to passengers as a carrier operating a similar elevated or subway station. The highest degree of care should be taken to protect him when he is about to board the car from injury caused by pushing crowds. This is especially true at those times when the company should know from experience that large, boisterous and jostling crowds are to be expected. [South Covington & C. Street Railway vs. Vanice, 277 Southwest. Rep., 116.]

MAINE—*Relief from High Local Tax Assessments.*

A taxpayer whose property is taxed at 100 per cent of its true value while that of others is taxed at a lower percentage is entitled to have his assessment reduced to the percentage of value at which other property owners are taxed, but his claim of discrimination must be supported by "something which in effect amounts to an intentional violation of the essential principle of practical uniformity." [Cumberland County P. & L. Co. vs. Inhabitants of Hiram, 131 Atlantic Rep., 594.]

MASSACHUSETTS—*Evidence in Action for Malicious Prosecution.*

A railway company instituted criminal proceedings against a one-man car operator, accusing him of larceny by retaining fares received by him, but he was acquitted. He then sued the company on the ground that it had acted maliciously and without probable cause for believing him guilty, and he received judgment. In this trial, the railway company took certain exceptions, one being to the exclusion of testimony of the division manager that on days when the plaintiff was laid off the receipts from the car were considerably greater than those turned in on the corresponding days when he was working and to the exclusion of the testimony of the assistant general manager that he had given this fact consideration in deciding whether to authorize the prosecution. The Supreme Judicial Court held that the exclusion of the testimony of the assistant general manager was wrong, whether the reports were false or not, as they influenced his judgment in deciding he had probable cause to believe the plaintiff guilty. The exceptions were therefore sustained. [Clark vs. Eastern Mass. St. Ry., 150 Northeast Rep., 184.]

MICHIGAN—*Passenger Injured by Tort of Fellow-Passenger*

Where a passenger was injured by the tort of a fellow passenger, the carrier can be charged only with the neglect by the conductor of some duty owed to the passenger arising from facts known to the conductor, or which in the discharge of his duties he ought to have known. Where a passenger tried to open the door between a compartment of a car at a place other than the regular stopping place, was assaulted by a fellow-passenger, fell against the glass in the door and cut his wrist, a verdict for the defendant was properly directed. [Takacs vs. Detroit United Railway, 207 Northwest. Rep., 907.]

MISSOURI—*Excessive Speed of Car Is Negligence*

An intending passenger crossed a street in front of a car thinking it would stop at an earlier corner before it reached the one at which he intended to board the car, but it did not so stop, and he was injured. The car's speed exceeded the 15 m.p.h. permitted under the city ordinance. It was held that this fact would entitle the plaintiff to recover damages, if it was the proximate cause of the injury. [Unterlachner vs. Wells, 278 Southwest. Rep., 79.]

NEW JERSEY—*Land Owned by Railroad Next to Right-of-Way and Rented Held Subject to Jurisdiction of Public Utility Commission*

A steam railroad owned property adjoining its right-of-way and rented it to a coal and lumber company. Later, an electric railway received permission from the Public Service Commission to make a physical connection with the steam railroad across this leased property. The Court of Errors and Appeals upheld this order on the ground that the steam railroad could not contract away its liability to perform a public duty. The electric railway must bear any reasonable expense called for by this connection. [C. & M. County Traction Co. et al. vs. Board of Public Utility Commissioners et al., 132 Atlantic Rep., 118.]

NEW YORK—*Plaintiff Can Examine Motorman*

It was held that a plaintiff in a personal injury case is entitled to examine the particular employee of the defendant who is most familiar with the condition of the alleged effective appliance, where an important feature of the case was the question of the condition of the brakes and appliances. [West vs. Coney Island & B. R. Co., 114 N. Y. Sup., 475.]

OHIO—*Requirements on Bus Franchises Upheld*

An Ohio statute says that motor transportation companies "may" file applications with the Public Utilities Commission for changing, extending or shortening their routes, increasing or decreasing the number of vehicles, etc. The word "may" in this statute was declared by the court to be equivalent to "must." The statute also required the company to secure permission from the commission for the issue of capital obligations. Where this was not done, the court held that it might be overlooked at the discretion of the commission. [Cincinnati Traction Co. vs. Public Utilities Commission of Ohio, 150 Northeast Rep., 308.]

OHIO—*Issue of Bus Certificate by Commission Voided*

If the Public Utilities Commission should grant a certificate on the convenience and necessity of a new bus route without due notice and hearing, as provided by the code, the grant is void. [Columbus R. P. & L. Co. vs. Public Utilities Commission of Ohio, 150 Northeast. Rep., 237.]

PENNSYLVANIA—*Terms of Rider in Accident Policy Covering Buses Held Not Controlling*

A transportation company took out insurance on six buses with an oral agreement that it would receive credit for periods exceeding ten days in which any of the buses was not in use. At first the insured notified the insurer after the bus had been out of use for the period mentioned and would receive a credit memorandum therefor. Later, at the request of the insurance company, a form was used in which the number of the bus not in use was mentioned, and it was stated that the policy ceased as regards that bus. The transportation company understood the use of this memorandum to be for book record only and that all buses in operation were covered. Later, an accident occurred to a bus which the insurer had been notified had been withdrawn from service, but through an oversight on the part of the bus company, no notice was sent to the insurer that this bus had been replaced in service. The insurance company was held liable for the insurance under the policy. [Schuylkill Transportation Co. vs. London G. & A. Co., 131 Atlantic Rep., 701.]

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Personal Items

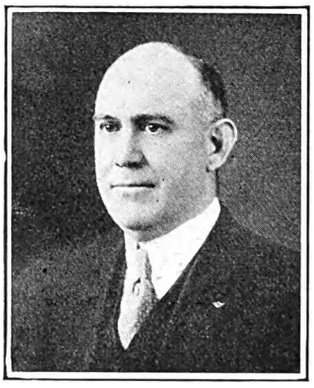
John W. Carpenter Heads Dallas Railway

Review of Changes Made Recently in Personnel of Texas Road—C. W. Hobson Returns to Commercial Pursuits—Richard Meriwether Vice-President

OF GREATER interest than the brief mention made of them in the ELECTRIC RAILWAY JOURNAL for June 19, page 1079, are the changes in personnel of the Dallas Railway, Dallas, Tex., the most important of which resulted in the withdrawal of C. W. Hobson as chairman of the board, the elevation of John W. Carpenter to the post of president, a position vacant for some time, and the continuation of Richard Meriwether, long general manager of the company, in that post and as vice-president.

J. W. Carpenter

C. H. Hobson



Richard Meriwether

A lot of water has gone over the dam in Dallas since Mr. Hobson in 1916 was induced to try to avert the disaster that threatened the electric railways there. But men are part and parcel of the times in which they move. So the need arises to recount in part how it was that Mr. Hobson, who probably had little natural desire for the job, was in a sense commandeered as the one local man qualified to make the Dallas utilities local institutions and to restore the local transportation system to public confidence.

In 1916 the General Electric Company, though a subsidiary, owned a substantial but minority interest in the Dallas Electric Company of Maine, which controlled the Dallas Electric Light Company, three street railways operating in Dallas east of the Trinity River, and the Interurban Terminal property. The Oak Cliff lines were controlled by other interests.

The Mayor of Dallas requested the General Electric Company to acquire control of the Dallas Electric Company and the Oak Cliff street railway line, organize two separate Texas companies, one to operate the light and power property and the other all electric railway facilities in the city limits of Dallas—both companies to operate under new franchises.

Mr. Hobson was requested by the General Electric Company to head the railway. In the negotiation of the franchises there were numerous contracts, commitments and promises made—some definite, others informal. So Mr. Hobson set about the task he did so well. For about eight years he functioned as head of the railway. Then on Dec. 31, 1924, the General Electric Company disposed of all of its interest in Dallas Railway and, all of its promises, contracts and commitments having been fully complied with, Mr. Hobson felt that it was no longer necessary or desirable that he, as Southwestern manager of the General Electric Company, should continue as an officer in the railway. In consequence he tendered his resignation as a director and chairman of the board of directors of the railway.

Mr. Hobson, besides being the Southwestern manager of the General Electric Company, is a director in the Texas Electric Railway and the Texas Interurban Railway. He is chairman of the board of directors of the Southwest General Electric Company.

A native of Savannah, Mo., after coming to Texas he founded the Hobson Electric Company of Dallas and Houston and became its president and general manager. As early as 1888 he was identified with electric railway work at St. Joseph, Mo., as treasurer of the railway there. He is an active member of several civic and social organizations. He has held the office of vice-president and director of the Dallas Chamber of Commerce.

Mr. Carpenter was born on a farm in Navarro County. He started his career in the electric light and power business in Corsicana in 1900. He later was made general superintendent of the power and light and street railway company there and worked for some of the large electric companies in New York and Ohio, for a time with the Northern Ohio Traction Company. Later Mr. Carpenter returned to Corsicana and was made president and general manager of the Corsicana Light & Power Company.

The late Col. J. F. Strickland, pioneer in the electric power and light business in Texas, made Mr. Carpenter vice-president and general manager of the Dallas Power & Light Company in 1918. He occupied this position until 1919, when he became vice-president and general manager of the Texas Power & Light Company.

Mr. Carpenter is a member of the board of regents of the Texas Technological College at Lubbock. He is also a member of the board of directors of the East Texas Chamber of Commerce and vice-president of the Cotton Palace at Waco. Mr. Carpenter has been active in the movement for the industrial development of Texas through the upbuilding of the textile industry of the State.

Mr. Meriwether, in addition to directing the street railway operations in Dallas, is vice-president and general manager of the Texas Interurban Railway. He went to Dallas in 1911 as superintendent of a local holding of the Stone & Webster corporation. Upon the merger of the railways in Dallas in 1917, Mr. Meriwether became general manager of the new concern, which continues as the Dallas Railway.

J. C. Madigan Retires at Grand Rapids

John C. Madigan, veteran superintendent, whose span of service with the Grand Rapids Railway, Grand Rapids, Mich., and its predecessors has covered every type of railway vehicle from horse cars, cable cars and trolley cars to the present de luxe electric rail coaches, has tendered his resignation to L. J. DeLamarter, general manager. He will retire on Aug. 1.

Mr. Madigan has spent 38 years in the employ of the Grand Rapids Rail-

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way. He will now devote his time to his big stock farm on the Rouge River, near Rockford, Mich., and to his other interests. His successor has not been appointed.

Mr. Madigan entered the service of the Valley City Street & Cable Company in May, 1888, at the time the cable company began operations. Two years later, on Aug. 1, he was made division superintendent and continued in executive capacities with that corporation and its successors, the Consolidated Street Railway and the Grand Rapids Railway. In 1900 he was made superintendent of transportation and six years later was promoted to general superintendent, a position which he held for two decades.

John G. Baukat Appointed to New Work

John G. Baukat, well known in the electric railway field, has been appointed vice-president and sales manager of the Woonsocket Manufacturing Company, Providence, R. I. Mr. Baukat's office will be located in the Grand Central Terminal Building, New York City.

Since early in the present year Mr. Baukat has served in the capacity of consulting engineer for the New York Railways. In fact, for the past few years he has been occupied in general consulting engineering work, principally in designing and superintending the building of trolley car equipment. He was affiliated for two years with the Batavia Car Works, which he organized and operated. In his very active career Mr. Baukat has been affiliated with several manufacturing concerns, among them the General Electric Company and the National Steel Car Company, Hamilton, Ont. In the operating end many companies have had his services. They include the Hydro-Electric Power Commission, the Lehigh Valley Transit Company and the Schenectady Railway. Some years ago he was connected with Day & Zimmermann, Philadelphia, public utility operators.

R. P. Stacy, formerly of Pittsburgh, has been made vice-president and general manager of the West Virginia Utilities Company, Morgantown, succeeding Joseph K. Buchanan, resigned. Mr. Stacy, accompanied by C. C. Gillette, another official of the company, arrived in Morgantown late in June and immediately entered upon the discharge of his duties. Mr. Stacy is a graduate of North Carolina State College. For a number of years he was with the Westinghouse interests and later became associated with the Duquesne Light Company, Pittsburgh, Pa.

S. Gordon Gale, Ottawa, Ont., vice-president and general manager of the Hull Electric Company, has been appointed to the position of general manager of the Gatineau Power Company, a subsidiary of the Canadian International Paper Company. Mr. Gale's appointment will not affect his position with the Hull Electric Company, which is a subsidiary of the Canadian International Paper Company. Mr. Gale is an outstanding figure in electric railway and power circles in Canada and the United States. He is a former president of the Canadian Electric Railway Association. The Gatineau Power Company was organized to control the power developed by the Canadian International Paper Company on the Gatineau River.

W. W. Foster Heads New York Association

W. W. Foster, secretary-treasurer and general manager of the Rochester, Lockport & Buffalo Railroad, Rochester, N. Y., was elected president of the New York Electric Railway Association at the annual meeting at the Hotel Champlain, Bluff Point, N. Y., on June 25. Mr. Foster is very well known in New York State, not only for his association with electric railway activities but also for his banking and business affiliations.

At the age of sixteen he entered the employ of the First National Bank of Syracuse as a clerk. Two years later he entered the service of Holden & Sons, wholesale coal dealers, as an accountant and cashier. In 1905 he became identified with electric railway interests when he went with the Beebe Syndicate as general auditor and assistant treasurer. This syndicate operated five interurban electric railways, including the Buffalo, Lockport & Rochester Railway, which was taken over in 1911. In the railway field Mr. Foster seemed to have found his chief interest. In June, 1915, the Buffalo, Lockport & Rochester Railway was segregated from the Beebe Syndicate and at that time he became auditor, secretary and treasurer, moving his offices to Rochester, N. Y. A little more than two years later he was appointed general manager of the company, but still retained the position of secretary-treasurer. In April, 1919, the company was reorganized and the name changed to the Rochester, Lockport & Buffalo Railroad Corporation. Then it was that he was elected a director and appointed to the positions of secretary-treasurer and general manager. These positions he still holds.

In addition to his railway work Mr. Foster has retained his banking affiliations and is a director of the Union Trust Company, Rochester. He was born in Syracuse on Jan. 1, 1873.

W. W. Foster

Obituary

Bert Weedon

Bert Weedon, a director of the Interstate Public Service Company, Indianapolis, and traffic manager for the company, which operates interurban and light and power utilities in Indiana, died recently in an Indianapolis hospital. He had been in ill health for some time. Funeral services were held June 28, with the Knights Templars in charge. Burial was in Indianapolis.

Mr. Weedon was widely known in public utility circles of Indiana. Practically all his life, since early boyhood, was devoted to public service corporation work. He joined the staff of the Interstate company as traffic manager in May, 1913. Prior to that time he was in the service of the New York Central Railroad at Terre Haute, Ind. That company sent him to the University of Michigan, where he completed his education.

Harry Reid, president of the Interstate, said:

> Mr. Weedon was one of the most loyal and valuable members of the staff. We were close friends and his duties as a director of the company and traffic manager brought us in close contact. His death is a loss of an efficient and valuable officer and associate.

Mr. Weedon had unbounded faith in the interurban electric railway. He went after business intensively and he understood the value of good public relations. The road with which he was associated was one of the most intensively developed of its kind in the United States, doing an immense freight business and being distinguished for the quantity and the quality of its passenger services, which included parlor, dining and sleeper car accommodations. For this development there was sufficient reward to go around, and the officers of the company were not either slow or loath to acknowledge the part that Mr. Weedon played in advancing ideas for successful application in connection with the development of this service—a service of singularly outstanding merit.

In 1924 Mr. Weedon was a member of the committee on the development of new business of the American Electric Railway Transportation & Traffic Association, and in 1925 of the committee on selling transportation of that body.

Mr. Weedon was born at Murfreesboro, Tenn., 44 years ago. His parents died when he was a child and he went to live with an uncle in Logansport. He is survived by his wife and three children.

W. S. Hamilton

William S. Hamilton, superintendent of stores for the New York State Railways, and brother of James F. Hamilton, president of the company, died at Syracuse after an illness of ten weeks.

Mr. Hamilton entered the employ of the railway at an early age, and served in many capacities. At one time he was president of the Schenectady Railway. He has lived in Utica, Schenectady, Syracuse and Rochester, while serving in the railway companies.

Mr. Hamilton was on a business trip to Rochester when stricken with apoplexy.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Bids Asked for 100 Buses for Buffalo

Mayor Frank X. Schwab of Buffalo, as commissioner of public safety, has asked for bids to be submitted on or before July 6 for 100 single-deck buses in lots of 25, 50 or 100, of 26 to 30 passenger capacity with one or two-man control or both; also for 100 double-deck buses in lots of 25, 50 or 100 of 50 to 56 passenger capacity with one or two-man control. Bidders must submit their own specifications. Where possible, bidders are requested to furnish five or ten buses for operation and demonstration purposes, when required. No proposal will be considered unless accompanied by a certified check drawn for 10 per cent of the amount bid, or, in lieu of such check, by a bond conforming to law, such bond to be equal to 50 per cent of the sum named in the proposal. Proposals should be marked, "Proposals for Motor Buses."

This request for bids marks a step by the city to start municipal bus operation in opposition to the service now being given by the International Bus Corporation, a subsidiary of the International Railway. The legality of the plan of the City Council is questioned by the city law department, but Mayor Frank X. Schwab says a transportation emergency exists. He is anxious to have the plan to establish municipal bus routes placed before the courts, if necessary.

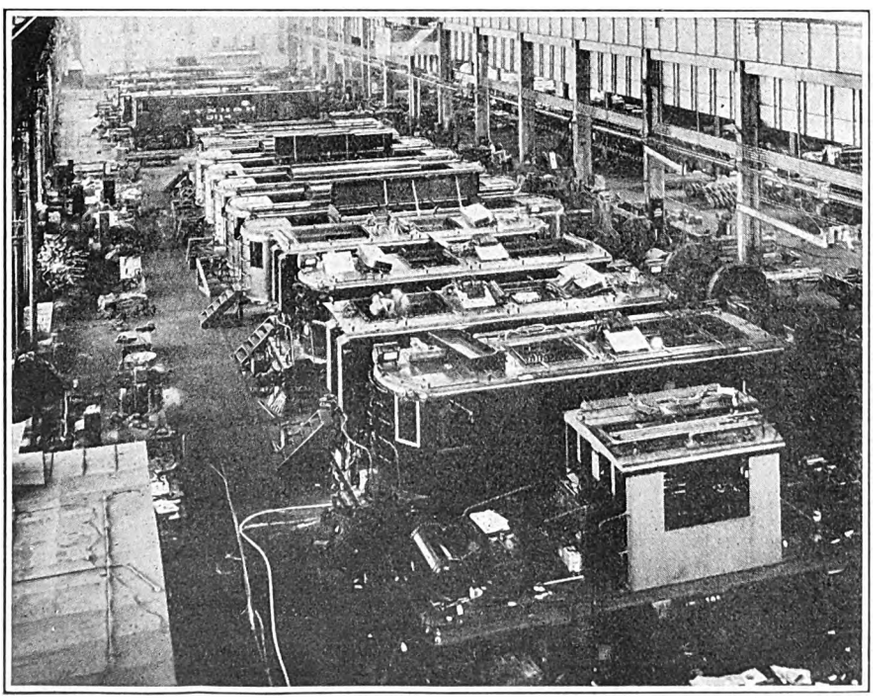
Plant to Reconstruct Railway Track Equipment Is Planned

Within a few days work will be started on the erection of a modern steel and concrete factory building at Indianapolis by the Morrison & Risman Company, Inc., of Buffalo, N. Y., for the reconstruction of railway track equipment, it was announced by R. L. Morrison, vice-president and treasurer of the corporation. The new plant will house machinery of the latest pattern for the reconstruction of frogs, switches and similar track equipment. F. C. Cullen, who will be the manager of the plant, accompanied Mr. Morrison to the city and assisted him in making arrangements for the erection of the building. The site on which the plant will be erected is 650 ft. long and 105 ft. wide. Recently the company, which has been in business in Buffalo for 38 years, placed a second plant in Chicago, due largely to the expansion of the business in the Middle West. The new plant was so successful that after six months of business it was decided that another new plant and branch office in Indianapolis was needed.

Noiseless Car Is Exhibited

As a means of increasing public interest in transportation affairs, the Twin City Rapid Transit Company, Minneapolis, Minn., recently entered one of the noiseless street cars which it plans to put in service in the Twin Cities in the St. Paul Products Show, recently held at one of the St. Paul department stores. This show inaugurated the home products display and sales plan being conducted in the Minnesota city. The car that was exhibited weighs approximately 25,000 lb., is equipped with noiseless roller bearings and brake bands, as well as an improved type of spring to insure a maximum of easy and quiet riding.

Many Electric Locomotives Under Construction at Erie, Pa.



A RECENT view of the locomotive assembly shop of the Erie, Pa., works of General Electric Company, showing fifteen electric locomotives of various types in the process of being assembled. In front is an 80-ton switching locomotive. Next are four halves of the two freight locomotives for the New York Central Railroad, and beyond these are five of the ten gearless passenger locomotives for the same railroad. Next in line are two New York, New Haven & Hartford switching locomotives, and in the far end of the long building are three of the new motor-generator type of locomotive for the same railroad.

Applicants Rush to Exhibit at Cleveland

American Electric Railway Association Reports About 101,302 Sq.Ft. of Space Sought on July 1

Space for the monster exhibit to be held at the meeting of the American Electric Railway Association in Cleveland, Ohio, starting on Oct. 4, will be assigned by the exhibit committee of that body at a meeting called for July 8. Up to the close of business July 1, applications had been received from 190 member companies for about 101,302 sq.ft. of space. There were also nine applications asking for 670 lin.ft. of track space.

Transportation experts from all parts of the world will attend the meeting and examine the display because they look upon the exhibit as reflecting the latest developments in both rail and non-rail vehicular transportation. Records established in Atlantic City for the exhibition of the latest types of electric railway cars are expected to be broken. Special track has been provided adjoining the exhibition hall on which to show this equipment. Applications have already been received for the display of typical passenger cars and for showing dump cars, crane cars, concrete breakers, freight cars and even refrigerator cars. It will be a live exhibit, in that the cars will be served with current to permit the operation of all the automatic devices with which they are equipped.

No phase of up-to-date operation is likely to be neglected. Although they are machines not easy to handle over a temporary track, it is expected that both oil-electric locomotives and gas-

	Booths	Total Sq.Ft.
Section A—Arena floor...	53	23,838
Section B—Exhibition hall	103	19,627
Section C—Auditorium's west wing....	148	62,077
Section D—Open air exhibition space	8	6,360

Section E—1,500 lin.ft. exhibition space.
Total number of exhibition booths in Sections A, B, C, D, and E, 312.
Total number of square feet available 111,902, exclusive of track space.

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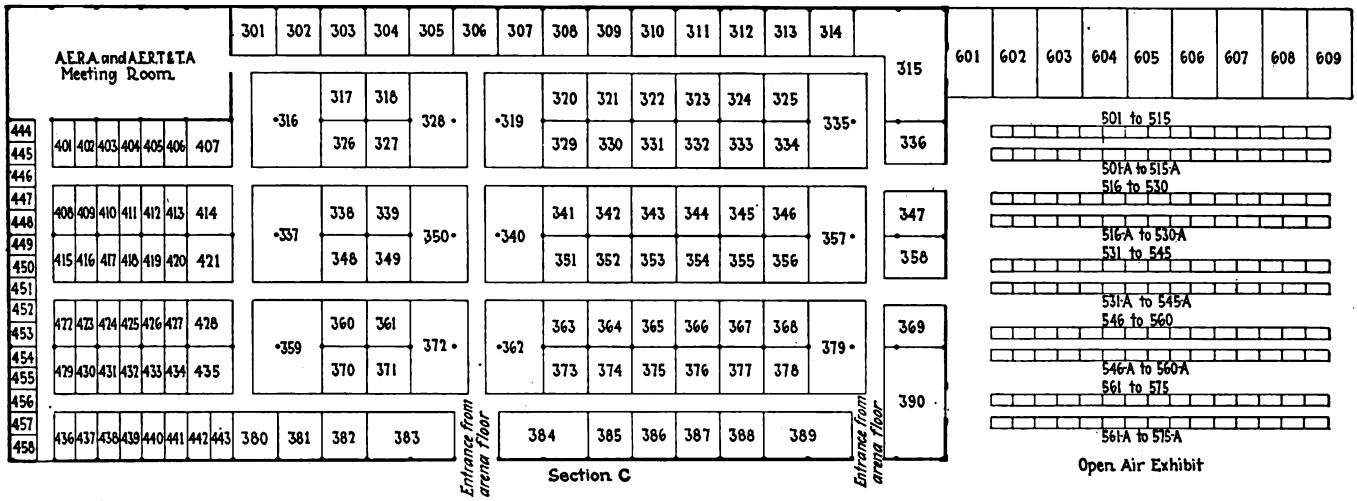
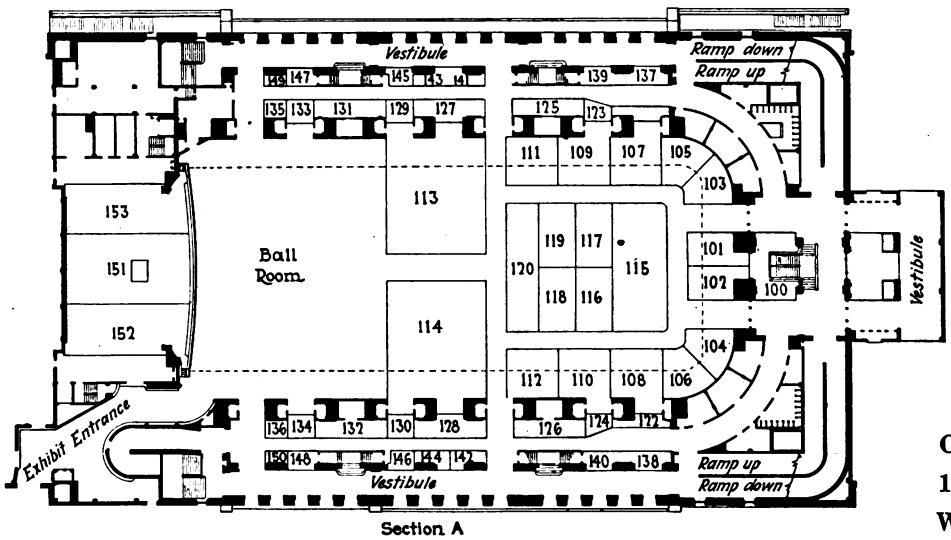
electric rail cars will be shown. Reference was made in the ELECTRIC RAILWAY JOURNAL previously to some of the plans that had been developed for exhibiting the railway equipment.

So far as the show of buses is concerned it is expected that the vehicles which will be displayed will outnumber and outrank in their variety similar vehicles shown in previous years. The feeling prevails that the motor bus men this year should do more in the way of showing trucks and tractors than they have in the past. The suggestion has also been made that the automobile makers display taxicabs.

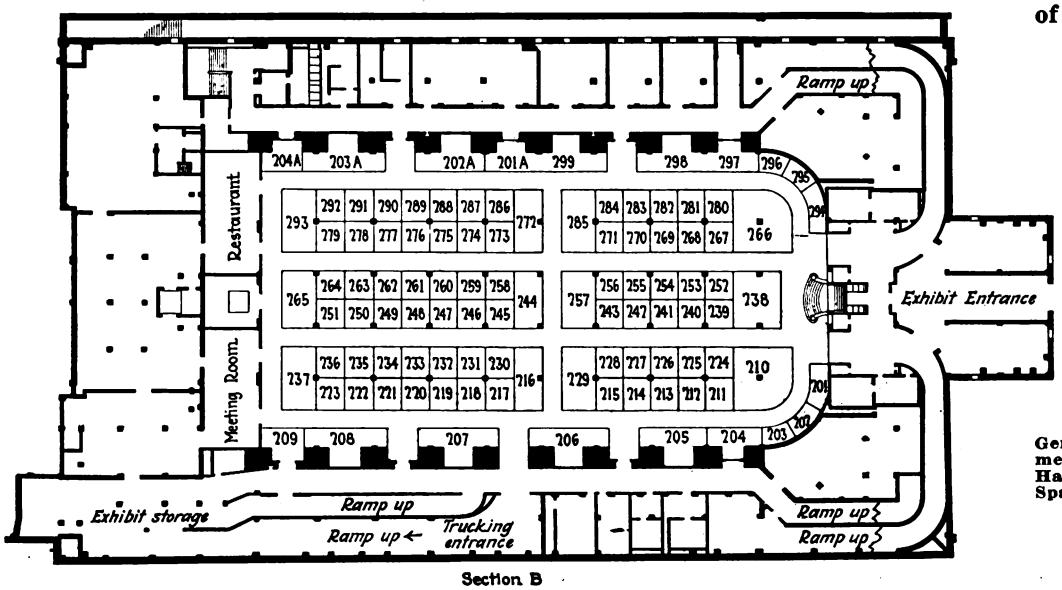
Nothing definite has been said about it, but it would not be surprising if some planes were shown. At least one electric railway is now operating planes in regular service.

A recapitulation of the space available, with the total number of booths, and the number of square feet and an illustration showing the meeting hall and exhibition layout accompany this account.





On July 1 190 Applicants Were Seeking 101,302 Sq.Ft. of Space



General Arrangement of Meeting Hall and Exhibit Space at Cleveland

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Some Recent Timken Company Changes

Phenomenal growth of sales of Timken bearings for industrial uses has brought about the promotion of G. W. Curtis from industrial equipment engineer of the Timken Roller Bearing Company, Canton, Ohio, to district manager of sales, industrial division, for the Milwaukee territory. Mr. Curtis will work with R. W. Ballentine, who previously has handled this territory. S. M. Weckstein succeeds Mr. Curtis as industrial equipment engineer. Mr. Weckstein has been notably successful in developing Timken bearing applications for precision work in machine tools and high-speed applications. G. W. Richards and A. R. Spicacci are appointed assistant industrial equipment engineers to assist Mr. Weckstein.

Other changes have recently been announced. H. E. Gilmore will become manager of the St. Louis branch of the Timken Roller Bearing Service & Sales Company.

The Omaha branch office of the Timken Roller Bearing Service & Sales Company, formerly located at 2524 Farnum Street, now occupies larger quarters at 2240 Douglas Street. Complete service stocks for authorized distributors will be maintained as in the past. The management will continue under the direction of A. D. Hackim.

The new home of the Los Angeles Branch of the Timken Roller Bearing Service & Sales Company will be at 1361 South Figueroa Street, moving to this location from 1241 South Hope Street.

Track and Line

Connecticut Company, New Haven, Conn., is planning to construct an additional track over Blue Hills Avenue from Westbourne Parkway to the turnout track north of Holcomb Street, Hartford. The street board and railways committee of the Common Council will, it is expected, grant the required permission.

Los Angeles Railway, Los Angeles, Cal., has started work at the Temple Block which will unite two of the oldest car lines in the city. The south layout of the special work on Main Street at the Temple Block will be relocated and new double tracks constructed west therefrom to connect with the present terminal of the Temple Street tracks in front of the Federal Building. This work will necessitate the relocation also of the center line of tracks with respect to Main Street from this special work to a point about 125 ft. north. All other special work and curves at this location will be removed. The safety island in the center of the street will be completely reconstructed and the large island in front of the Federal Building will be removed. A new island will be built along the east side of the tracks on Main street, north from the new curves to Temple Street.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., is busy now with two paving jobs. There are 3,700 ft. of paving to be laid on King Hill Avenue. About 1,150 ft. of the concrete work has been completed and all the steel laid on the east track. The Francis Street project totals 1,800 ft. of paving.

Power Houses, Shops and Buildings

Georgia Railway & Power Company, Atlanta, Ga., has purchased a tract of land containing many acres, part of which, it is said, will be used as a site for a carhouse. The property is located near Atlanta adjacent to the West Point belt line.

Birmingham Electric Company, Birmingham, Ala., will start work shortly on the construction of a two-story and basement building to be used as a warehouse and offices for linemen, construction crews and other employees. The new building will cost approximately $350,000.

Rockford City Traction Company, Rockford, Ill., through Receiver Adam Gschwindt, was authorized by Judge E. D. Shurtleff, in the Circuit Court, to expend $72,000. Of this amount $50,000 is for the completion of Seventh Street paving and track laying and $7,000 is for North Second Street track laying.

Trade Notes

American Engineering Company, Philadelphia, announces the appointment of H. Kempner as sales manager of its "Lo-Hed" electric hoist division. Mr. Kempner has been in charge of sales promotion work for the American Engineering Company, including the handling of its advertising and publicity, for the last three years. He studied electrical engineering at Harvard University and for four years was an instructor in physics at Pratt Institute, Brooklyn, N. Y. He formerly was connected with the engineering department of the Western Electric Company in New York. From 1919 to 1923 Mr. Kempner was in the service of the McGraw-Hill Publishing Company, Inc., handling accounts in a number of papers published by this company, including *American Machinist, Electrical World* and *Power*. In 1920 he was sent to Washington to organize and take charge of the disposal of surplus war property for the government. He was overseas from 1917 to 1919, participating in the Oise-Aisne and Argonne-Meuse offensives.

Monitor Controller Company, Baltimore, Md., manufacturer of automatic controllers and electrical resistors, has opened a branch office at Room 417, 136 Federal Street, Boston, Mass., with Nelson A. McCoy in charge. For the past eight months Mr. McCoy has been located at the main office of the company. Previous to joining the Monitor organization he was with the Wagner Electric Corporation for fifteen years. After completing this company's student course he was made foreman of its motor tests. In 1913 he was transferred to Wagner's Philadelphia sales and service organization and in 1921 was sent abroad, covering Hawaii, Australia and New Zealand.

John R. Lee has been appointed general sales manager of Dodge Bros., Inc., Detroit, Mich. Mr. Lee has been assistant general sales manager since last December, and prior to that served for several years as assistant to the president. Three new assistant general sales managers have been appointed to serve with Mr. Lee. They are: H. J. New, formerly director of distribution; W. M. Curves, former division sales manager, and F. R. Valpey, former director of the commercial car and truck division. Mr. New's duties will embrace agreements and distribution; Mr. Curves will be in charge of districts and field operations, and Mr. Valpey will concentrate on Dodge Brothers commercial car and Graham Brothers truck and bus sales.

New Advertising Literature

Nichols-Lintern Company, Cleveland, Ohio, has issued a booklet giving prices and specifications on various types of Nichols-Lintern Universal lanterns.

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-380, describing Helicoil sheath wire units. This is a form of heating unit with protective casing. Nickel chromium wire is used as a conductor and it is surrounded by a compacted insulating powder so as to insulate it from the casing. The unit is flexible and can be bent into various shapes.

Ohmer Fare Register Company, Dayton, Ohio, has reprinted another early address by John F. Ohmer. It is entitled "Transfers, Their Use and Abuse," and was delivered before the Iowa Street Railway Association on April 16, 1906. It outlines the principal problems connected with the issue, collection and accounting for of transfers and then explains how these difficulties are overcome by the Ohmergraph, a transfer printing and issuing machine. A paragraph dated June 9, 1926, at the end of the paper, explains that the Ohmergraph referred to in this address was the first step in the evolution of the present Ohmer transfer machine, which prints all the required data on plain paper supplied to the machine in rolls, no punching or prepared transfer being necessary.

Metal, Coal and Material Prices

Metals—New York	June 29, 1926
Copper, electrolytic, cents per lb	13.875
Copper wire, cents per lb	16.00
Lead, cents per lb	8.275
Zinc, cents per lb	7.52
Tin, Straits, cents per lb	61.75
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.425
Somerset mine run, Boston, net tons	1.925
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.70
Central, Ill., screenings, Chicago, net tons	1.45
Kansas screenings, Kansas City, net tons	2.425
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.70
White lead in oil (100-lb. keg), N. Y., cents per lb	15.00
Turpentine (bbl. lots), N. Y., per gal	$0.89

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, July 10, 1926 *Number* 2

The Surprising Feature of the Cleveland Shopping Survey

ELECTRIC railway men are so familiar with the principal causes and effects of street congestion that they do not realize how ignorant the general public is on these matters. Take, for instance, the effect of parked vehicles on a downtown street. It is obvious to the railway manager that a line of standing automobiles along the curb or along both curbs of the street cuts down its useful width by just that amount, consequently general parking hampers the movement of all traffic. He does not appreciate that the downtown merchant often looks upon the rows of parked automobiles as representing large numbers of customers who are making purchases within the district.

Nothing will help more to clear up this situation than a series of surveys such as that recently completed in Cleveland. The purpose of the Cleveland survey was to learn the methods of transit to the downtown stores in the city used by customers on several days. Similar surveys have been made in other cities, but for the most part they have been fragmentary in character. The Cleveland survey stands out prominently in three ways: It was quite comprehensive as it included most of the leading downtown stores in the city. It was conducted by the merchants themselves, and it is of recent date. The result found, that an average of only one person in five who visited the stores on the three days of the test came in a private automobile, is not a surprise to most men familiar with the situation, but proved to be very much of a revelation to the merchants of Cleveland. It is probable that remedial action, with the approval of the retail business interests, will follow the results of the test.

The really surprising information developed by the survey in Cleveland, however, is not the proportion of customers reaching downtown retail stores by electric car and auto. It is that this rather simple method of establishing a most important fact has not been utilized to a greater extent in settling similar questions in other cities. There have, of course, been other surveys of a like nature, but there have been very few of them and nowhere near as many as the number of cities where the question of parking in the downtown streets has been and is very active.

The Cleveland example also points to a way of making the survey both comprehensive and very convincing. This is by letting the merchants make the count with their own forces, though in Cleveland the railway helped to organize the plan and largely bore the expense. There is no more certain way of establishing any truth in the mind of a person than that of letting him reach it by his own deductions or action. This is the basis of the laboratory method of teaching physics and chemistry. It should work equally well with a downtown retail merchant. Such a man under the false impression that most of his customers reach his store in their private automobiles usually will not be convinced of his error by statistics from other cities. Even figures from a neighboring store may not be convincing. The merchant may think that his own clientele is more exclusive and belongs largely to the limousine-owning class. But let him make his own tabulation at his own store door by his own employees and he no longer can be blind to the truth.

There is a corollary to the problem just demonstrated, which should also not be forgotten by the downtown merchant. This is that if custom is impeded in its flow to his store it will go to those which are reached more easily. In other words, if street car passengers, who make up the bulk of the customers, find that it takes too long to get downtown to shop they will patronize their neighborhood shops. This would, of course, mean a loss to both downtown merchant and trolley company. In this their interests are identical. Hence it should not be difficult for them to get together.

For the benefit of the industry there should be many polls of shoppers like that in Cleveland.

No Other Course Was Open to the Interborough

NO CAUSE for quarrel can be found with the position taken by the management of the Interborough Rapid Transit Company, New York, in the controversy with its motormen and switchmen who have gone on strike. These men elected to secede from the Brotherhood of Interborough Employees, with which body the company had just arranged a renewal of the existing working contract. This was, perhaps, their privilege, but it was also their obligation to accept the consequences of that action. On its part the company was not hasty. The remarks of Mr. Hedley referred to in this issue make plain the position of the company. The grounds for his action, backed by the brotherhood as a whole, were that for him to consent to arbitrate any matter with any group that had left the brotherhood would be a breach of faith. So the merits of the issue hinged on that ethical point. The company did feel, however, that the wage demands were exorbitant, and one of its spokesmen expressed the opinion that an impartial board would find that the wages now paid were adequate. There seems no reason not to accept this as true.

The good offices of the Transit Commission were sought as mediator but without avail. It is to the credit of that body that it lost no time in idle palaver when the issues at stake were made plain and that it arranged to secure the co-operation of the other transit carriers to assist in the emergency by increasing their facilities. The concern of that body, apart from attempting to secure an amicable adjustment, is to see that the public

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suffers a minimum of discomfort. This it did with unusual results.

Perhaps the best answer to the charge of the inadequacy of the present rates of pay for the motormen and switchmen is found in readiness of other men to accept the wage scale that the men who went out purport to regard as inadequate. Defections from the ranks of the strikers further attest the adequacy of these rates and indicate that a very large number of the men who went out were carried away by emotions which in their more sober moments they were able to analyze impartially. Last-minute news indicated that the strikers would seek affiliation with the American Federation of Labor. That in itself was significant of the feeling of isolation that had taken hold of the strike leaders, an isolation best expressed in the words of one of the leaders late on July 8 that the "strike is still on." A strike that is still on and is effective is its own best spokesman. Some of the New York papers that cater to the sensational went to great lengths to capitalize the strike, but the public was apathetic. It understood the issues too well to permit itself to become demonstrative—except in so far as its attitude reflected impatience at the inconvenience which the ill-advised action of the men on strike had caused them to experience.

Tax Reductions Offer a Saving Without Investment

IN THIS issue is found an abstract of Economist Vickers' theories on taxation as given before the Central Electric Railway Association. They are not new, but his application of such ideas to the railway industry are. He holds forth hope that concerted action will bring relief, but insists that railway managers must first understand these principles. Here is an opportunity for a nationwide policy and a nationwide action. For years public service properties have paid taxes on the physical value of the property owned or used in public service. Other properties owned by our political subdivisions do not pay taxes because it would be taking the money out of one pocket and putting it into the other. While the ownership of our utilities is generally in private hands the conduct of their corporate existence is under public control in one way or another.

The natural conclusion might be that the utilities should not pay taxes at all. But not so in the theory of which Captain Vickers is a proponent. The ability to pay is the only correct basis to use, he says. This is analyzed still further into a combination of gross and net revenue basis with suggested values worked out for several cases.

The opposite view of boosting the rates to pay the tax has proved impracticable. There is an economic balance that limits this scheme, as many operators know. The cost of mass transportation must be kept down as low as may be to maintain the volume—and without volume a property is in a bad way.

It is one thing to work out a theory and another to carry it forward. Captain Vickers has done that too in several instances. With his abundance of detailed information and his ability to put it across before managers or tax commissions, he can be of material assistance in specific cases.

Here is an opportunity to save several per cent of gross without the investment of a dollar of new money.

Infraction of Traffic Regulations Is a Growing Evil

OPINIONS may differ as to whether or not traffic regulations in the average city are well adapted to present congested conditions. There can be no doubt, however, that infractions of these regulations are becoming more and more frequent. Like most bad habits, this disregard of the law grows upon those who practice it.

Passing another vehicle on the wrong side is thought by many drivers to be a creditable achievement if one gets away with it. Beating the traffic officer's whistle at a street intersection gives the average automobilist a glow of inward satisfaction. Parking in a restricted area is considered quite a feat if one does not "get a ticket." So it goes. Violation of traffic regulations seems almost like a game, the winner being the driver who disregards them the greatest number of times in a given period.

Nobody stops to analyze the results to himself of this general habit of violating the traffic regulations. For once that the automobilist gains some slight advantage through his own transgression, he suffers delay a dozen times on account of the transgressions of others. Consider, for example, the man who goes over to the wrong side of a two-lane roadway in order to pass the vehicle ahead of him. Where traffic is dense he seldom succeeds in this attempt, but usually loses in his own place in the column and effectually blocks movement in the opposite direction. Yet nearly everybody does this when opportunity offers.

Even more serious is the effect of this attitude on public transportation vehicles. Instances can be seen every day where one man in a private automobile blocks a street car or bus carrying 20 to 100 people. Perhaps the man who never uses public transportation vehicles can afford to be indifferent about blocking traffic. But how few people there are who come in this category. While a great many people own automobiles, the number who use them habitually when traveling on congested city streets is comparatively small. Traffic counts have shown time after time that upward of 75 per cent of the traffic is being carried by public conveyances. The man who selfishly delays them today is likely tomorrow to be a passenger indignant at a similar action of some one else. This is a point which can well be emphasized by the transportation companies in their publicity work.

Detroit's Mayor Is Right About the Jitneys

MAYOR SMITH of Detroit has taken a strong stand on the jitney in Detroit. That is as it should be. Despite this the issue has been complicated by further court action. Offhand it would seem that there could be only one answer to the question—the answer Mayor Smith has stated most emphatically. He wants the present jitney ordinance strengthened and the jitneys thrown off the streets altogether. It is an answer so preponderant in the weight of the evidence behind it that it appears queer the issue should arise at this time. How the question did arise anew is best told in the article elsewhere in this issue.

The plea does seem a little ingenuous that was made by the spokesman for the jitney drivers, to the effect that the move was unwise from a civic standpoint

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arbitrarily to order $500,000 worth of rolling stock off the streets when transportation facilities are none too plentiful." Opposed to this, of course, is the statement of H. U. Wallace, manager of the municipal railway, about the arrangements he has made for taking over the jitney traffic. But the action of the city was not hasty. The case has long been in the courts and the jitney men had fair warning. For the present the jitneys are still running under a temporary restraining order. It is another respite they have achieved—nothing more. In the end the Mayor's idea of entire elimination of the jitney will prevail. Particularly in the case of a municipal railway is his argument irrefutable that if the railway is to give the best possible service at the lowest possible fare it should have a monopoly. In no other way can that end be secured. The strange thing is that at this late day it should be necessary to reiterate this self-evident fact. As the Mayor has so aptly pointed out, Detroit, if it needs to do anything, needs to strengthen its anti-jitney ordinance.

Ways Exist for Saving Some of the Little Interurbans

LAST year witnessed the dropping out of service over a number of miles of lightly traveled interurban track. This spring has seen some more of the investment in the smaller interurbans wiped out. Does this mean that the small interurban roads have had their day? A few instances like this can hardly be as significant as the failure of the Union Bus Terminal at Indianapolis, and no one will say that the day of the motor bus is at an end because its use was not applied wisely in some instances.

Too many of these unfortunate interurban lines were built with the hope of creating an abnormal riding demand in a community too limited in population and possibilities really to need them. Some of these smaller routes have been kept in operation by means of common financing along with more successful trolley lines. Perhaps for a time they paid their way, for the novelty of the new means of transportation may have brought on a period of overstimulation, but in such a case the let-down was all the harder.

If these little fellows are not all doomed, what can save them? That depends somewhat on the individual road and on the community it serves. The possibilities of passenger service in a purely agricultural community are rather meager, yet a route may be so situated that it can give a superior type of freight service. In urban communities the prosperity of these lines depends almost entirely on the prosperity of the various industries in the cities served.

If there was a time in these unsettled years when an interurban management could calmly map out plans for the future it is now. Wages and material prices have approached some semblance of stability, many of the misunderstandings under commission regulation have been cleared up, and the limitations of bus competition have been pretty well demonstrated. In addition there are examples of what many successful managements have been able to do by extensive modernization of equipment, roadbed and terminals. So there is precedent for and a record of what to expect from almost anything the management may want to try.

These small interurban lines need not die off. If there was something more than a mere gamble that set them going in the first place, it must still be there if the right means are used to give it new life.

Constructive Thinking Just as Prevalent as Ever

"THERE'S nothing new under the sun," sang the bard. Perhaps he dealt with things spiritual rather than material, but even on this ground there may be found those who would be disposed to question his words. In the field of invention, for example, we find that genius still manifests itself in new and varied garb. Years ago we were told that all was up with the inventing business; that everything worth developing had been trotted out and placed on exhibition and that naught was left for the erstwhile man of ideas save to spend his declining years in saddened retrospection. But the proponents of this fallacious reasoning have been confounded. Today more worth-while ideas are born per minute than ever before.

It would not seem reasonable to suppose that the electric railway industry has escaped this well-spring of constructive thinking. There have been and are many forward-looking men who have gazed on the business of transporting their fellows and found it good. From these sources have come the inspirations for the Grand Rapids cars, the Philadelphia plan for co-ordinating every conceivable form of public transportation, the C.E.R.A. standardized freight cars, the Pittsburgh plan for rewarding employees who submit valuable suggestions—in short, all of the progressive movements which have tended to give the lie to the dirge that the industry is dying by inches. But there is ample room in the choir loft for many more singers with persuasive voices. And there is also a need for a more keenly attuned ear on the part of many railway managements, for often the finest singer renders his *magnum opus* in pianissimo.

Ideas are to be had for the taking. There should be no wilderness requiring the strident shouts of a prophet. In a field of activity which has lagged behind, for whatever reason, there is no room for petty bickering, for small thinking, and especially for executive deadwood. Invention is dead—Long live Invention!

Cleveland Convention Bids Fair to Exceed All Others

EXPECTATIONS that the Cleveland convention, to be held next October, will be the largest ever held by the American Electric Railway Association now appear to be more than justified. At the meeting of the exhibit committee held in Cleveland this week it was found necessary to revise the arrangement of the exhibit space to care for the requests already made. This action was taken even though the original plan for the convention called for a considerable increase in space over that sold at Atlantic City last year.

Plans for the technical program have not yet been announced in full, but it is to be assumed that the papers and addresses will be fully in keeping with the rest of the arrangements. The improved outlook in the industry and the many problems that merit discussion will prompt many to do their part toward making this convention the greatest in the industry annals.

It should be unnecessary to urge attendance at a convention such as this. Geographically, the location should attract many who have not been present at meetings in recent years. Instead of bringing up arguments why one should go to the convention, this year it is going to be the reverse—and it will be difficult to find reasons why one should not go to Cleveland.

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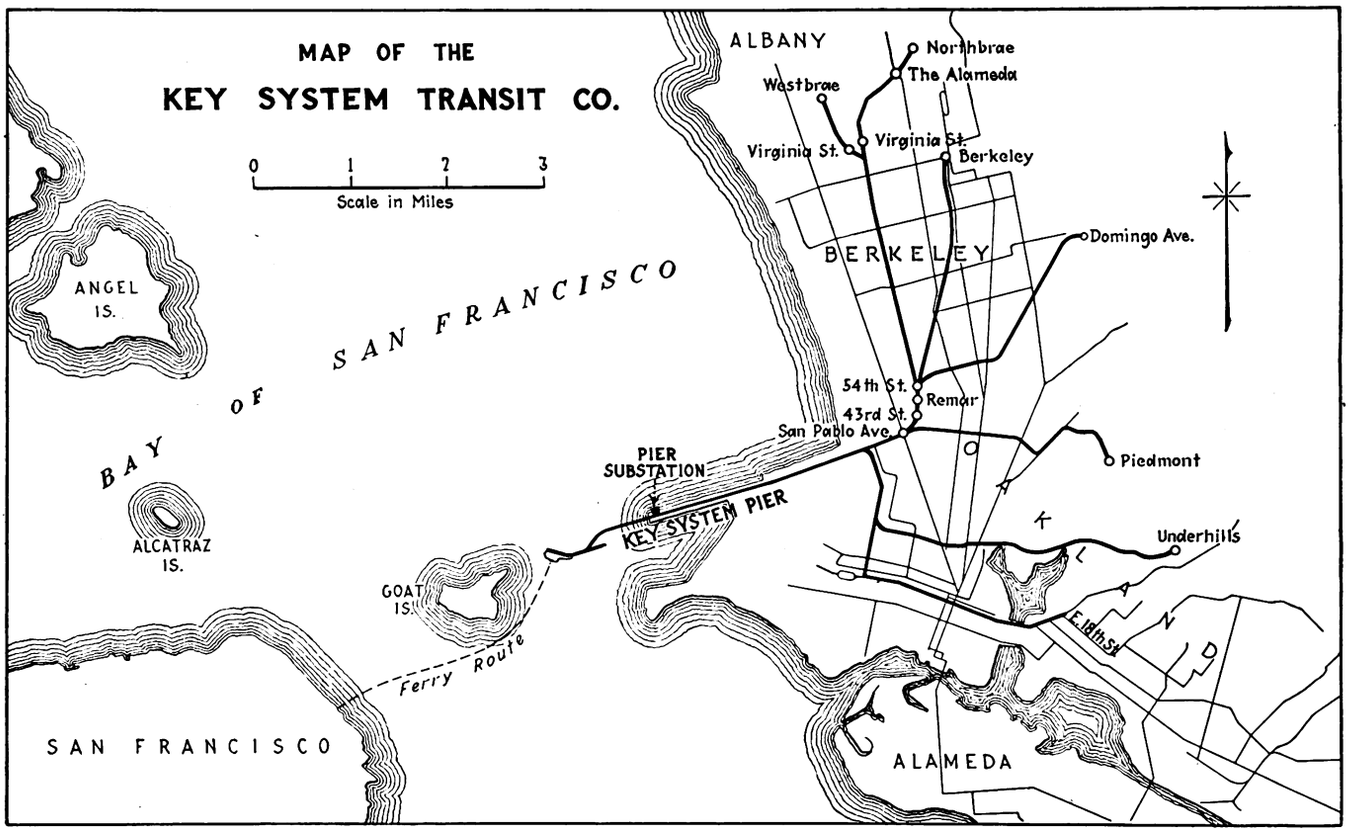
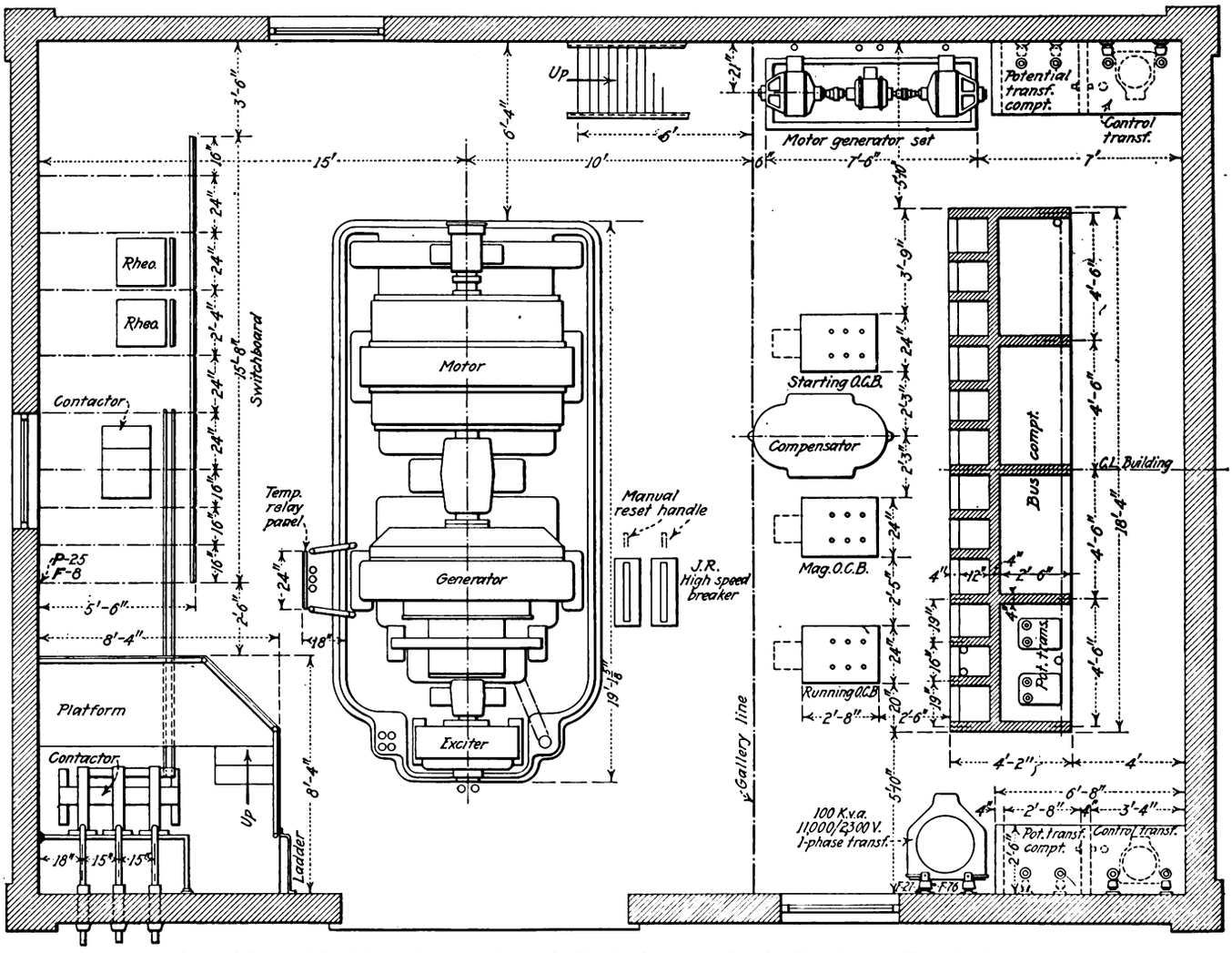


Outline Map of the Key System Transit Company Showing the Location of the New Pier Substation



Ground Plan of the Pier Substation Recently Put in Operation by the Key System Transit Company

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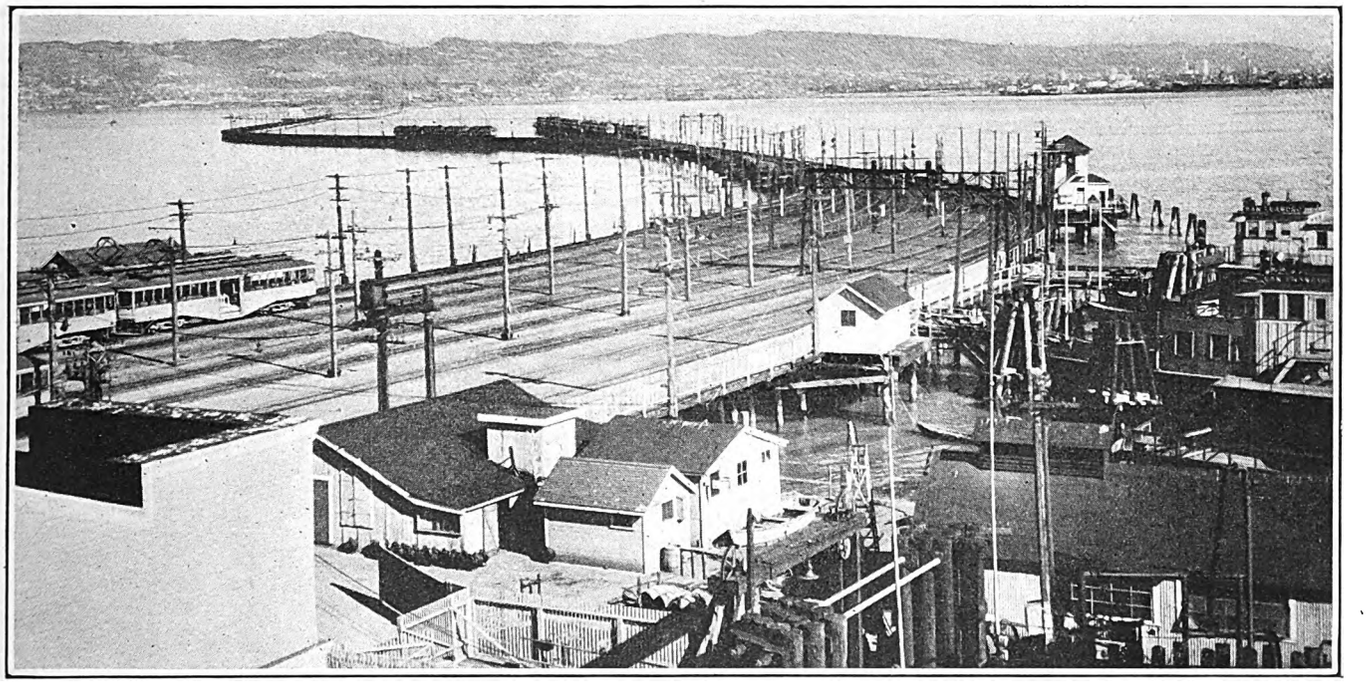
Key System Transit Company Completes 1,500-Kw. Substation

Motor-Generator Used with Automatic Control Equipment that Allows 300 per Cent Overload Until Windings Reach a Predetermined Heat, at Which Point Load Is Automatically Relieved to Prevent Overheating — Set Can Also Be Controlled from Remote Point

By H. P. Bell
Chief Engineer Key System Transit Company, Oakland, Cal.



Where the Key System Transfers Its Passengers to the San Francisco Ferries, 3 Miles Out in San Francisco Bay

The Oakland and Berkeley hills can be seen in the background. The new 1,500-kw. substation constructed to handle this important traffic can be seen halfway inland toward the shore. It is located about at the point where the wooden trestle joins the causeway

RECENTLY an interesting application of automatic substation equipment has been completed by the Key System Transit Company of Oakland, Cal. This system is part of the company's trans-bay service between San Francisco on the peninsular side of San Francisco Bay and the nine different cities which are served on the continental side of that body of water. This trans-bay service consists of a combination ferry boat-interurban train service in which passengers starting from San Francisco ride a distance of 2.9 miles by ferry boat and then transfer at the Pier Terminal to one of a number of trains bound for diverse destinations in the continental or East Bay territory, as shown on the accompanying diagrammatic route map. The Pier Terminal is located at the extreme westerly end of a pier which extends approximately 3 miles into the bay from the continental shore line. This pier is composed of about 2 miles of solid earth fill and 1 mile of trestle structure.

Trains consisting of from one to eleven cars leave the Pier Terminal and follow one another on a 50-second headway. Upon reaching the mainland the lines fan out to their respective destinations. At the same time that each set of trains is leaving the Pier Terminal with passengers from San Francisco another set is arriving with passengers who transfer from the trains to the ferries bound for San Francisco. In this manner 638 trains per day and 20,000,000 passengers per year are handled through this throat of the system. It was to meet the exacting demands for proper power service to this most important part of the system that the new substation was installed.

This application called for a most reliable installation which would operate successfully on large overloads for short periods, and when overloaded to the safe temperature limits of the equipment, would "back off" from the load but still hold operating voltage on the line until a sufficient time interval had elapsed to reduce its temperature, and then again take up its overload, if necessary. Thus a motor-generator set, with shunt-wound generator, with special control and other features described later, was selected to meet the requirements of this particular application. The installation as now completed will be able to handle the future

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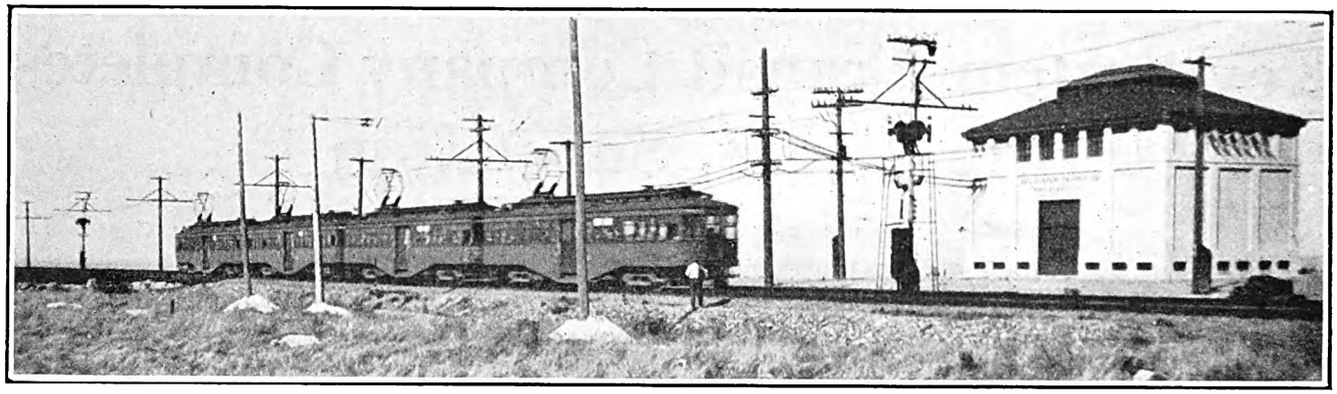


A Four-Car Train of the Key System Transit Company Passing the New Substation Located at the End of the Earth-Filled Portion of the Key System Pier Well Out Into the Middle of San Francisco Bay

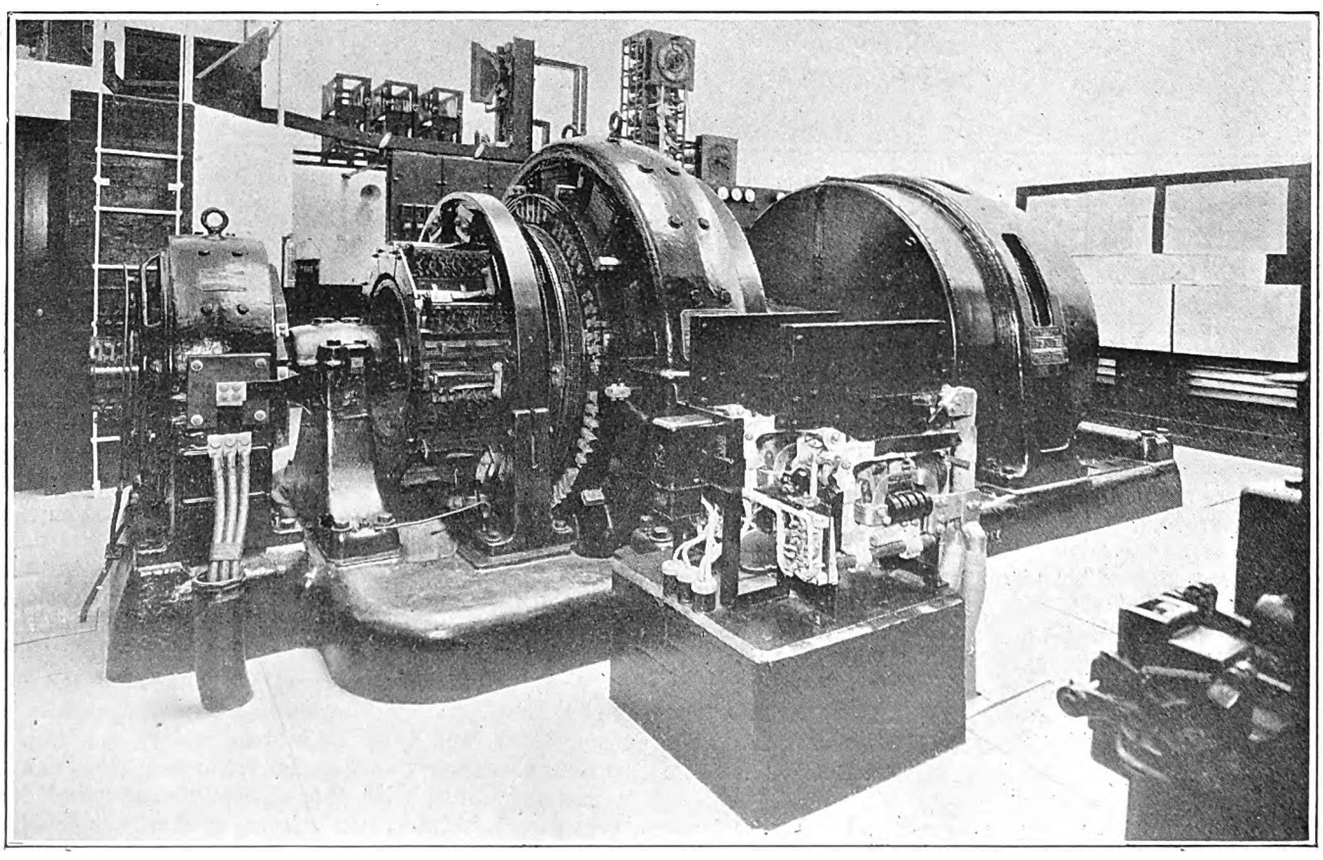
development of this portion of the system by the addition of forced ventilation when required.

Addition of this station permitted the removal of $11,000 worth of copper feeder cable and decreased the feeder losses in this section from 22 per cent to 9.6 per cent. The operating voltage was also increased, which allowed a higher speed of operation of the trains, thus increasing the track capacity in this congested territory by 11 per cent. The station was placed in operation early this year, and the time has been too short on which to base performance data. Its operation, however, has been thoroughly satisfactory and capable of meeting the estimated requirements.

The new substation is located at the westerly end of the earth fill portion of the pier, approximately 2 miles from the shore of the mainland. The building is practically surrounded by salt water, with its floor line 7.7 ft. above high-tide water level. Great care was necessary in the construction and installation to combat and overcome the effect of salt water and salt air. Proper consideration was given for earthquake hazard in the construction and support of the building. The structure, as shown in one of the illustrations, is of reinforced concrete, built on concrete piles, which were driven practically to the point of refusal into the underlying hardpan.

The ventilation is supplied through three series of louvers, one just above the floor level, one just below the coping, and one in the monitor roof. These furnish an abundance of fresh air with good circulation. Provision is made for future addition of forced ventilation as found necessary to delay the action of the temperature overload control.

The equipment, furnished by the General Electric



The 1,500-Kw. Synchronous Motor-Generator Set Installed in the New Substation of the Key System Transit Company
In the immediate foreground can be seen the two type J.R. high-speed circuit breakers that when closed short circuit a current-limiting resistance. Upon overload, these breakers will open in 0.015 second.

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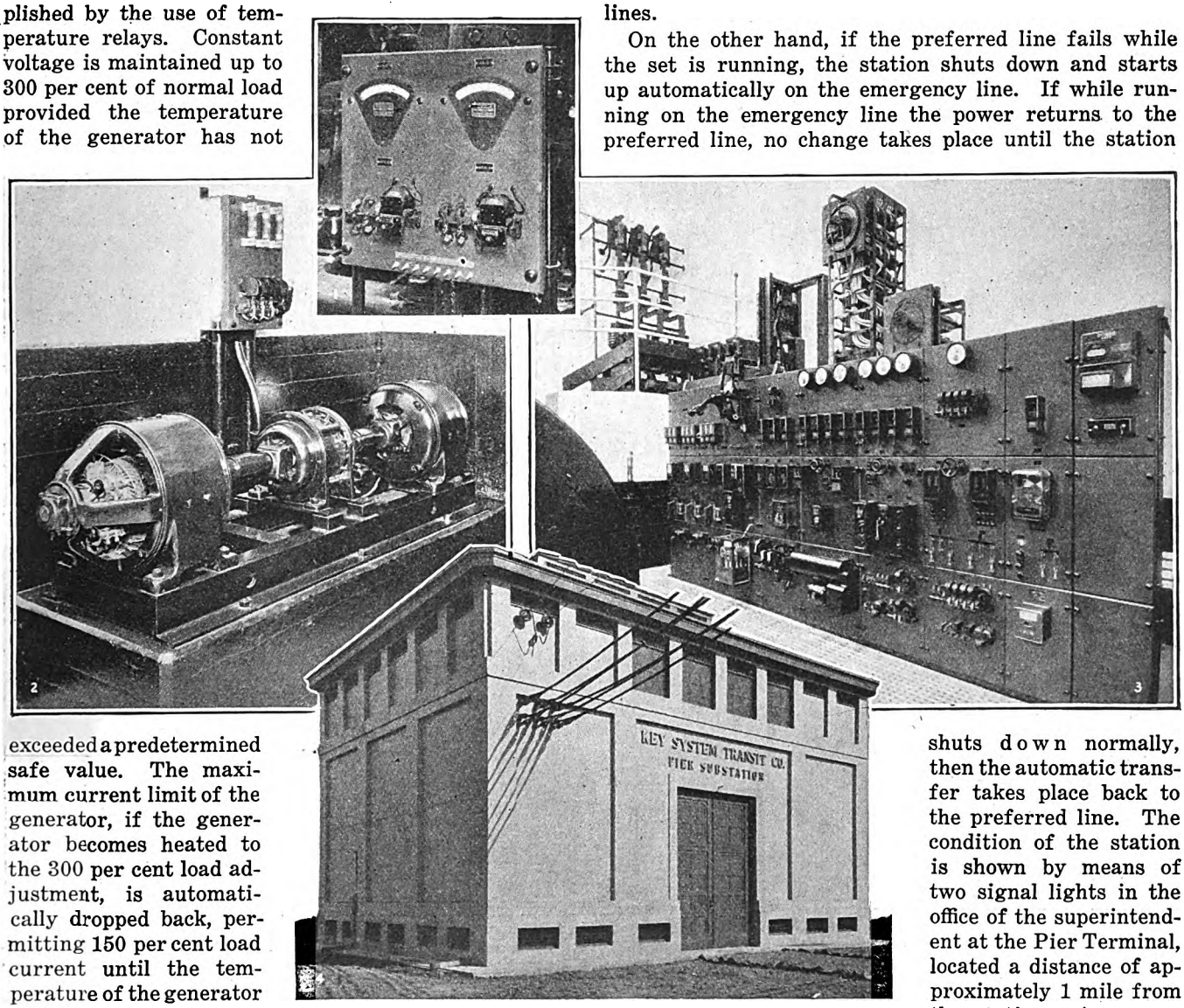
Company and installed by the Key System Transit Company's forces, consists of a 1,500-kw., 11,000-volt a.c. 600-volt d.c. synchronous motor-generator set and the necessary auxiliary and control apparatus to make its operation completely automatic after the starting impulse is given. Control power is obtained from either of two incoming 11,000-volt, three-phase, 60-cycle lines and the equipment is arranged to operate selectively on either of these lines.

The non-overloadable feature of the station is accomplished by the use of temperature relays. Constant voltage is maintained up to 300 per cent of normal load provided the temperature of the generator has not exceeded a predetermined safe value. The maximum current limit of the generator, if the generator becomes heated to the 300 per cent load adjustment, is automatically dropped back, permitting 150 per cent load current until the temperature of the generator reaches a second predetermined value. If the current remains at the 150 per cent value until the temperature of the generator reaches a third predetermined point, the maximum current is again automatically dropped back to the 100 per cent normal load current until cooling of the generator automatically makes possible the restoration of the higher limit points. If, however, the generator continues to rise in temperature at normal load, the set will shut down and be locked out. This condition will not obtain unless some abnormal condition prevails.

The equipment is arranged so that it may be started either by remote control or automatically. Either of the incoming lines may be used in emergency. The equipment is designed to take power normally from the preferred line, and the closing of these disconnecting switches energizes the control power transformer and the line side of the line breakers. If the preferred line should fail when the station is not running two relays open and a third relay is energized so that the station may start from the emergency high-tension lines.

On the other hand, if the preferred line fails while the set is running, the station shuts down and starts up automatically on the emergency line. If while running on the emergency line the power returns to the preferred line, no change takes place until the station shuts down normally, then the automatic transfer takes place back to the preferred line. The condition of the station is shown by means of two signal lights in the office of the superintendent at the Pier Terminal, located a distance of approximately 1 mile from the station. A green light indicates the normal operation of the station, whether running or shut down. A red light indicates a lockout or that the station requires manual operation before it can be started.

The coil of the overload relay is connected to the secondary of a current transformer, the primary being in the d.c. circuit. A potential is thus induced in the secondary only upon a very rapid rise of direct current, thus differentiating between a short circuit and a rapid increase in normal load. If the d.c. breakers are tripped out due to an ab-



Control and Main Switchboard Equipment Provides Many Automatic Devices for Substation Operation

No. 1. The temperature control panel on which are mounted the devices that prevent the motor-generator set from overheating.

No. 2. The motor-generator set that boosts or bucks the excitation field of the main generator, thus regulating the voltage.

No. 3. The main switchboard showing many of the automatic control devices for the automatic operation of the new 1,500-kw. station of the Key System Transit Company.

No. 4. The substation building is constructed of concrete, non-reinforced. This building is well out in the middle of San Francisco Bay, being at the end of the earth fill of the Key System pier. The main machine floor is 7.7 ft. above high tide. Particular thought is given to salt water and salt air conditions and to the earthquake hazards. Concrete poles are used.

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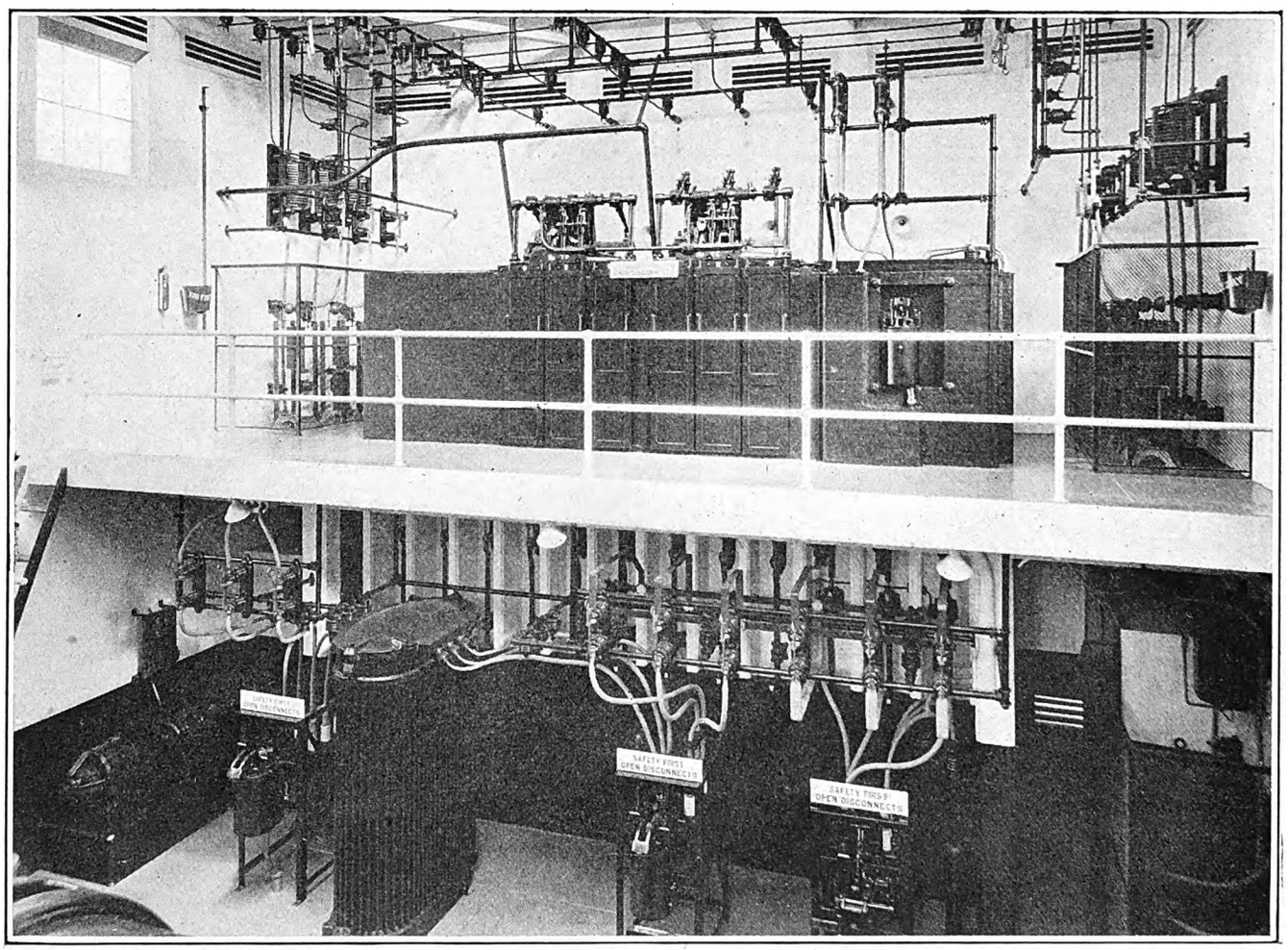
normal load condition or short circuit, the breakers will automatically close after a time delay of 30 seconds, provided the abnormal conditions have disappeared.

The set is shut down by operation of the time switch, or if the set were started from the remote control station, it must be shut down from that station.

A special feature in this installation is the voltage regulating equipment, consisting of a small motor-generator set, which either boosts or opposes the field of the d.c. generators, depending on the excitation of the small generator attached to the control set.

under-voltage connection to the d.c. bus, sudden increase in feeder current, reclosing feeders on short circuits or severe overload conditions.

The building is of poured but non-reinforced concrete. Only the slabs used for the horizontal compartment were precast. Transite inserts are used as barriers between the line and the load insulators of the oil circuit breakers. Construction of the switch cells with rigid structures at the end permits the oil circuit breakers being installed in compartments open on both sides, thus improving the conditions for maintenance.



Showing One Side of the New Key System Automatic Substation

In the lower left-hand corner is seen the motor-generator set used for regulating the voltage of the main d.c. generators. Near this is the starting compensator, and on either side of the compensator are the three automatic a.c. switches used in starting. On the gallery is the high-tension room, showing the H-type switch compartments and the bus structure.

Two type J.R. high-speed circuit breakers are connected in parallel in the negative side of the generator. Under short circuit conditions, the circuit breakers open in 0.015 second. These circuit breakers bridge a heavy resistance, which reduces the current to the commutating capacity of the generator.

The equipment is designed to afford automatic protection against sixteen abnormal or normal conditions that will prevent the proper operation of the set. These sixteen features are overspeed, low voltage on the a.c. lines, overload on the a.c. lines, motor field failure, wrong polarity, overheated bearings, single and reverse phase starting, overheated a.c. machine winding, underload or reverse power on the d.c. side, over-voltage on the d.c. side, d.c. ground or flashovers, d.c. under-voltage, single unbalanced or reverse phase operation,

The station was designed and installed by the railroad company under the general direction of the chief engineer. F. M. Morgan, construction engineer for the company, had complete charge in the field of the building construction and the installation of equipment.

Divided Seats for Lake Shore Line

CHANGES in the seating arrangement of cars of the Lake Shore Electric Railway will be made in the near future with a view to increasing passenger comfort. The present type of single seat which accommodates two persons will be replaced by a double seat with two individual spaces. One of the type now under consideration is made of green plush material, 38 in. long, with a small arm in the center to divide the space.

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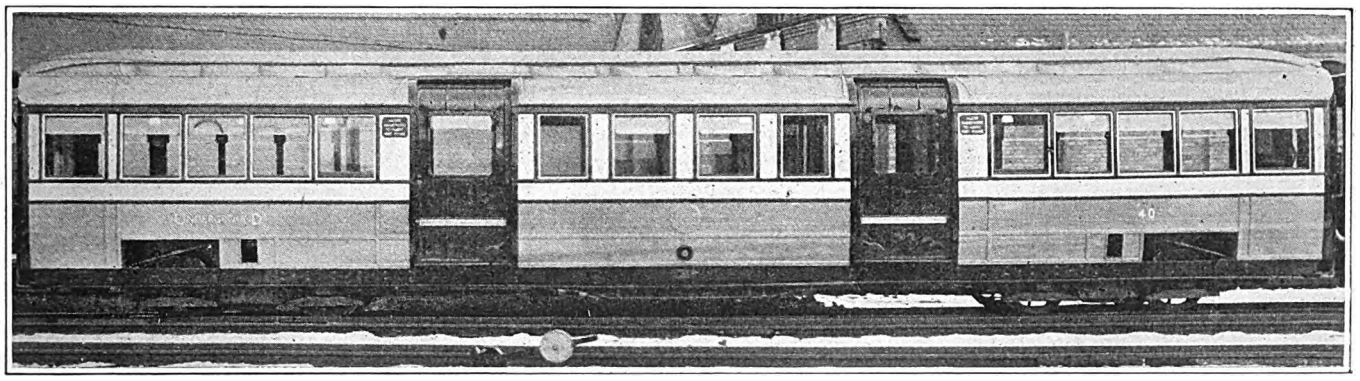


Side View of Altered Car of C. L. R.

Extensive Modernization Program for London Underground

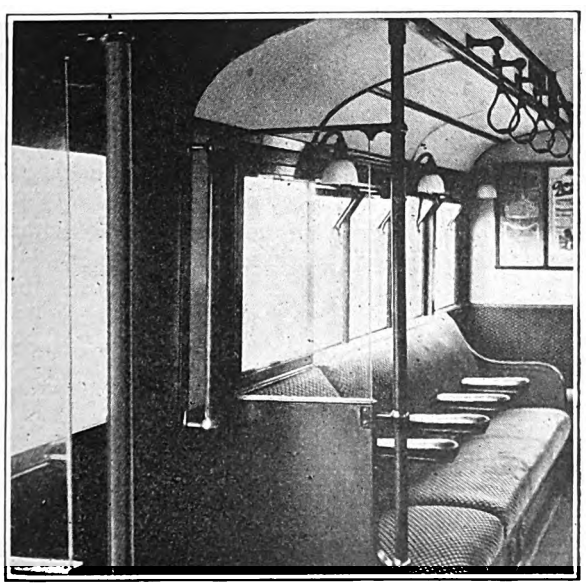
Central London Railway Is Making Sweeping Alterations in Many of Its Wooden Trail Cars—Increased Operating Efficiency Is Hoped For—City and Hampstead Lines Have Adopted a New Standard for Tube Cars—Many New Cars Purchased

FOR several years the London Underground electric railway companies have been carrying out systematic improvements in the types of cars used on their lines. New cars purchased have been designed in accordance with up-to-date developments in car-building practice and much of the existing rolling stock has been modernized from time to time. With one notable exception all of the new cars which have been purchased in recent years have been necessitated not by the scrapping of old ones, but by railway extensions. The exception was in the case of the City & South London Railway.

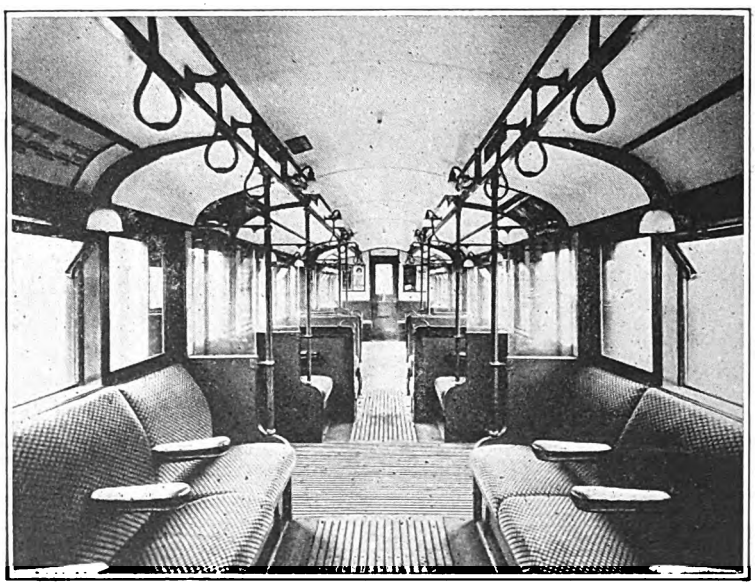
When the small tubes of that company were enlarged to correspond to the standard tube diameter more than a year ago it was found necessary to retire all the then existing rolling stock, consisting of small wooden cars hauled by electric locomotives, these being replaced by the regulation steel Underground cars operated on the multiple-unit system. A junction was constructed with the Charing Cross, Euston & Hampstead Railway near Euston and a service of through trains over the two lines started.

Modernization Program Limited to Central London Railway at Present

The present modernization of old cars of the underground lines extends only to the Central London Railway. A brief sketch of the work that is being done by this company appeared in the issue of the ELECTRIC RAILWAY JOURNAL for June 19, page 1050. With the exception of 24 steel motor cars, one of which is shown in an accompanying illustration, this rolling stock consists of wooden cars built mainly of teak, with metal outside sheeting, and has been in



Draft Screen at Side Entrances



Interior of C. L. R. Cars After Alterations

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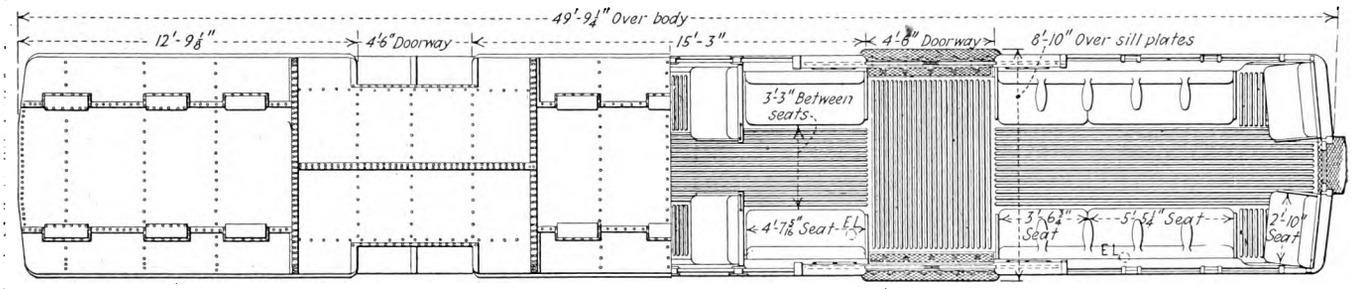


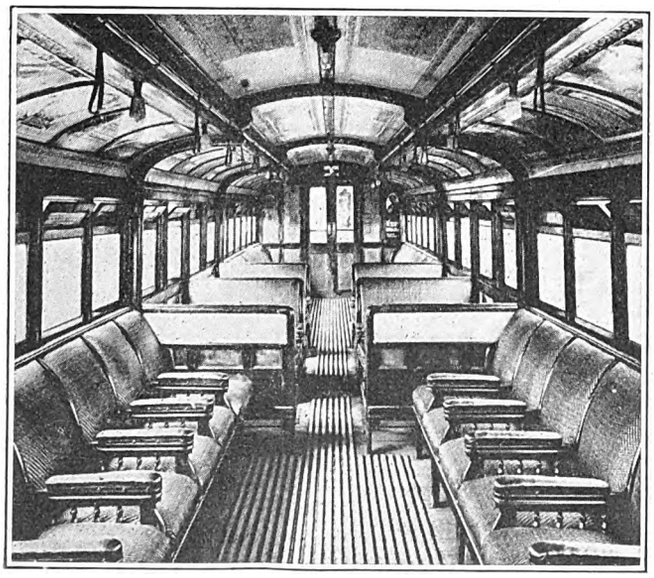
Floor Plan of Altered Car Adopted by Central London Railroad

service since 1900. Through careful maintenance these cars are still in excellent physical condition, especially as they have been operated entirely within the tubes and have thus escaped the rigors of unfavorable climatic conditions.

Prior to modernization the cars had open-end platforms and no side doors. The work being undertaken consists of closing in the end platforms and cutting two 3-ft. 3-in. doorways at points between the trucks on the trail cars and a double doorway 4 ft. 6 in. wide in the middle of the motor cars. These doorways will be provided with sliding doors, air-operated. The control of doors will be pneumatic, two small pipe lines being run throughout the train. So that closing of the doors may be sufficiently accelerated an electric control will be superimposed, but this control will be of a secondary nature and will not be essential to the door operation. All doors will of course be interlocked, giving a lamp signal to the guard when all doors are closed. The guard will in turn transmit a bell signal to the operator of the train. Operation of the door gear will be effected through the use of a vertical-faced rotary valve with a detachable handle. Piping to the pneumatic door system will be of copper as far as possible, to avoid trouble hitherto invariably experienced with new iron pipe due to scale, cuttings, etc.

Draft Screens Are Provided

Side doorways will be provided with semi-frameless draft screens of heavy plate glass attached between the side of the body and vertical grab poles running from floor to monitor. These grab poles constitute vertical struts and are made of steel pipe covered with thin black fiber tubing where handling will occur. The design of the draft screens is shown in an accompanying illustration.

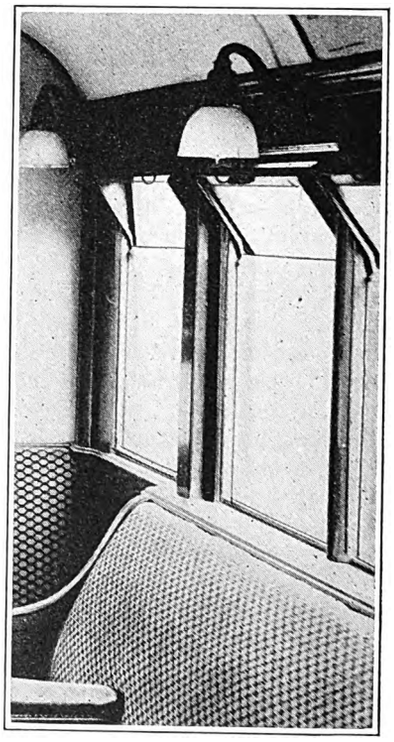


Interior View Before Alterations Had Been Made

Existing framed windows in the cars are being replaced with semi-frameless main windows with semi-frameless inward-swinging top lights controlled by a dead-centered spring giving open and closed positions.

Peculiarities in Door Design

Owing to the small dimension between the cant rail and the floor on the tube cars it is necessary that the side doors should be curved at the top portion to conform to the roof line. This involves not only a discontinuous cant rail, which at the doorways must be replaced by a steel-built lower roof, but also makes it impossible to hang the doors from the top. The standard underground arrangement of a larger bottom roller on ball bearings and a sliding guide at the top has been adopted. In order to maintain the contour of the door these latter are being made of a cast aluminum alloy known as Alpax.



New Top Glass for Ventilation

The 24 steel motor cars previously referred to are at present provided with closed ends fitted with hand-operated swing doors and swing side doors located near the forward or motor truck. These latter doors are controlled by means of a door check and are locked and unlocked automatically by the operation of the end doors. Eight wooden motor cars have recently been converted to the same type as the steel motor cars, but it is expected that the doors of the 32 motor cars will soon be converted to the standard pneumatically operated type.

The seats in the modernized cars will be of a well-sprung type, upholstered in moquette, and will replace the old seats of pegamoid, rattan and wood. Additional cross seats will be provided at the newly constructed ends, a slight extension of the floor behind the headstock at the corners being made to accommodate these seats. The interior decoration of the cars will be in

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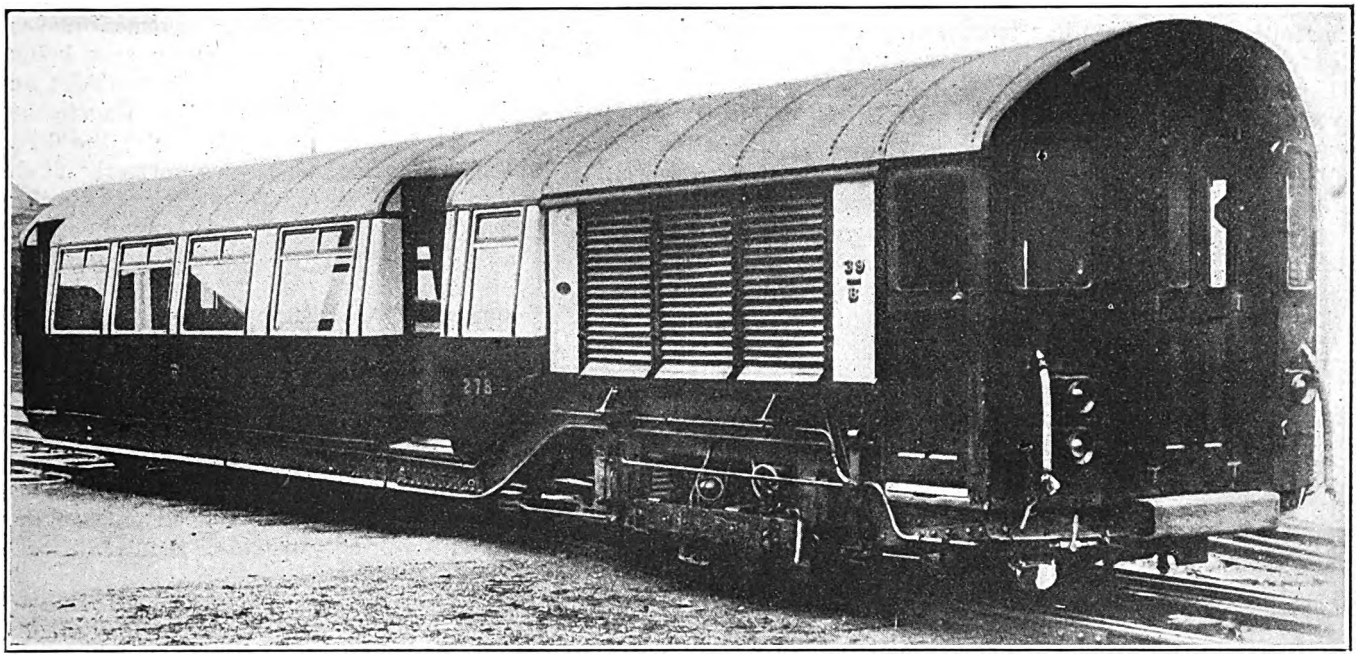


One of the 24 Steel Motor Cars

green and mahogany, giving a bright and cheerful appearance. Exteriors will be painted red and green.

Lighting Is Improved

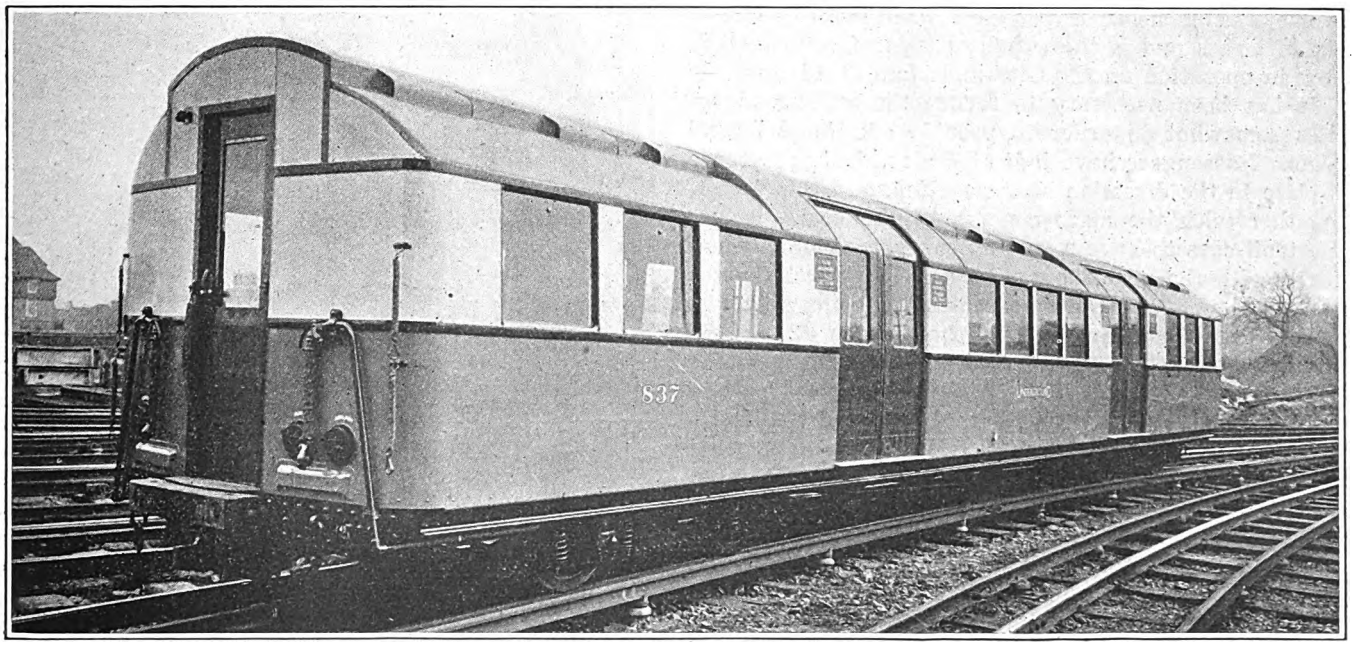
Improvements are being made in the lighting arrangements of the cars. The present monitor rail lighting is being replaced by bracket lights with Superflux type shades. These are located along the cant rail, except at the doorways, where similar lamps in ceiling fixtures will be used. Better distribution of light is obtained by making these changes.

The modernized units are being arranged with insulated negative wiring to permit of their being used at a later date, if required, with an insulated return, as is usual on the Underground railways. The negative wire is being temporarily earthed so that the cars can run on the existing earthed return used on the Central London Railway.

Some reconstruction of the trucks may be carried out, experiments in this direction being in progress at the present time. No change is being contemplated just now in the general motive equipment of the Central London Railway, although consideration is being given to the necessity of increasing train lengths and speed. This will eventually require intermediate motor cars and some change in control and other equipment. In all probability the present changes in the cars will make possible considerable improvements in operating schedules, due to the great facility with which loading and unloading may be accomplished.

City and Hampstead Lines Adopt a New Standard

For through service over the lines of the City & South London and the Charing Cross, Euston & Hampstead Railways 197 new cars were recently purchased. These are of an improved type designed to form a



A New City and Hampstead Trail Car

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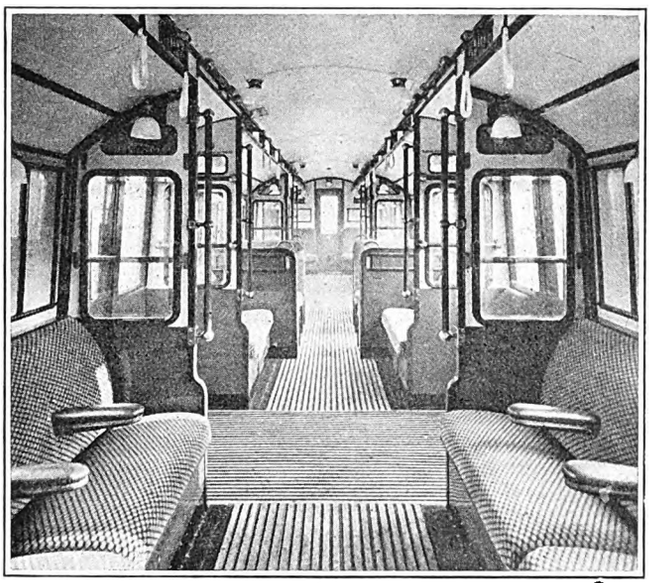
standard for future use. Since their delivery a further order for 127 similar units has been placed and delivery of a large share of these has now been made. They are to be used on the Morden and Kennington extensions, south of the River Thames, of the two railways named above. These lines now have a total of 505 cars, 324 of which are of the new standard.

To arrive at this standard much the same method was employed that was conceived in this country by the Grand Rapids Railway, namely, that of asking various manufacturers to build sample cars embodying all possible improvements in car design. Orders were



Interior of a Standard City and Hampstead Trail Car

placed with five leading British manufacturers of rolling stock for single cars, each to be to Underground specification with respect to dimensions and general principles of design, but to embody any special features that the manufacturers might themselves devise. A sixth car was built to specifications formulated by Underground engineers. These six cars were later submitted to the exacting test of service in the tubes and after an exhaustive trial a new design of car was evolved. This incorporated the salient features of the six test cars and is the standard type of rolling stock now in operation on the City and Hampstead lines.

It has been necessary to reduce the seating capacities somewhat in order to provide additional lateral seats. Passengers have indicated a marked preference to face in the direction of car motion, and this factor, together with the arrangements of the doors, causes the trail cars to have a seating capacity of 48 as compared with the previous capacity of 52. In the motor cars 30 seats are provided and in the control trailers 44, these figures comparing with the former 42 and 52 respectively. The seats, upholstered in a fawn-colored moquette, are of the spring-borne type. Special attention has also been given to the lighting, and the lamps, of shadowless design, are distributed in a manner that permits of a soft yet brilliant light being diffused equably through the car.

The arrangement of the doors governs the general principles upon which the City and Hampstead cars have been designed. Instead of platforms and collapsible gates at each end of the car, there are two pairs of sliding doors, as on the modernized Central London cars, these being located to divide the interior of the car into three sections. This arrangement makes for expeditious ingress and egress, every seat being conveniently near a door. Each doorway provides an opening of 4 ft. 6 in., the total width of opening to the platforms per car being 9 ft., compared with the 6 ft. afforded by the narrow end doorways formerly used. Operation of the doors is pneumatic, practically similar to the system employed on the modernized cars described above.

A very noticeable feature of the new cars is the smooth and quiet performance in operation. The rattles and other harsh noises frequently concomitant with the operation of trains in tunnels have been largely eliminated. This improvement was effected through experiments and research conducted by Prof. A. M. Low, in which the use of "sound photographs" played an important part. The bogies are inclosed in asbestos shields and special packing devices have been adopted in the bogies themselves and in other parts of the car.

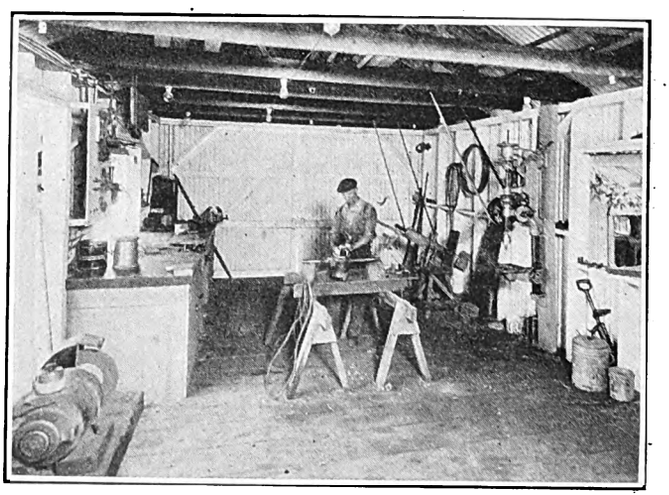
First Aid Teams Popular in Chicago

PUBLIC appreciation of the good work being accomplished by the First Aid Drill Teams of the Chicago Rapid Transit Company is evidenced by the fact that close to 66,000 persons, including hundreds of school children of impressionable age, have attended demonstrations of first aid methods in less than four months. Co-operating with the company's public speakers' organization the teams gave a total of 51 educational talks and demonstrations in the first three weeks of May.

In popularizing the work in the schools of the city, it is believed that not only will the pupils be equipped to render first aid, but they will also help to spread a knowledge of these humanitarian principles among others.

Dr. Hart E. Fisher, chief surgeon of the Rapid Transit Company, is in charge of the various teams.

Track and Line Departments Have Own Maintenance Shop



Work Room Shared by Track and Line Departments in Dallas

TRACK and line departments share a small maintenance shop for their equipment and tools in Dallas. As can be seen in the picture, the shop includes a metal saw, a drill press, grinding wheels, bench tools and equipment for testing meters used in the line department.

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All Coupons at the Different Stores Were Distributed and Collected by Young Lady Employees

How Mrs. Shopper Rides*

Cleveland Conducts Survey of Means by Which Shoppers Reach Principal Stores—Employees of Stores Collect the Data—Electric Railway Found Principal Agency Used

By Ralph W. Emerson
General Manager Cleveland Railway

ONE of the fundamental factors in determining the best method to pursue in handling the problem of traffic congestion in the downtown area in any large community is, first, to determine the relative importance of the different modes of transportation.

A very large percentage of the people entering and leaving the main business section of a city are shoppers in retail stores. Inasmuch as retail stores front for the most part on congested main thoroughfares, a knowledge of just how these patrons reach the stores will enable city authorities and traffic divisions of the police department to determine how congested streets should be used. Such information also will have a commanding influence upon retail merchants in securing their cooperation with the city and its traffic officers. Merchants unfamiliar with the causes and effects of traffic congestion are opposed to the total or even partial restriction of automobile parking. This attitude on their part is largely due to the fact that they see hundreds of automobiles pass their stores and relatively few street cars, and they have gained the impression that automobiles transport the greatest number of their patrons.

Unlimited parking or even the much-abused one hour privilege has brought about a solid line of autos on both sides of our main thoroughfares in the congested district, the occupants of which are not necessarily trading in the store in front of which their auto is parked. Later arriving auto patrons, unless chauffeur driven, do not have ready access to the store where they wish to trade and must go elsewhere. This defeats the very thing the store owner had hoped to accomplish by his insistence that parking be permitted. If, however, he is a thoughtful man he will take cognizance of what is daily transpiring and awake to the fact that the greatest number of his auto patrons are not benefited by the parking privilege.

Parking Drives Shoppers Away

Promiscuous parking is the greatest contributory cause to congestion and the slowing up of moving vehicles. Herein lies a very real danger menacing downtown merchants. It is a danger that many of them fail to see, namely, the danger of decentralization, or driving business to the outlying and less congested business centers. It follows that street car riding shoppers will become more and more reluctant to shop downtown if the progress of the street car is impeded to the extent of exhausting the patience of the shopper by taking unreasonable time. It also follows that the shopper who drives her own auto dreads the distasteful trip downtown as congestion increases and opportunity to park her auto becomes less and less.

If that is true, then the future of our downtown merchants in the larger cities is dependent upon the rapidity and convenience with which their patrons can reach their stores. Discovering and believing that to be certain truth, many of the larger stores in the centers of business have provided downtown garages for their

*Abstract of paper at annual meeting of Central Electric Railway Association, S.S. *South America*, June 28-July 2, 1926.

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customers, using either motor coach service to and from their stores or supplying chauffeurs to drive private cars to and from their garage.

Many attempts have been made by those vitally interested in the question of traffic congestion to conduct a poll similar to that under discussion in various cities throughout the country. For the most part these polls have failed, or have not been representative, for the reason that it was found difficult or impossible to enlist the co-operation of local merchants. Apparently some merchants fail to realize the importance of looking at facts or of giving them a degree of consideration adequate to influence their attitude toward parking. They are fearful of agitating the matter because they cannot determine beforehand in their own minds what might be the result of restricted parking. Existing conditions are satisfactory to them and any change in the means of travel of various classes of their patrons is unwelcome. Any traffic poll must depend for its success upon a sufficient number of merchants of diversified interests willing to discover how existing conditions may be changed into new and more orderly and more universally beneficial situations.

CLEVELAND CONDUCTS SUCCESSFUL SHOPPERS' POLL

In the city of Cleveland a poll recently made resulted most successfully because it had the approval and enjoyed the co-operation of the forward-looking merchants' association, known as the Retail Merchants' Board, which is a branch of the Cleveland Chamber of Commerce. At the request of the Cleveland Railway, the secretary of the Retail Merchants' Board called a meeting of all members. The purpose of the poll was presented to them, together with a statement that the railway company would bear the entire expense of such a survey, whereupon the board appointed a committee to co-operate with the railway company in the working out of plans and details of the survey. It was decided that the poll would be carried on in 22 stores. These stores were not only the largest in Cleveland, but represented the greatest diversity in goods which they sold. It was further decided to carry on the poll on three days of the week, namely, Tuesday, Thursday and Friday, for the reason that these days are probably the three heaviest days of the week at this time of the year. The dates decided upon were June 1, 3 and 4.

After a consideration of the various ways in which this information might be gathered, it was decided to distribute to the store patrons a ballot with a perforated tear-off corner, as being simple and not apt to cause congestion at store entrances.

The four perforated corners of the ballot, as shown, bear the following language:

1. I came downtown in a motor coach.
2. I came downtown in a street car.
3. I came downtown in a private automobile.
4. I walked downtown.

The work of the survey was conducted by 80 young ladies employed by the various stores affected by the survey. On the Saturday preceding the survey a meeting was held in the Chamber of Commerce library, when these young ladies were given instructions fully informing them as to the purpose of the survey, details of carrying it on and the work which they were to do. In passing, it is only fair to say that the large vote which was secured was due in no small measure to the high caliber of the clerks assigned to this work and the painstaking effort which they put forth to get out as large a vote as possible. These girls were identified by silk streamers bearing the words "Traffic Survey."

Prior to the first day of the poll, ballots and boxes for the reception of coupons bearing the words "Please Deposit Traffic Survey Ballots Here" were distributed to the 22 stores. With the opening of the stores on Tuesday morning these ballots were handed to the shoppers as they entered the store with the courteous request that the patron read the ballot while in the store. As the patrons left other young ladies requested them to deposit their ballots in the ballot box, which was conveniently and conspicuously located at the exit door.

The ballot used by the patrons for the three days was pink in color. A green ballot was supplied to the

Records Were Taken by a Simple Form of Ticket with Four Coupons

employees in the stores affected, and they voted on the first day only. On Friday, the third day of the survey, Woolworth's largest 5 and 10-cent store was added, making 23 stores for that day. A poll was also taken in the Hanna Building, as being a typical downtown office building.

The survey was preceded by considerable newspaper publicity, stating the purpose and explaining the ballot, so that those voting were more or less prepared for it. The distribution of the survey is shown in Table I.

TABLE I—TOTALS OF GREEN AND PINK BALLOTS AT DIFFERENT CLEVELAND STORES

Firm Name	Buses	Per Cent	Cars	Per Cent	Autos	Per Cent	Walked	Per Cent	Total
Ames	434	11.9	2,500	69.0	538	14.8	154	4.2	3,626
Bailey	545	6.5	6,401	76.2	1,118	13.3	343	4.1	8,407
B. R. Baker	103	8.0	519	40.4	595	46.1	74	5.7	1,291
Webb C. Ball	34	7.7	194	44.0	187	42.4	26	5.9	441
Bedell	945	31.9	1,418	47.9	489	16.5	115	3.8	2,967
Bowler & Burdick	11	6.9	60	37.5	83	51.8	6	3.7	160
Geo. H. Bowman	224	6.8	2,578	74.4	561	16.1	104	3.0	3,467
Browning, King	76	12.6	267	44.2	193	32.0	68	11.2	604
Burrows Bros.	130	7.7	950	56.7	471	28.5	122	7.3	1,673
Chandler & Rudd	180	8.3	1,570	72.4	333	15.3	89	4.1	2,172
W. B. Davis	184	8.8	497	52.1	342	35.9	31	3.2	954
Halle Bros.	771	9.7	4,269	53.5	2,657	33.3	288	3.6	7,985
Higbee Co.	2,016	13.6	9,065	61.5	3,301	22.4	350	2.4	14,732
Kinney & Levan	311	16.4	898	47.4	605	31.9	81	4.3	1,895
Lindner	389	15.0	1,238	48.0	818	31.7	135	5.2	2,580
May Co.	1,256	7.0	13,151	73.8	2,812	15.7	633	3.5	17,852
Oppenheim-Collins	160	10.8	905	61.4	334	22.6	74	5.0	1,473
Siegels	61	11.2	322	59.5	137	25.2	22	4.1	542
	165	9.2	1,113	62.1	429	23.9	85	4.7	1,792
Sterling & Welsh	146	8.3	786	44.8	732	41.7	91	5.2	1,755
Stone Shoe	133	9.5	911	65.2	296	21.2	57	4.1	1,397
Wm. Taylor Son	914	8.6	7,301	68.4	2,090	19.6	359	3.4	10,664
F. W. Woolworth	165	7.1	1,701	73.0	320	13.7	144	6.1	2,330
Hanna Bldg	220	8.5	1,332	51.3	872	33.6	172	6.6	2,596
Totals	9,473		59,946		20,313		3,623		93,355
Per cent		10.1		64.2		21.8		3.9	

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The figures given in Table II indicate that of the combined shoppers and employees voting only about one in five uses a private automobile.

Stores Show Different Percentages

As might be expected, the percentage using the various modes of transportation varied considerably in the different stores.

The highest percentage using motor coaches was at the Bedell Company, a high-grade women's apparel shop, where 33.16 per cent of the 2,826 voting used the motor coach. The lowest were patrons of the Geo. H. Bowman Company, a china and glassware store, where 6.48 per cent used motor coaches of the 3,395 voting.

In this connection it might be well to state that the railway company operates but one motor coach line through the territory affected by the 23 stores.

The largest percentage using street cars was at the Bailey Company, a large department store, where 75.48 per cent used the street cars of the 7,757 voting. This

TABLE II—SUMMARY OF FIGURES GIVEN IN TABLE I

Shoppers voting..... 85,657 Employees voting..... 7,698

	Motor Coach	Street Car	Automobile	Walk
Shoppers, number	8,910	53,738	19,551	3,458
Shoppers, per cent	10.46	62.74	22.82	4.04
Employees, number	563	6,208	762	165
Employees, per cent	7.31	80.64	9.9	2.15
Total, number	9,473	59,946	20,313	3,623
Total, per cent	10.15	64.21	21.76	3.88

is without doubt low, for the reason that many of the patrons in this instance were foreigners who did not understand and could not be made to understand what the ballot was for. Without doubt most of them were car riders. This is further borne out by the fact that in the same store more than 90 per cent of the employees used the railway facilities.

The smallest percentage using the street car was at the Sterling & Welch Company, a very high-grade house-furnishing store, where 36.74 per cent of the 1,410 voting used that mode of transportation. The largest number of patrons using private automobiles was also at the Sterling & Welch Company, where 48.29 per cent came in this way.

An interesting feature of the survey is the fact that more than 4 per cent of the patrons in the downtown stores walked to the store, the largest percentage being 12.01 per cent, at Browning, King & Company, and the smallest being 2.48 per cent, at the Higbee Company.

No confusion and practically no delay were found at store entrances, where the ballots were distributed, and in evidence of the satisfaction of merchants it may be noted that not a single one offered a word of adverse criticism, while many of them voluntarily presented letters of commendation.

The results obtained are as accurate as can reasonably be expected and they showed conclusively that the facilities of the local transportation company carry the bulk of shoppers.

Survey Suggests Possibilities of Improvement

Immediately upon publication in the local papers of the figures herein given agitation of radical parking changes was enlivened. Councilmen, the secretary of the Cleveland Automobile Club and the Traffic Commissioner of the Police Department were convinced that a revision with new restrictive clauses of local parking regulations was demanded. The sentiment prevailed that not only is it necessary to eliminate the one hour parking provision on main thoroughfares of the business center of the city, but also the unlimited parking on side and back streets. On these latter streets it is believed an opportunity might be given for shoppers and others to park for brief periods of time.

It is hoped that, with the figures of this poll at hand, disputes and misunderstandings as to the relative importance of the different modes of transportation may be answered and that the survey may act as a starting point to bring about a more equitable use of our main thoroughfares.

Municipal Railway Talk Over Radio

Superintendent Henderson at Seattle Explains Some Phases of Local Operation Little Appreciated by General Public—Citizens Owe It to Themselves and the City to Use Lines Whenever Possible

D. W. HENDERSON, general superintendent of the street railway division of the Department of Public Utilities of the city of Seattle, Wash., has been talking over the radio to the people of Seattle about the municipal railway. He admonishes the public to remember that the street railway is not owned or controlled by a few capitalists. Neither is it owned nor operated by a clique of politicians, but it is owned by the entire public of the city of Seattle. Mr. Henderson said that in order to make it a success and that the very best service possible might be given it is the duty of residents as citizens to patronize the cars and to boost it wherever they can, "as the street railway system of the city of Seattle is at this time one of its best assets."

Mr. Henderson said in part:

"On April 1, 1919, the city of Seattle took over the operation of the street railway system of the Puget Sound Traction, Light & Power Company, consisting of about 220 miles of track, 507 street cars (including freight equipment) the carhouses and shops necessary for the operation of the road and the employees necessary for operating the lines. The city gave in payment for the property $15,000,000 in utility bonds bearing 5 per cent interest. When the city started operating it had no capital to work upon except the revenue collected from the passengers. Previous to the purchase of the road, those in charge at the City Hall held they could operate the lines on a 5-cent fare, pay all operating expenses, meet the principal on the $15,000,000 of bonds and interest thereon and, in addition, give the employees an increased rate of wage over and above that which was being paid by the traction company.

"The first payment on the principal of the bond issue was not to be made until March 1, 1922, but it was necessary to pay the interest every six months. On April 1, 1919, there were 1,876 employees in the service of the railway; on April 1, 1920, there were 2,208; on Dec. 1, 1925, there were only 1,891. Instead of having an amount of money sufficient to pay the interest on the bonds and to meet the operating cost at the end of the first year's operation, there was a deficit of more than $1,000,000.

"There has been paid to the bondholders the sum of $5,256,325 in interest and by March 1, 1926, there will have been paid $4,225,000 of the principal. Up to date

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we have been able to meet all of our bills and obligations, partly due to the fact that the banks of the city were willing to carry our warrants from time to time so as to enable us to meet expenses. Whether it be private or public, there is no large organization such as this which does not at times have to borrow in order properly to handle its business.

"It was plain after the road had been operated for a year that the 5-cent fare would not insure revenue sufficient to meet the obligations which were required and it was found necessary to increase the fare. The first increase in fare was in July, 1920, when the rate was raised to four tokens for 25 cents or 10 cents cash. We operated under this rate until Jan. 9, 1921, when the fare was again increased to three tokens for 25 cents or 10 cents cash. On March 1, 1923, in order to satisfy some citizens who were still under the belief that the system could be operated on a 5-cent fare, the fare was again reduced to 5 cents with a charge of 1 cent for transfer. The opinion was that by reducing the fare enough extra riders would patronize the cars to increase the revenue to meet the obligations. In order to do this, it was necessary to increase the riding 45 per cent. But, from the experiment, we found there was an increase of only 7 per cent, and on June 16, 1923, after 3½ months trial of 5-cent fare, the previous rate of three tokens for 25 cents or 10 cents cash was restored. This experiment caused a deficit of $500,000, and we have been trying our best to overcome this deficit since that time. Under this last rate of fare, however, we were able to secure revenue sufficient to meet the operating costs, the interest on the bonds and the payment of the maturing principal. One thing you must remember—that few large organizations ever attempt to redeem bonds as the Seattle Municipal Street Railway is doing with its bond issue. It is necessary for us to redeem each year the sum of $843,000 of bonds and in addition pay interest every six months. You must also bear in mind that the Supreme Court of the State of Washington ruled, in what is known as the '14 Taxpayers' Suit,' that no general fund money of any kind can be used for the maintenance or operation of the street railway system of the city. Many people are under the impression that they are paying taxes in addition to the car fare. No taxes have yet been paid by the public for the maintenance or operation of the railway.

"Lately there has been considerable agitation regarding the installation of a rapid transit system as part of the street railway. Subways in other cities have cost in the past more than $11,000,000 a mile. Before any steps are taken to build any rapid transit system in the city of Seattle, the matter should be very thoroughly investigated by competent engineers. Unless you have traffic sufficient to load the rapid transit cars practically at all times, there is no chance of any reduction in fare.

"There has been considerable talk about the street railway system becoming obsolete and that buses would take the place of street cars. Experts have come to the conclusion that in any city with more than 100,000 population the street car is necessary to handle mass transportation. There is no question but that buses can be used to good advantage in most any city to feed the street car lines. We are operating buses in the outlying districts in conjunction with the railway and, since they have been in operation, the buses have built up the districts in which they operate. By working both the street car and the bus, there is no reason why any city should not have the service to which it is entitled."

Caring for Increased Traffic in Jacksonville

Business Activity of Florida's Largest City Reflected in Street Railway Traffic—Spray Painting Used Extensively for Cars

CHIEF among the transportation problems in Jacksonville, Fla., during the past year has been to know how to take care of the increased traffic. The reason is that Jacksonville has not only participated in the real estate development of the other cities in Florida, but it has also been the gateway to all of the state for automobile and railway traffic except for the far western section of the state near Pensacola.

Up to last September the company had been in the hands of a receiver since 1919. Then the receivership was lifted and J. P. Ingle, who had been receiver since April, 1925, and previously had been general manager

Island Platforms with End Lights, Installed by City, Speed Boarding and Alighting

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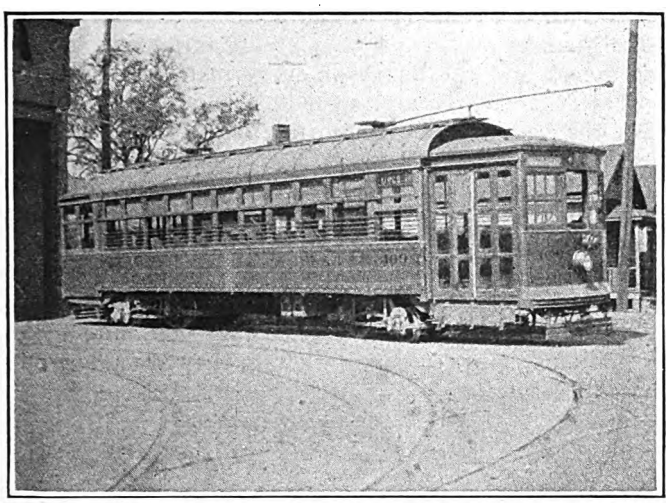
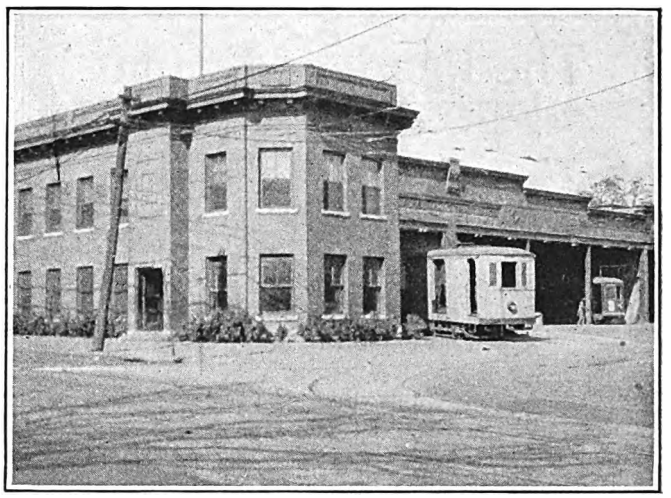


Double-Truck Car Converted to One-Man Operation



Main Carhouse in Jacksonville

under the receiver, was appointed general manager of the property. During the receivership the city of South Jacksonville constructed an extension to the Jacksonville system as a municipal enterprise and had purchased sufficient cars to operate it. This track and these cars were then leased by South Jacksonville to the Jacksonville Traction Company.

The rolling stock of the Jacksonville Traction Company consists of 107 cars, of which 57 are single-truck Birney cars. The company has also rebuilt 22 of its double-truck cars for one-man operation, adding complete safety equipment.

Car Exteriors Are Spray Painted in a Single Color

Yellow has been adopted as the standard color for the entire car except the roof, and very little striping is used. This solid coloring was not adopted because it was considered more attractive than a combination of colors for the car body, but to shorten the time that cars being repainted have to be in the paint shop. Spray painting is used for both car body and roof. While the body is being sprayed the windows are covered with bar soap which is rubbed on from a cake. After the spraying is finished this soap, with any paint which has lodged on it, can be taken off in a few minutes with a putty knife. The only brush work used on the car, except for the striping, is on the lower part of the roof to make an even edge where the roof and body spraying meet. About 30 minutes is required for each coat of paint, and the company gives each car two coats at a car-painting period.

To distinguish the old rear-entrance cars from the new front-entrance cars, the Brooklyn design of an irregular star on the front dash was first tried. This has been abandoned for the words "Rear Entrance" in black and a curved arrow pointing to the rear. Both lettering and design appear on the side of the dash nearest the curb.

As on several other properties under the management of Stone & Webster, considerable use is being made of Miller sliding shoes instead of trolley wheels. No change was required in the overhead construction nor is any grease used on the trolley wire.

The fares charged are 10 cents for a single ride and five tokens for 35 cents. In addition, a weekly pass is sold for $1.25.

A Ten-Year-Old Pretzel

A LITTLE more than ten years ago the first issue of the *Pretzel*, published by the Reading Transit Company, Reading, Pa., was placed in the little boxes in the street cars. Since that time the publication has never missed a single issue, appearing every Friday morning. The *Pretzel* has always endeavored to be a pleasant traveling companion. Almost every issue contains an item or two giving patrons a "close-up" of the work of the departments connected with the operation of the railway.

In its weekly chats the paper has acquainted car riders with some of the railway's problems, related a number of accomplishments, thanked riders for patronage and compliments, accepted and quite frequently profited by criticisms. The *Pretzel* has enjoyed a steady increase in circulation. The first week that it was placed in the cars about 20,000 were taken from the boxes. More than 32,000 copies are now printed every week. In addition to the thousands which are read in the cars, many are preserved and mailed to the friends and relatives of patrons in other cities. The *Pretzel* has a regular mailing list of approximately 200 names. The little four-page paper is sent to practically every state in the Union. The *Pretzel* starts its second decade with a determination to cling to its purpose as announced in its first issue—that of being a friendly, chatty traveling companion for street car riders.

Illuminated Train Number Boxes in Dallas

Convenient Train Number Device Used by the Texas Electric Railway

ILLUMINATED train number boxes, similar to those shown in the illustration, are used on the cars of the Texas Electric Railway, Dallas, Tex. Four sets of numbers are mounted on cloth rolls and can be turned by the handles projecting from the sides. The numbers can be seen plainly by day and are illuminated by lamps at night.

This device has facilitated identification of cars by the supervisory force.

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The Readers' Forum

The Grand Rapids Bonfire Was a Serious Mistake

INDEPENDENCE, July 4, 1926.

To the Editor:

I see by your issue of July 3 where Grand Rapids had a bonfire and burnt up what they called antiquated equipment. They made a very serious mistake in doing this. These cars might have been "antiquated" in Grand Rapids, but they would have been, according to the illustrations, very modern in my town and they should have given them to the traction company.

By the pictures some of the burnt cars had as many as eight wheels onto them and all the wheels on each side of the car showed as being on. In my town some of the cars that have three wheels are able to negotiate the hills when properly loaded.

Out of more than 130 cars that my town has got there are at least 57 varieties, and it has been suggested that each one of the 57 varieties be segregated and used to advertise one brand of Heinz's pickles into it as the oldest variety just corresponds in age with the time Mr. Heinz put out his first pickle.

Sometimes these cars in my town stop for no apparent reason when going up a hill, but never whilst descending. The other day the writer was onto one of these which stopped ascending a hill, and after all other ordinary expletives had failed the motorman says to the car "gid-dap" and off it started. He told me his grandfather drove that car in 1851 when it had mules onto it, which probably accounted for its peculiar proclivities. A. NUISANCE.

Read "Electric Railway Practices in 1925"

BOSTON ELEVATED RAILWAY
Offices of the Public Trustees, Park Square Building, 31 St. James Avenue

BOSTON, MASS., July 1, 1926.

To the Editor:

I have noted with interest your review of "Electric Railway Practices in 1925" in a recent issue of the ELECTRIC RAILWAY JOURNAL, with particular reference to the similarity in names between this book and "The Handbook of Modern Electric Railway Methods and Practices, 1925." While greater differentiation in title might be desirable, the plan and scope of the two books are so different that there should be no confusion in the minds of electric railway executives if they will study them both carefully.

Now that "Electric Railway Practices in 1925" has been distributed widely, I would like to emphasize the importance of a careful reading of the book by all responsible railway men. The presentations this year were remarkable in comprehensiveness and in the quality of the practices which were described. If the reading of the book gives to a manager a single new idea it will be worth the few hours of his time that is necessary.

It seems to me that a manager might well expect of his department heads that they also familiarize themselves with the contents of the book. The Charles A. Coffin Foundation is expending a substantial sum to put this digest into the hands of every man who can use it efficiently. By prompt co-operation of the technical press the best practices disclosed in the presentations were made available to the industry some months ago. This volume, as you state, "with the information carefully collated and grouped under subject heads, gives another use for it (i.e., the material in last year's briefs)."

I hope that the similarity in names between the two books referred to will impel a close examination of both by the industry to determine wherein they are alike and wherein they differ. HENRY H. NORRIS,
Editor "Electric Railway Practices in 1925."

Greater Care Is Needed at Steam Railroad Crossings

CLEVELAND, OHIO, June 28, 1926.

To the Editor:

It is common knowledge that most street railway companies at one time or another have suffered loss because of carelessness or neglect on the part of crossing flagmen. My experience, by observation over a period of several years, is that 95 out of 100 street car conductors in flagging a car across railroad tracks fail to look both up and down the tracks before so doing, and a good proportion of them walk straight across the tracks without ever giving a thought apparently to the need of looking to their right or left. This lack of attention on the part of certain employees is often the cause of the company paying out large sums of money for damages.

At a certain railroad crossing protected by gates operated by a railroad watchman the traction company also had a man on the job. In one instance a street car pulled up to the crossing and stopped. The gates were up at this time and the traction company flagman was in a sitting position, apparently in a trance. The railroad gateman came out of his shanty and tapped this fellow on the shoulder, at the same time pointing up the track toward an approaching passenger train. Thereupon the fellow rose from his seat and by motion of his flag in hand indicated to the car motorman that he was to wait.

Toward the close of the World War three railroads entering Akron, Ohio, were drawn into a controversy with the city because they had closed up and fenced a dangerous railroad crossing, after first having built a substantial and satisfactory overhead bridge. The small merchants and workingmen of that end of town protested that the crossing should be reopened. After proposals and counterproposals had been exchanged between city and railroads, an agreement was reached whereby the crossing was reopened, and one railroad installed gates and furnished watchmen and gatemen. It was further agreed that this company would have complete supervision of the crossing, including the employees. The city's contribution was in the form of a check mailed to the railroad company once a month, the amount being equal to one-half the pay of crossing attendants.

This suggests one possible way in which better protection may be secured at steam and electric railway crossings. W. H. CAMERON.

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Maintenance Notes

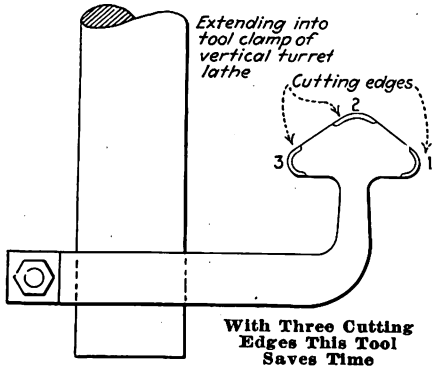
Trolley Tap Does Not Interfere with Car Operation

COMPRESSED air for pneumatic track tools is obtained by the United Railways & Electric Company, Baltimore, Md., from an electrically operated compressor placed at the side of the street. Power for operating the compressor comes from the trolley wire by a specially designed copper hook being placed over one of the trolley ears, as shown in an accompanying illustration. Current is carried from the hook to the compressor through an insulated wire attached to a light bamboo pole. With the hook in position over the trolley ear the rod is tied back to one of the span wire supporting poles in such a way as to be out of the way of passing cars, and the hook over the trolley ear permits passage of trolley wheels, so that car operation is not interfered with. This makes it unnecessary to remove the hook from the wire until the position of the compressor is changed.

Trolley Tap Prevents Interference with Car Movements in Baltimore

Machining Performed in One Operation

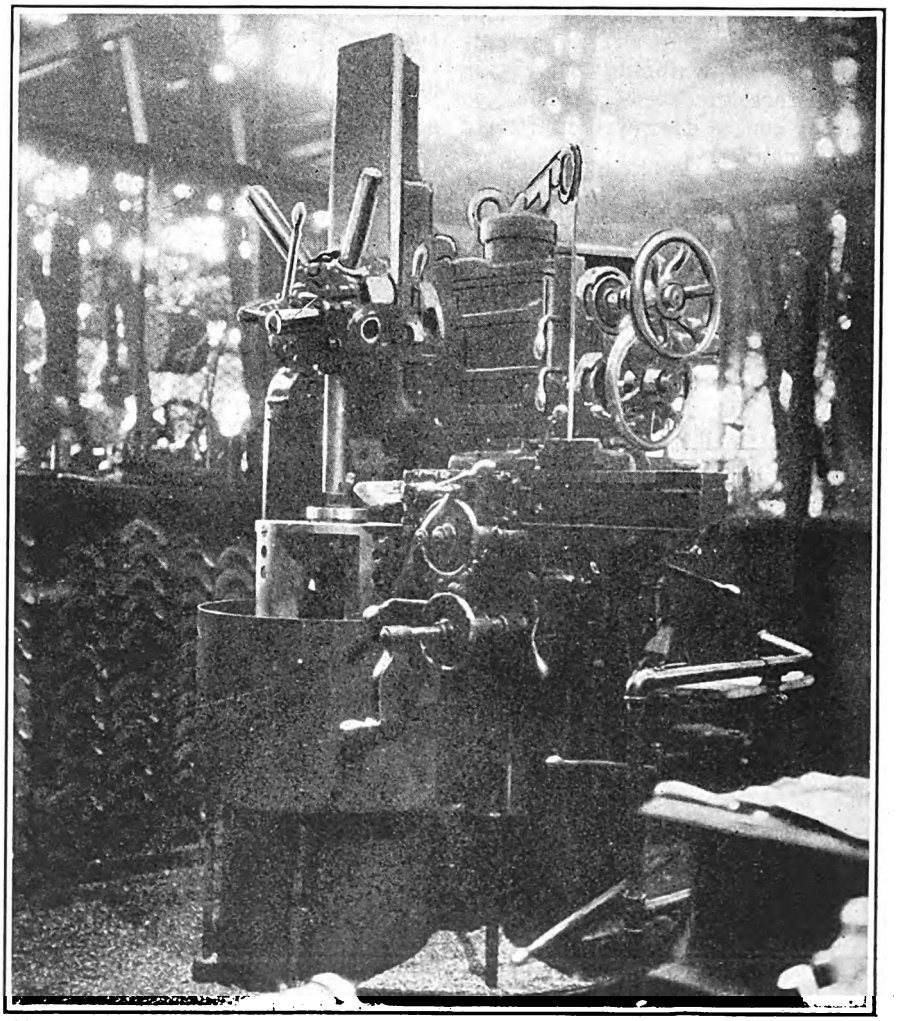
IN THE shops of the United Railways of St. Louis has been installed a new Bullard vertical turret lathe that is used almost exclusively in the machining of the split bronze axle bearings made by the railway.



With Three Cutting Edges This Tool Saves Time

Special tool constructed in the shops of the United Railways of St. Louis, with three cutting edges for facing the inside, bottom and outer side of split bearings.

The machine is a remarkable time-saver, requiring only from five to ten minutes per pair to turn out the bronze axle bearings. The bearing castings come to this lathe finished on the faces forming the split. Two of these sections are picked up by the operator at random and placed in the vertical chuck. The first operation is to machine the outer side of the



Bullard Vertical Turret Lathe for Machining Split Bearings

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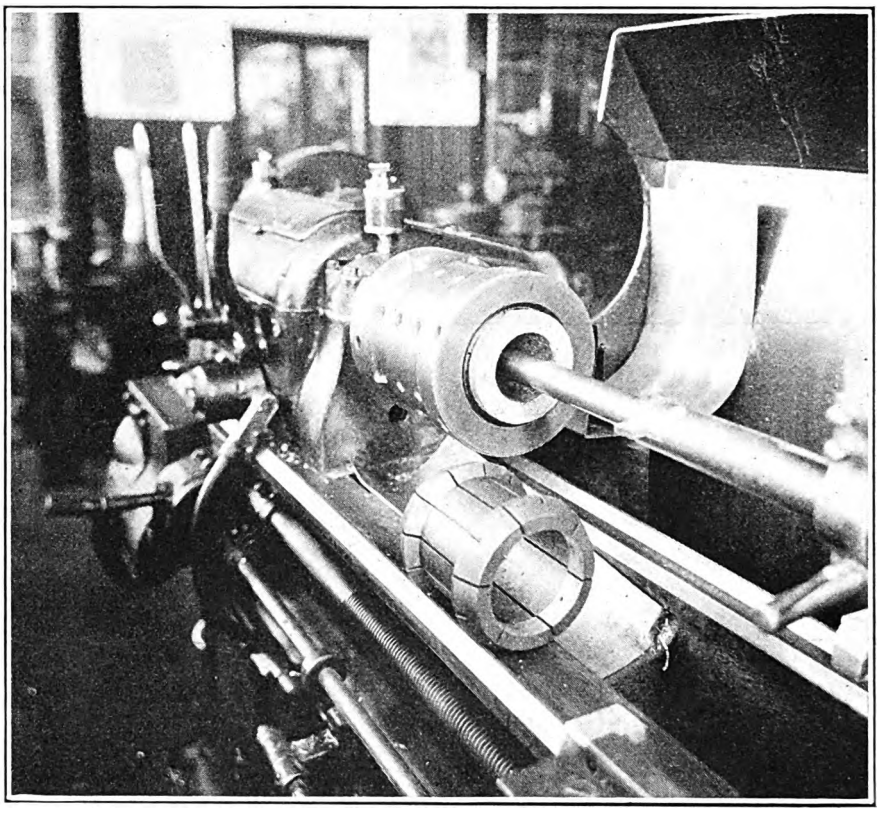
bearing collars and a second tool, mounted on the turret, machines the face of the collar. The third tool has three cutting engines, the general design of which is shown in the accompanying sketch.

In machining, the tool is first run down the inside of the split halves of the bearing, accurately machining the bearing surfaces on the inside, using cutting edge No. 1. The tool is then moved sideways, cutting on edge No. 2, as shown in the diagram, which machines the bottom of the bearing as it stands in the chuck. The tool is then raised and cutting edge No. 3 machines the outer surface of the lower end of the bearing, thus completing the machining operation.



A Special Type of Chuck Facilitates the Boring of Armature Bearings in the Shop of the Department of Street Railways in Detroit

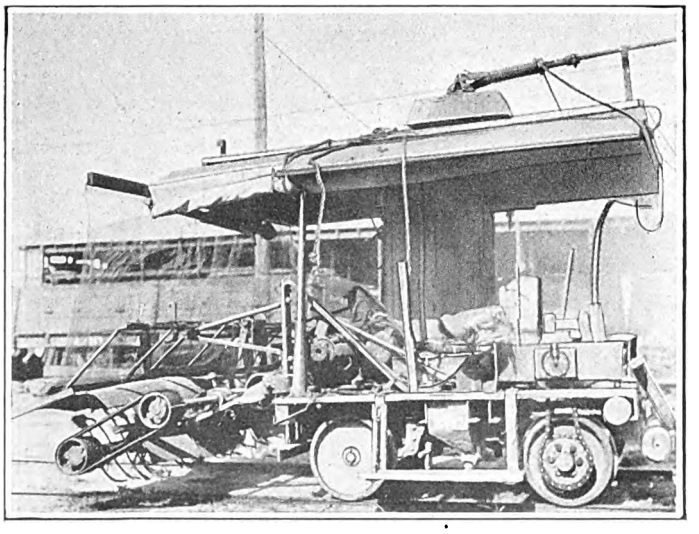
Whipping Weeds Off the Right-of-Way

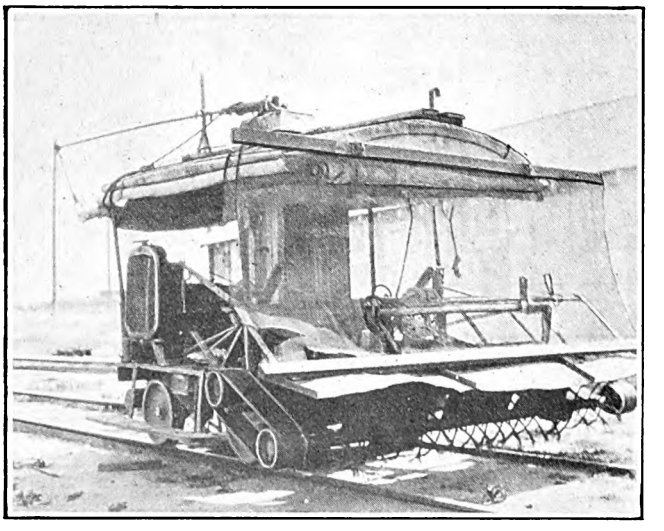
FOR several years the Texas Electric Railway, Dallas, Tex., has used a home-constructed device to destroy the weed growth on the roadway by mechanically tearing the weeds to pieces. The Texas Electric maintenance crew goes over the right-of-way once or twice a year with this equipment, at a cost that averages 90 cents per mile per cutting. If the whipping process is done before the seeds develop too far, they can be destroyed effectively in this manner.

As shown by the illustration, the equipment is both electrically and gas driven. The gasoline engine, taken from a used automobile, propels the equipment along the track at a speed of from 6 to 10 m.p.h. The weed-whipping device is driven by means of a motor operated from the trolley. This weed-whipping device consists of a rod drilled at numerous points through which small sections of about $\frac{1}{16}$-in. diameter steel cable are inserted. The cable is then cut off to the predetermined length and wedged in place by means of small metal fillers so that the wires will not throw themselves out when revolved. Since these wires wear out, the fastening device or wedge must be one that can easily be loosened so that new wires can be put in. To protect the equipment and the operators who ride in the car, a large metal fly screen is supported in the front.

Special Chucks Assist Armature Bearing Work

PROVISION is made for boring armature bearings so that the bore will be centered accurately in relation to the outside finished surface by the Department of Street Railways, Detroit, Mich., which uses a special chuck. The bearings are bored in a lathe by means of a horizontal boring bar. The chuck in which the bearings are held during the boring operation consists of three parts. The main outside section is fastened to the tailstock of





Weed Whipper Used by Texas Electric Railway

At left, side view of Texas Electric weed whipper, showing electric motor and belted device for driving the weed whipper brush hung in front of the apparatus.

At right, front view of electric weed whipper, showing the gasoline engine unit which drives the vehicle. An electric motor revolves the weed whipper and cuts the tops off the weeds.

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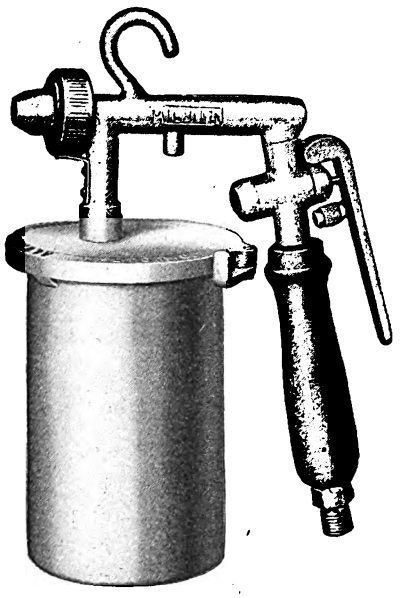
the lathe. A center portion holds the bearings and an end ring is used as the clamping medium.

In the accompanying illustration one of the central portions in which the bearings are placed is shown lying on the bed of the lathe. It will be seen that this has two flanged ends which are beveled. This collar is split lengthwise by a number of saw cuts. The saw cuts do not run the entire length, however, and those which extend from one end are alternated with those which start at the other. When the slotted collar is placed inside the chucks pressure to clamp the bearings is obtained by the end collar bearing on the beveled section at the front end while the rear end is pressed against a similar beveled section of the main outside casing. By screwing up on the end ring sufficient pressure is obtained so that the bearing is clamped securely and accurately. Slotted collars of various sizes are used to take care of different types of bearings. The outside portion of the slotted collars, however, is made uniform so that they all will fit in the same outside chuck. With the bearing in position the flange end extends outside of the chuck so that this can be finished off accurately by the same boring bar.

New Equipment Available

Light-Weight Paint Spray

SO AS to make the operation of spraying paint as easy and simple as possible, the Alexander Milburn Company, Baltimore, Md., has just brought out a light-weight, compact and extremely efficient paint spray equipment. Particular attention has been given in the design of this to provide simple construction without moving parts and passages shaped so that clogging will not result. The equipment consists of a rugged cover, body, atomizer and a convenient handle. The illustration shown is for the company's type A, which weighs approximately 1 lb. with a pint container and 17 oz. with a quart container. The body, cap and container are made of aluminum and the atomizing chamber and tip are made of forged bronze. The handle is of a special composition fiber.



New Self-Contained Type of Paint Spray

In operation the paint enters a large annular chamber surrounding the air nozzle, from which it is atomized and expanded in a venturi shape. Atomization is regulated by turning the nozzle. Adjustment provides for a large spray or for entirely shutting off. With the paint shut off the equipment can be used to provide a stream of air for dusting and cleaning purposes. The manufacturers recommend an air pressure of approximately 40 lb.

To test the efficiency of this particular type of spray a large railway system used it for painting cars. Eleven coats of paint were applied and each coat was rubbed down before applying another. It was found that the Milburn spray produced a saving of 75 per cent in time and provided for a reduction in labor of three men.

Large Size Portable Vacuum Cleaner

REPRESENTING a distinct improvement over previous models, a new portable vacuum cleaner, for heavy service such as is needed by electric railways, has been placed on the market by Allen & Billmyre Company, Inc., New York, N. Y. The machine weighs approximately 105 lb. and through use of rubber-tired wheels it can be moved about with exceptional ease. By means of a 15-ft. or 25-ft. length of hose a large surface can be cleaned without constantly moving the machine. It can be used with the same ease as the ordinary household vacuum cleaner.

The frame of the machine is similar in construction to an automobile chassis except that it stands in a vertical position. It is made in one piece and is mounted on easy running ball bearing wheels which transport the cleaner with very little physical effort. All parts fastened to the frame are welded to assure strength and rigidity and also to avoid vibration.

The exhauster and ½-hp. Westinghouse motor are made in a compact, self-contained unit of aluminum construction. This electrically driven device is efficient and is entirely free from wearing parts and there is only one working part, i.e., the steel shaft on which the armature and aluminum impellers are mounted. This shaft operates in ball bearings, which lengthens the life of the machine. Its operation is similar to other vacuum cleaners on the market, except that the air is filtered very thoroughly before it is again set free. The air suction produced by the two-stage centrifugal exhauster, with its one-piece aluminum impellers, draws the dust and dirt into a container which holds approximately one peck. The cloth filter is held at a distance of 1 in. from the metal container by means of a mesh screen and the entire design of the unit is unusually simple and foolproof.

Portable Vacuum Cleaner for Heavy Service

This machine can be operated from a lamp socket or floor plug connection. The Westinghouse motor with which the machine is equipped can be operated on direct current of 100 to 120 volts or on alternating current of 105 to 120 volts, 25 to 60 cycles, single phase. Machines can also be supplied for 220 volts.

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Association News & Discussions

Central Electric Railway Association Contributes Valuable Ideas

Principles of Taxation, Getting New Business and Reduction of Costs Among Outstanding Addresses Made on the Voyage of the "South American"

HARDLY a more delightful mixture of pleasure and gainful effort has been experienced in any recent railway meeting than on the boat trip of the Central Electric Railway Association. From Monday, June 28, until Friday, July 2, the good ship *South American* carried its 300-odd delegates and guests over the Great Lakes. Two stops were made for golf and sightseeing, and bridge and deck games were continually in progress.

Three business sessions were held aboard ship. Ralph Emerson, general manager Cleveland Railway, presented a paper in which he interpreted the recent "shoppers' check" made in Cleveland into facts of value to the industry at large. As stated in the paper, which is abstracted elsewhere in this issue, only one customer in five rides to shop in his or her own conveyance.

Captain Leslie Vickers, economist of the American Electric Railway Association, told of the advanced thinking concerning railway taxation. He showed the futility and injustice of the ad valorem tax now so common. Captain Vickers believes in the tax on gross and net revenue. He cited authorities of national reputation who also approve this basis. His paper is abstracted in this issue.

Developing Off-Peak Business in Cincinnati

Development of off-peak business was considered in a paper prepared by Walter Draper, president Cincinnati Street Railway, but in Mr. Draper's absence the paper was read by H. R. Biery, director of public relations. Mr. Draper contended that buses must be held down to legal speed and electric cars accelerated to legal speed if conditions are to be improved. In his opinion, if only a little change is effected in this situation the improvement will be noticeable and far reaching. Special fares during different periods of the day have not been found workable in Cincinnati, he said. Off-peak riding has been developed by advertising events that may be seen during the non-rush hours. On one occasion 100,000 people were hauled in the off-peak hours of a single day. Special car business, once an important element of the service, has now disappeared. However, this class of business has fallen to the company's buses.

A prepared discussion was presented by Clinton D. Smith, general manager Beaver Valley Traction Company. Mr. Smith's experience with the zone fares and with different combinations of weekly passes has been extensive. Destination checks formerly were used, but now since their elimination various investigations have failed to reveal any abuse of the system, whereas many advantages have accrued to the company, such as increased speed of operation and savings due to the elimination of checks. The 5-cent zone appears to be uneconomic and consideration is being given to increasing this base fare, he said. Replies to some 300 letters sent out to merchants in the Beaver Valley indicate their desire to see the Beaver Valley Traction Company on a paying basis, as they believe the cars to be a substantial asset to the industries the company serves.

J. W. Welsh, executive secretary A.E.R.A., pinch hit for D. L. Gaskill, secretary-treasurer for the East Central Division of the N.E.L.A. in reading his paper. Mass consideration of industry problems of public policy and personnel was of greatest importance, he said. The amount of good to be obtained from participation in an association depends upon the spirit brought to it.

Reduced Insurance Rates Possible

Cause and prevention of electric railway fires was the subject of a paper by J. S. Mahan, president Western Section of the International Association of Electrical Inspectors. One reason that rates are high is that the railways carry the best risks and pass the poorest on to the insurance companies. Mr. Mahan analyzed several disastrous fires on railway properties and showed the elements that had contributed to their starting, the conditions which existed and specific fires on traction properties which had come within his observations, though omitting names.

The first was of a carhouse with no division walls and entrance from one end only and with a light metal roof. The fire probably came from a stroke of lightning and the spread of the fire was so rapid that the employees in the carhouse were unable even to save their own clothes. The roof buckled under the heat, resulting in the loss of about 90 cars. Investigation showed that the protection from lightning was not adequate and that the trolley poles had been placed in contact with the trolley wires, preparatory to the early morning runs out of the carhouse. This probably contributed to the rapid spread of the fire by providing numerous paths for the flow of the lightning surge to the earth. The carhouse replacing the one destroyed is of much better construction from a fire underwriter's standpoint. It is divided into sections of not more than three tracks per section, and all openings and walls between these sections are protected on both sides by automatic fire doors. Special hazards, such as carpenter, blacksmith, paint shops, etc., are segregated each in a separate section, and A.D.T. and private watchman clock systems have been installed. All car heaters also have been gone over so as to make them comply with the Fire Underwriters' standard.

In another instance cited by the speaker, smoke was seen coming from a stored car by the night watchman, but he was slow in turning in the alarm. The fire spread rapidly, and soon an exposed metal truss supporting the gable at one end of the carhouse buckled and came down with the brick gable across the entrance. This prevented the removal of cars. By prompt work, aided by the fact that the carhouse was divided into bays with fire doors at the openings, the fire was confined to the section in which it started. It is believed that this fire started from a defective heater. The heater blower motor stalled and became overheated, causing air circulation to be shut off.

In another case cited by the speaker, the carhouse was of good construction, but the water for the fire hose connections was furnished by a tank which was inadequate in size. Had the water supply been adequate, a fire which developed could easily have been confined to the immediate vicinity of its origin.

Another case was cited of a company which carried its own insurance on a power plant, in which oil switches were in a lean-to outside the main building, but communicating with it through a small opening. The fire started in this lean-to, and before it was extinguished there was a loss of more than $100,000. This more than wiped out the company's insurance fund.

Mr. Mahan quoted instances of material reduction in insurance rates through the installation of changes recommended by the Underwriters' Inspection Bureau, the annual saving in insurance cost being in some cases more than 50 per cent of the cost of installing the improvements.

In closing, Mr. Mahan summarized briefly some of the outstanding things which can be done on every property to reduce the fire risk and thus the fire loss, and spoke particularly of the need of standardized heaters according to the Underwriters' requirements.

Business Principles Applied to Selling Transportation

John Dewhurst, associate editor of ELECTRIC RAILWAY JOURNAL, read a paper in which he drew a comparison between riding on electric cars and

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buses and the popular sales of other commodities. He pointed out that a basic marketing law indicates that 60 per cent of the product will be sold at the popular price. This popular price is the lowest price for the quality that meets the popular idea of a satisfactory performance. Qualities above this standard, selling up to 25 per cent above the popular price, have a demand amounting to only 30 per cent of the total quantity. For qualities below the standard there is a demand for only 10 per cent of the total volume.

Referring to the market for passenger-miles, he stated that it appears that common carrier cars and buses are now supplying only 28 to 40 per cent of the total market. The theory advanced by Mr. Dewhurst is that the economic carriers, cars and buses, are supplying a service just a little below the popular idea of a satisfactory service today and hence cannot obtain the 60 per cent of the business to which these carriers are rightfully entitled. Almost overnight, he said, the industry has been changed from a monopoly to a highly competitive industry with an improved commodity as a serious competitor. Elimination of noise and increased speed, coupled with modern methods of operation, are necessary hurdles to be jumped before the proper volume of business can be gained. The vehicle is the most important element of modernization. The car of tomorrow must embrace more modern features. Such a vehicle must be built for better service, not necessarily for economies of operation, although that may go hand in hand with other improvements. The light-weight car is an example of combining features of economy and better business getting. A modern vehicle, coupled with operating methods designed to get business, will put the electric railway in position to go ahead and produce.

Maintenance as a Means of Selling Service

Maintenance as related to selling service was discussed by Jonathan Wolfe, assistant superintendent of tracks and roadway Chicago Surface Lines, and M. W. Cooke, superintendent of current control Pittsburgh Railways. Mr. Wolfe told of the 100 new cars just purchased by his company and the extensive reconstruction of tracks in the city streets of Chicago in the face of an expiring franchise. Many blocks of track are being reconstructed, using 130-lb. rail with yellow pine ties on either 6-in. concrete or 8-in. rolled stone base. Manganese welding of low joints properly ground off is bringing back much worn track into good condition. High carbon steel is also extensively used. Every complaint of poor track reported by outsiders or company men is noted in a track ledger and a complete record is kept until the trouble is corrected. Mr. Cooke showed graphically the progress his company has made in reducing trolley breaks and at the same time reducing maintenance costs. Life of trolley ears has been taken as a gage to measure life of other trolley equipment.

Many good and bad examples of advertising cards were shown by Labert St. Clair in his talk on advertising for traffic. Mr. St. Clair warned against the so-called "clever" or "trickily worded" sign as being dangerous. The best signs, he said, are basic truths stated in not more than five words. Policy, performance and publicity define the program of a company entering an advertising campaign. The best mediums to use are, in their relative order of merit, the company publications, newspapers, billboards, movies and general advertising.

Harry Brown, secretary Ohio Brass Company, read H. M. Lytle's paper telling of how the employees of the Chicago, North Shore & Milwaukee sell transportation. An abstract appears elsewhere.

Using the Bus to Develop Excursion Business

Buses as used to develop excursion business was the subject of a talk by L. H. Palmer, vice-president Fifth Avenue Coach Company. Mr. Palmer's experience along the lines of his talk was gained largely during his connection with the United Railway & Electric Company of Baltimore. In Baltimore a sightseeing business was established more than a year ago. In Mr. Palmer's opinion the electric railway company of a community should be the purveyor of all transportation except that provided by steam roads.

Operations of the Kentucky Carriers, Inc., a bus subsidiary of the Louisville Railways and operating seventeen city-type buses, were described by G. B. Powell, general manager. Mr. Powell started a bus excursion business last year and up to June of this year had run 2,000 miles at an average gross of 51 cents per mile. Some 4,000 miles was scheduled for June at an estimated gross averaging 49½ cents. The popular charge for sightseeing tours is a flat charge including incidental costs. Long tours should include in the total meals and rooms at the best hotels.

New York Railroad Club Has Enjoyable Outing

"BACK TO BOYHOOD" was the slogan of the large gathering of steam and electric railway officials, employees and supply men of the New York district who congregated at Travers Island, July 8, for the annual outing of the New York Railroad Club. Golf, baseball, tennis, quoits, together with track and swimming events, were among the sports indulged in. Those who played golf went out early in the morning and played at the Wing Foot Golf Club at Mamaroneck until noon. A special train which conveyed about five hundred more left Grand Central Station, New York, at noon. On arrival at Travers Island a buffet lunch was served, after which the athletic events began. The Sunrise Trail Band of the Long Island Railroad furnished inspiring airs for the would-be athletes. An informal dinner at night concluded the merrymaking.

Strike conditions on the Interborough subway in New York kept a number of the electric railway men away from the festivities, but many employees of nearby electric railway lines which were not affected by the railway strike were well represented. The Long Island Railroad had a large delegation and its athletes carried off most of the prizes in the track and field events.

How Employees Can Sell Transportation*

North Shore Line Employees Conduct Successful Campaign for More Business—Prizes by Company Stimulate Efforts—Central Sales Committee Directs Drive

By H. M. Lytle
Vice-President Chicago, North Shore & Milwaukee Railroad

PROBABLY the first requisite to having "employees sell transportation" is to ask them to do it. That may seem rather patent, but the fact is that very few transportation companies have talked to their employees about it. On the other hand, it is unfair merely to ask them to sell transportation without giving them a concrete idea of what you have in mind, or not to have a selling organization to tie to. Setting up such an organization is not as difficult as where the employees are asked to take part in a customer-ownership campaign of a company's securities.

Since Jan. 1, 1926, the men and women who make up the family of the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—have been engaged in an organized "Better Business" campaign. Britton I. Budd, president of the North Shore Line, had been considering asking the employees to sell service in a definite way for some time, and on that date named a general committee, composed of Jesse S. Hyatt, general manager; M. J. Feron, general superintendent of transportation, and F. W. Shappert, traffic manager, with C. Edward Thorney, an expert traffic man, as secretary. In his letter Mr. Budd said: "It is my hope that every man and woman associated with the North Shore Line shall be enlisted in this campaign. It is my belief that it will prove one of the most popular and beneficial efforts that has been attempted by the North Shore Line." Then, to make the campaign interesting, he authorized awards to total $5,000 for those making the best selling records during the year.

Results of Five Months' Effort

To digress from a connected story of just how the campaign was organized, it may be interesting to note a number of results of the first five months of effort, as follows:

More than 4,500 new business tips touching every phase of the transpor-

*Abstract of paper at summer meeting of Central Electric Railway Association, SS. *South American*, June 28-July 2, 1926.

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tation which the company has to offer were turned in by men and women of the company. In order to sell the road, it has been necessary for every employee further to sell himself; in other words, he has had to become possessed of the fullest information.

While the best of team work has always prevailed among the North Shore Line family, nevertheless the teaming together in hot competition has further developed this spirit of co-operation and good fellowship.

There is a fuller understanding of the railroad's problems than at any time in its history.

The families of all employees on the railroad are interested in the campaign and have heard so much about the road's affairs that members can talk about it almost as fluently as those who are directly on the payroll.

The 11,000 stockholders have been kept advised monthly through a publication which they receive and have been valuable business getters.

Practically all business men in every community served by the railroad know about the road's activity. It has greatly increased their estimate of the company as a live, up-to-the-minute, business-getting organization—one with which they like to deal.

Primarily, the campaign develops two classes of business: one, that which the employees themselves can handle directly, and the other, "leads" which the traffic department experts can follow up. Combined, the two mean an intensive combing of the territory.

The question that is always asked is, "Is the interest of the employees sustained?" The answer to that is seen in the figures from month to month, which have shown a consistent growth both in the number of employees actively participating and in the number of tips turned in to headquarters.

Organizing the Selling Campaign

Summarized briefly, the campaign organization was developed through the holding of a meeting by the general committee of about 100 of the livest wires in the organization. These were not necessarily department heads or even persons in supervisory capacities. At this meeting the idea was carefully outlind.

These men were those whom it was felt would naturally be the captains and lieutenants of the organization. The general committee then thoroughly canvassed the entire organization and made appointments of captains and lieutenants that constituted a total of seventeen teams, each representing a department or a particular service of the company. Each was given a captain and lieutenant.

Then there were five field agents appointed and they were given supervision over certain numbers of teams. The field agents report directly to the general committee.

The teams were allowed to pick additional lieutenants as were necessary, but were pledged to enroll in their membership every employee on the payroll.

To help in the organization work, a letter was sent out by the general committee to every employee at his or her home address, outlining just what the campaign was to be. This has since been followed by other letters from the headquarters office and supplemented by frequent letters from the team captains to their team members.

A headquarters organization was formed to look after both the clerical work and also to act as an organizing force to help out the teams.

A credit system was devised whereby each individual obtains a credit for each tip he turns in. This is carefully noted on an individual card in the office files and a credit is also given at the same time to his team. If the tip actually develops business, he is given additional credit and, if it is especially large or important business, possibly two or three credits. These credits will be totaled at the end of the year to determine how the $5,000 of award money shall be distributed. In this way it gives positive assurance to the individual that he will get full credit for everything that he does.

Following the organization meeting there were other meetings of team captains and lieutenants where the company's situation was carefully gone into and information given as to particular classes of business which the company was anxious to develop. From the start the employees showed a preference for developing merchandise despatch business and it has been necessary to hammer the passenger end of the business.

Each team has a definite quota for each month, based on the number constituting it. A monthly sheet is kept, with a thermometer illustration, and it is posted in all places where employees congregate. This gives them complete, up-to-date information as to where the teams stand and promotes the competitive spirit.

Large space is given each month in the employee publication—the *High Ball*—to the campaign. This gives a great deal of information that can be used in selling, tells of meritorious work by individuals and is a valuable medium for arousing enthusiasm.

Lessons Learned from Campaign

Further backing up the effort, every meeting of employees, whether departmental, safety, A.E.R.A. section or small group gatherings, is spoken to by some one representing the campaign.

A considerable newspaper advertising program has been carried on in the territory, a series of advertisements on "Facts About the Company" being a big feature.

After the campaign had been under way two months some special awards of extra prize money for particularly good effort were given; this is being continued at irregular intervals. The amounts of these special awards are determined by the general committee.

An interesting feature of the effort is that at the end of May seven teams had scored 100 per cent or better of their quotas; this in spite of the fact that the marks were set very high. It is interesting, too, that the leaders were the teams constituting the baggage department, trainmen on the Waukegan city lines, the freight men in the merchandise despatch department, trainmen on the Milwaukee city lines, the station agents and the motor coach men, which includes the drivers.

These conclusions are apparent in answering the question raised by the title of this paper:

1. If the management is wholeheartedly behind the selling campaign and transmits its enthusiasm down through the organization, then the employees will be the most valuable of all selling agencies at the company's command, for the employees are "the company."

2. There is need of expert direction. A traffic expert, just as skilled at his job as is the construction engineer at his, should direct the campaign. That does not mean a "theoretical expert," but one who has had real transportation salesmanship experience.

3. Before the employees can wholeheartedly sell, they have to be sold on the management, upon their immediate superiors, upon the service they have to sell.

4. If they are sold and actively start selling, it is inevitable that they, because of their collective acquaintanceship, will bring a vast volume of business to the railroad which it would not obtain in any other way. In addition, they give the company a standing with the public which only a thoroughly "sold" family of employees can bring about.

The Modus Operandi

Accompanying Mr. Lytle's paper were a number of exhibits of details employed in the active conduct

COMING MEETINGS OF *Electric Railway and Allied Associations*

July 22—New England Street Railway Club, annual outing, Portland, Me.

July 23-24—Central Electric Railway Accountants' Association, meeting, Drake Hotel, Chicago, Ill.

July 28-30—Electric Railway Association of Equipment Men, Southern Properties, semi-annual meeting, Chattanooga, Tenn.

Aug. 11—Metropolitan Section A.E.R.A., annual outing, Pelham Bay Park, New York.

Aug. 12-13—Wisconsin Public Utility Association, Railway Section, La Crosse, Wis.

Sept. 17-18—Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Michigan.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

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of the campaign. They included the following:

A blueprint showing the organization of the seventeen different teams, which are arranged in five groups, as follows: (1) Dining and parlor cars, baggage, Chicago station employees, merchandise dispatch. (2) Maintenance of way, construction, transportation, mechanical. (3) Architectural, motor coach, general office. (4) Through service, new industries, Milwaukee city lines. (5) Electrical, Waukegan city, station agents. Each of these groups had a field agent, reporting through the general sales committee to the sales director, Mr. Lytle.

A thermometer chart showing the monthly standing of the seventeen teams mentioned above. These charts are posted in all places where employees congregate. At the side of the chart is a drawing of a thermometer giving the average of all of the teams, and adjoining it are seventeen columns showing the record to date of the individual teams.

Copy of a letter sent to the home of each employee on Jan. 1, 1926, outlining the plan of the better business campaign. It was signed by the general sales committee, gives particulars of new improvements made by the company as reasons why a better business campaign should succeed at the present time and tells of the offer by President Budd of $5,000 as prizes.

A later circular sent to all employees describing the organization of the different teams, with the explanation that each individual should also try to make a record for himself. This circular described the method of awarding credits by saying a card index would be kept for each individual of the new business "tips" which were received from him.

Another circular giving talking points about the service, and a questionnaire sent out by field agents to all members of the team under his direction.

Three "pep" type of letters about the campaign sent by the secretary to all employees. One of these explained that the results of the campaign were so gratifying that President Budd had authorized a number of additional awards to individuals for special service in addition to the $5,000 previously announced. The names of those receiving such prizes are given.

Copies of the company's publication, the *High Ball*, showing how extensively the campaign was featured in that magazine, which goes to the homes of all employees.

Relief of Taxation and Imposts—A Hopeful Outlook*

Readjustment of Burdens According to Ability to Pay Will Bring the Utilities in Line with Other Business—Combined Gross and Net Tax Urged as Most Equitable

BY LESLIE VICKERS
Economist American Electric Railway Association, New York City

RELIEF from taxation and imposts are the two directions at the present time toward which we can look hopefully for help. We have gone a considerable distance in fare increases, and in some cases have reached the barrier beyond which we dare not go for fear of discouraging car riding; we have just put into effect every economy of management that we could think of. We have done much to reduce our wage cost by the introduction of one-man cars, and by the use of bigger cars have reduced costs of operation and upkeep costs. But in the matter of taxation and imposts we have frequently found ourselves helpless in the presence of taxing bodies who were relentless in their determination to get out of us the last cent they could. It was not so bad when we enjoyed a monopoly and could pass the increased cost on to the car rider. It was up to him to pay us, as he would any other collector; and while he did not always stop to think that the fare he paid for his ride was a real tax and was passed on to some governing body, yet he paid just the same because he had to. Then came the private automobile and the greatest revolution in transportation history.

I have really no quarrel with regulation. I believe it has come to stay and is in the best interests of the public. But what I would plead for today is a recognition by the public of the injustice of imposing twentieth century regulations on the same industry that has to put up with our eighteenth century system of taxation. In a word, I am pleading for the recognition of the principles that the only fair and just method of taxing a regulated industry is according to its ability to pay; for our ability to pay measures accurately the value of the franchise that has been granted to us, whether it remains a complete monopoly or a broken monopoly under the influence of the multitude of private automobiles that do the work which we once performed.

IT IS quite certain that a gross earnings tax alone will never remove inequalities and injustices. But a combination of the two methods—gross earnings and net earnings—will come as close as any tax that has ever been devised toward producing equalities among the utilities themselves and toward bringing them into line with the taxes that ordinary unregulated businesses have to pay. Besides it will bring to the state a more definite income yearly with which to meet the expenses outlined in its budget, and thus avoid the criticism that the utility is escaping taxation because it is badly managed.

METHODS OF TAXING PUBLIC UTILITIES WERE STUDIED

Now, what are the methods in use today for taxing public utilities? At the suggestion of Mr. Storrs and the Advisory Council, I undertook a year ago to study the taxation burden of thirteen selected electric railway companies and to find, if I could, the underlying principle upon which their taxes were levied. I was able to determine the burden of their taxes all right, but when I came to determining the principle that underlay that burden I met with nothing but failure, and the reason for this is that there is no underlying principle.

In order to be brief and avoid boring you with figures, let me say that there are two main methods in use. One that is used very seldom is the capitalization method, but this one is so fully discredited that I shall not take time to discuss it. Most of the states follow the ad valorem method, under which an attempt is made to tax the utility according to the same principles that guide assessors in arriving at the value of other properties such as real estate. But experience has shown that under regulation you cannot determine the value of a utility as you can that of other economic property that is not regulated, and the ad valorem method has broken down in almost all those cases where the earnings of the utility have not been given major weight in the determination of value.

Furthermore, in states such as Ohio, where the law demands that property be assessed at 100 per cent of its value, it has become a notorious fact that local assessors willfully ignore this provision of the statute in regard to general property and enforce it in regard to public utilities. The result of this has been that in Ohio many examples exist of whole counties taxed on an assessment of 40 to 50 per cent of the value of general property, while the public utilities in the same counties have been carrying a tax of a full 100 per cent of their value. But then, corporations have no vote, while general property owners have.

EARNINGS THE REAL BASIS FOR TAXATION

Now if, under the ad valorem system of taxation, it has been found necessary to give the greatest weight to earnings, why not frankly admit that earnings furnish the real basis of taxation for a utility? Why bother about capitalization and valuation when in earnings you have a simple, efficient and accurate measure both of tax-paying ability and for obligation to the body which grants the franchise? Senator Davenport's committee of the National Tax Association summed it up when he said: "The ad valorem basis lacks simplicity. It is apt to become arbitrary, its administration is difficult and expensive. It is not an accurate measure

*Abstract of paper at summer meeting of Central Electric Railway Association, SS. *South American*, en route Buffalo to Chicago, June 28-July 2, 1926.

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of the obligation or ability to pay taxes. It does not succeed in placing a burden of taxes equitably.

"The tax on earnings is strong at the points where the ad valorem basis is weak. The earnings of a corporation are the real basis of its work and its tax-paying ability. The earnings tax involves the fewest theoretical conditions and is simple and inexpensive to administer. Earnings are a matter of fact about which there will generally not be disagreement. The determination of net earnings does involve certain valuations, but in general the element of personal judgment is relatively small as compared with the property tax. The earnings tax is simple and clear. It usually fluctuates with the prosperity of the tax-paying corporations and it is generally equitable between corporations."

While most of us feel that we are suffering under burdensome and discriminatory taxes, few of us realize just how heavy and unequal those burdens are. Again, with a desire to avoid figures and details as much as possible, let me simply state that in this investigation which we made we found that local taxes varied all the way from 1½ to nearly 10 per cent of the gross; state taxes varied all the way from nothing to 6½ per cent of the gross, while federal taxes in so far as they represent profits are almost negligible. Or, take another comparison. It was shown that in 1923 business corporations generally, including transportation companies, paid out a little more than 2 cents on every dollar they took in, for taxes. This group of electric railways paid out 7.7 cents; but of their net income before taxes corporations generally surrendered 27½ per cent, while these electric railways paid out 63.59 in taxes and an additional amount in inescapable imposts. And, while corporations generally paid taxes to the extent of 38 per cent of their corporate net income, these street railways were burdened with a tax amounting to almost 200 per cent and a burden of taxes and imposts combined of 265 per cent. As a matter of fact, they are better off than the electric railway companies generally throughout the country, for an investigation of their situation discloses the fact that in 1924 the relation of their taxes, corporate income or net after taxes was 343 per cent.

It is fair to assume that we have now reached the point in our political as well as our business life where we realize that the fairest basis of any taxation is that which applies the principle of ability to pay. The public utilities have never so far been taxed under this principle, for they have been regarded as tax gatherers supplying the government with an easy and effective method of providing the money called for by their budgets. The group of people which utilities serve are usually scattered over wide areas and are for the most part unable to make their voices heard in protest. It is only when the bondholders of the utilities are affected that real action is taken and an effort made to get rid of burdens which fall not only on them but upon the consuming public as well. Equality of taxation is guaranteed by the constitution of almost every state. Equality by no means is to be considered as "the same amount." It means equality of burden, and the burden can only be estimated by ability. Therefore, an ad valorem tax, unless based exclusively upon the item of earnings—in which case it ceases to be a true ad valorem tax—can never provide a satisfactory basis for ability to pay. The main point in regard to taxation from a historical point of view is that despite the fact that complete regulation has characterized the industry for a number of years and that it has been singled out from ordinary businesses and not allowed to make that economic profit which is the reason for their existence, little or no effort has been made to readjust taxes in accordance with the changed conditions. The fact is that our legal and regulatory procedure has advanced much more rapidly than our tax procedure, and that the willingness of the body politic to impose restrictive and regulatory legislation upon the industry has not been matched by willingness to adjust the tax method conforming to this new principle.

Old-Fashioned Taxation Methods Still Persist

The result of this has been that in many places the old-fashioned method of taxation by local assessors of little bits of the public utility system still persists; that state commissions and assessors usually look upon public utilities as the ones that will readily serve their purpose for gathering in those taxes which the legislature has made up its mind that it is going to spend; and that the great voiceless throng, made up for the most part of people of scant or moderate means, has quietly had to submit to a heavy burden of taxation. This might not be so bad were it not for the fact that the rights of capital, honestly invested, to earn a fair return have been almost totally ignored, and while many companies have been liberally taxed into bankruptcy many more have been kept on the ragged edge of poverty—a condition which has prevented them from maintaining their self-respect and giving to the public that form of service to which it is entitled.

The joint committee on taxation and retrenchment of the state of New York did not exaggerate when it said that the system of taxation in that state was the despair of every student of the subject. Every study of taxation that is made points out the great inequalities of tax burden, not only between the various groups of industries, but also among the public utilities themselves.

Almost all the blame can be laid at the door of two groups: (1) the local tax officials, who are greedy for everything they can get out of the public utility; and (2) at the door of the state taxing authorities, who still adhere in most cases to the time-worn and out-of-date ad valorem system of taxation.

Quite a good case could be established by the argument that since public utility property is devoted entirely to public use, it should therefore escape taxation to the same degree as a court house or capitol building; but, as far as I know, there is no one within the industry and few outsiders who advocate such an exemption. I do not know of any subject upon which there is a greater unanimity of opinion among tax experts and economists than that of what constitutes the proper basis for the taxation of public utilities. A long list of experts might be quoted in favor of the contention that they should be taxed exactly according to their earnings.

Under the condition of regulation to which public utilities now are almost entirely subject, the object or purpose of public utility tax should be to supplement rate regulation and bring to the state as much as possible of those profits that arise through favorable franchise arrangements; but where the

I HAVE really no quarrel with regulation. I believe it has come to stay and is in the best interests of the public. But what I would plead for today is a recognition by the public of the injustice of imposing twentieth century regulations on the same industry that has to put up with our eighteenth century system of taxation. In a word, I am pleading for the recognition of the principles that the only fair and just method of taxing a regulated industry is according to its ability to pay, for our ability to pay measures accurately the value of the franchise that has been granted to us, whether it remains a complete monopoly or a broken monopoly under the influence of the multitudes of private automobiles that do the work which we once performed.

IT IS fair to assume that we have now reached the point in our political as well as our business life where we realize that the fairest basis of any taxation is that which applies the principle of ability to pay. The public utilities have never so far been taxed under this principle, for they have been regarded as tax gatherers supplying the government with an easy and effective method of providing the money called for by their budgets. The group of people which utilities serve are usually scattered over wide areas and are for the most part unable to make their voices heard in protest. It is only when the bondholders of the utilities are affected that real action is taken and an effort made to get rid of burdens which fall not only on them but upon the consuming public as well.

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franchise arrangements are unfavorable, due in part to the state and its regulation, the state cannot in fairness expect to gain in the form of taxes.

Gross or Net Earnings?

Now if we admit that earnings constitute the basis of just taxation for utilities—and I do not imagine there will be many dissenting voices in this group at least—then how are earnings to be measured? Is it to be gross earnings or net earnings? It is admitted that "net" earnings is the ideal base from a utility point of view, but it should not be forgotten that every company which enjoys the protection of the state, whether profitable or unprofitable, owes something to the state under which it operates its franchise. It might also be argued that the larger the company the more it should pay and that its size is fairly represented by its gross earnings. But gross earnings by themselves can be fully as unjust as the ad valorem method; for a utility, due to the conditions under which it has to operate, may have an enormous gross and no net, while another utility alongside it may have a small gross and a high proportion of net.

It is quite certain that a gross earnings tax alone will never remove inequalities and injustices. But a combination of the two methods—gross earnings and net earnings—will come as close as any tax that has ever been devised toward producing equalities among the utilities themselves and toward bringing them into line with the taxes that ordinary unregulated businesses have to pay. Besides, it will bring to the state a more definite income yearly with which to meet the expenses outlined in its budget, and thus avoid the criticism that the utility is escaping taxation because it is badly managed.

What is the gross-net tax? It is *not* a new idea nor a new method. It is not the wild dream of an unknown and unimportant economist, but the definite recommendation of the most thoroughgoing and expert committee that has ever been brought together to consider taxes—the special committee on taxation and retrenchment of the state of New York which reported in 1922. It is the recommended method of the National Tax Association, which comprises almost all the foremost tax experts and commissioners throughout the country. It is the method that has the approval of such international figures as Professor Seligman of Columbia University, Professor Fairchild of Yale and Professor Bulloch of Harvard. In fact, I do not know of any single prominent economist or tax expert that has had a word to say against it—and yet it has never been adopted by a single state in the Union.

What the gross-net tax proposes to do is this: To tax all public utility corporations according to their gross in relation to their net earnings, the gross earnings being defined as "all receipts from the operation of a public utility," and net earnings being defined as "net earnings from the operation of a public utility after deductions of operating expenses and taxes assignable to operation except the gross-net tax itself." It is hoped, of course, that the gross-net tax will be the *only* tax imposed and that by a system of reapportionment to the individual communities, every other tax and impost burden will be removed as unnecessary and unjust.

No definite schedule could be laid down for all the states, since their budget requirements differ so widely. But for the state of New York, in order to bring in to the treasury almost the same amount of money as was being paid by the utilities under the multitude of taxes that affect operators, the following schedule was suggested:

Every company shall pay an annual tax that shall be the percentage of gross earnings fixed herein:

1. When it has no net earnings or its net earnings do not exceed 5 per cent of its gross earnings—1 per cent.

WHAT the gross-net tax proposes to do is this, to tax all public utility corporations according to their gross in relation to their net earnings, the gross earnings being defined as "all receipts from the operation of a public utility" and net earnings being defined as "net earnings from the operation of a public utility after deductions of operating expenses and taxes assignable to operation except the gross-net tax itself." It is hoped, of course, that the gross-net tax will be the *only* tax imposed, and that by a system of reapportionment to the individual communities every other tax and impost burden will be removed as unnecessary and unjust.

2. When its net earnings exceed 5 per cent of its gross earnings but do not exceed 10 per cent—1¼ per cent.
3. When its net earnings exceed 10 per cent of its gross earnings but do not exceed 15 per cent—1½ per cent.
4. When its net earnings exceed 15 per cent of its gross earnings but do not exceed 20 per cent—1¾ per cent.
5. When its net earnings exceed 20 per cent of its gross earnings but do not exceed 25 per cent—2 per cent.
6. When its net earnings exceed 25 per cent of its gross earnings but do not exceed 30 per cent—2¼ per cent.
7. When its net earnings exceed 30 per cent of its gross earnings but do not exceed 35 per cent—2½ per cent.
8. When its net earnings exceed 35 per cent of its gross earnings but do not exceed 40 per cent—2¾ per cent.
9. When its net earnings exceed 40 per cent of its gross earnings—3 per cent.

I have recently had the pleasure of working with a committee of the Wisconsin Utilities Association and drew up for it a schedule which calls for a tax of 1 per cent on corporations having no net or a net of less than 5 per cent of their gross and ranging up to 7 per cent of the gross in the case of those utilities whose net was in excess of 40 per cent of their gross. No one can complain that this is a light tax. Indeed, if the manufacturers of Wisconsin were to be taxed in the same principle as we are proposing for the public utilities there, they would have to shoulder a burden 30 per cent heavier than they carry today, and I believe that we would find that something like the same conditions exist in almost all states.

It is not hoped that the introduction of the gross-net tax will immediately relieve the public utilities of the burden under which they operate. In my opinion, it would probably be a mistake in judgment to suggest a change in the method of tax and in the amount of taxation at the same time. It would be far better for the utilities to agree to pay as a whole for the coming year that amount of taxation which would be imposed upon them under the ad valorem method, or perhaps the same amount as in the previous year for the industry as a whole. Then using the figures which we have obtained and apportioning a gross-net tax on the basis of these figures, it will be apparent to the commission and ultimately to the Legislature and the people they represent that the public utilities are paying a heavy proportion of their net in taxes. When this is fully realized, it will be opportune to ask for a reduction in the interests of equalization of the tax burdens of those who go up to make the state.

Taxes Readjusted

The gross-net tax will undoubtedly change the amount of taxes paid by the various utilities, some getting relief and others being more heavily burdened. This condition will have to be faced by the industry as a whole, and my hope is that it can be borne for a year, in view of the possible lightening of burden which we can hope for the industry as a whole at the end of that time.

The advantage of simplicity and ease of operation and application of the gross-net tax by the tax commission must not be lost sight of. It would make the administration of the tax commission an unusually simple matter as far as the utilities are concerned. It would avoid appeals and disputes which now take up a great deal of the commission's time. It would be fair as between the industries that comprise the public utility group. It would be flexible.

Some opposition will naturally be made to such a measure, since it proposes to tax utilities by a different method than that which applies to ordinary commercial property; but in some states telephone companies are already taxed by a different method and, after all, method must be made subservient to equality. In adopting the earnings factor as the most important one in determining the ad valorem method of taxation, the commissions have already thrown over completely the basis upon which taxation in the past was founded. This they had to do as the only logical step following regulation which so completely altered the economic outlook of public utilities.

I present this idea on taxation of public utilities as the most hopeful avenue of escape that we have from a burden that is rapidly becoming unbearable and which is responsible in large measure for the depletion of electric railway properties throughout the country. We are between the devil and the deep sea—the devil being the regulatory bodies that say how much

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we shall take in in revenue, and the deep sea being the taxing authorities that say how much we shall pay out in tribute to them for the privilege of operating a utility.

In our fight for lower and less discriminatory taxes we represent not only the owners of millions of dollars worth of invested funds but the millions of car riders who belong to a class of society that is least able to pay high taxes, for the rich have their own private automobiles and patronize our services but little; whereas the great mass of middle and lower class of people, who have been excluded from the federal income tax burden on the grounds that they are unable to contribute, ride the street cars and pay for the privilege a tax more burdensome than that imposed upon any other industry.

Let us awaken them to a knowledge of the conditions. Let us get the information before them through advertising, through Rotary and Kiwanis Clubs and boards of trade and let us enlist their help toward putting the electric railway industry back where it belongs as the cheapest, safest and cleanest and most efficient method of street transportation.

International Congress Announces Program

PLANS for the twentieth congress of the International Tramway, Local Railway and Motorbus Association have been sent out by President Fr. de Lancker and General Secretary A. de Backer. The congress will be held on Oct. 10-15 inclusive at Barcelona, Spain. Following is the provisional program as announced:

Sunday, Oct. 10

Registration and announcements.
10:30 p.m.—Reception to delegates.

Monday, Oct. 11

10:30 a.m.—Opening session; address of welcome; first technical session.
1 p.m.—Luncheon as guests of the Marquis of Foronda, president of the local executive committee of the association.
5 p.m.—Second Session.

Tuesday, Oct. 12

10 a.m.—Third Session.
3 p.m.—Visit to bull ring.
7 p.m.—Fourth Session.

Wednesday, Oct. 13

10 a.m.—Fifth Session.
1 p.m.—Luncheon as guests of Cataluna Railways.
3:30 p.m.—Visit to Sabadell and Tarrasa, served by the Cataluna Railways.
9 p.m.—Banquet given by his Excellency the Mayor of Barcelona.

Thursday, Oct. 14

Excursion to Montserrat; luncheon given by the Catalan Railway.

Friday, Oct. 15

10 a.m.—Sixth Session, general business meeting; meeting of executive committee.
1 p.m.—Luncheon at Tibidabo, guests of the Barcelona Metropolitan Railways (subway) and Great Metropolitan Railway (suburban railway system), to be followed by visits to the shops of these companies.
8:30 p.m.—Banquet, guests of Barcelona Tramways; closing of congress.

On Saturday morning those who desire can leave for Madrid, where the delegates will be guests of the Madrid Tramways. Sunday will be devoted to sightseeing trips in Madrid. Monday an excursion to Toledo is planned, and Tuesday will be devoted to an inspection of the Madrid Tramway System and shops.

In connection with the congress, a program of entertainment has been arranged for the ladies.

F. L. Blanchard Heads Utility Advertising Association

NEW officers were elected by the Public Utilities Advertising Association during a recent meeting in Philadelphia. As now constituted the personnel of the association is: President, Frank L. Blanchard, Henry L. Doherty Company. Vice-presidents, George F. Oxley, National Electric Light Association; Hal. M. Lytle, Chicago Rapid Transit Company. Secretary, Henry Obermeyer, Consolidated Gas Company of New York. Treasurer, Charles W. Person, American Gas Association.

The association is one of the youngest departmentals of the International Advertising Association, but the public service group reported a membership of more than 300, representing 225 utility companies throughout the country.

Advantages of Electric Drive for Gasoline Buses*

Higher Speeds, More Efficient Utilization of Engine, Less Mechanical Strain and Reduced Maintenance Costs Are Obtained with This Type of Vehicle

BY H. L. ANDREWS
Assistant Engineer Railway Department,
General Electric Company

SEVERAL factors contribute to the ability of the electric drive to maintain higher average speeds than the mechanical drive bus in frequent stop service. Of chief importance is the elimination of the time lost in shifting gears during each acceleration or on grades. An expert driver trying to make a fast schedule with mechanical transmission can shift gears and let the clutch into complete engagement in about 1.5 seconds. The average driver trying to avoid jerking the passengers and clashing gears requires from 2.5 to 3 seconds for each gear shift. On level runs, with four-speed transmission, drivers may start on second gear and thus have three shifts to make on each acceleration, which consumes from 5 to 8 seconds. During the period of changing from one gear to another the engine is not only doing no useful work but there is an actual retardation of bus speed.

To compensate for these sags in the acceleration curves many drivers will operate engines at excessive speeds in second and third gear to obtain high power output from the engine and high tractive effort at the rear wheels. Unless the engine speed is brought to a very high point in third gear the speed when starting on high is so low as seriously to reduce the rate of acceleration. These features are inherent in mechanical transmission where engine speeds and wheel speeds are directly proportional and in each gear position the engine speed and its power must operate over a wide range.

With the automatic electric drive the characteristics of the generator and motors are such that the engine may be quickly increased in speed from idling to a point of high output speed, and then gradually increased to maximum safe output with no intermisssion or lag. The result is operation at the most efficient part of the speed curve, a more constant power output and a very appreciably higher rate of acceleration. This higher rate of acceleration permits higher schedule speeds, and experience indicates that under similar operating conditions a bus equipped with electric drive can maintain at least 10 per cent higher schedule speed than a bus equipped with mechanical transmission.

There is little question but that with expert drivers mechanical transmission can accelerate as rapidly as electric transmission, but it is not feasible in normal operation, and even though it were, it is possible that accidents would increase to such an extent that the pace could not be maintained. The Philadelphia Rural Transit Company is operating 235 motor buses with electric drive and maintaining schedule speeds of 11.5 to 12.5 m.p.h., which it is safe to say is materially higher than schedules maintained by mechanical transmission under similar conditions.

In actual service tests with electric drive the maximum engine speeds obtained during acceleration or when climbing severe grades are approximately 1,700 r.p.m., and normally in frequent stop service the maximum speed seldom exceeds 1,500 r.p.m. Similar tests with mechanical drive when attempting to maintain similar schedules show maximum engine speeds of 2,000 to 2,600 r.p.m. in the intermediate gear position.

Or, to put it another way, the electric drive reduces the engine peaks during acceleration approximately 40 per cent. In addition, during the retardation period, the idling and braking period, the engine revolutions with mechanical transmission are directly proportional to the bus speed. With electric drive the engine drops to idling speeds at the beginning of the retardation period and operates at this speed until the bus is again accelerated, when it is quickly brought up to a high output speed.

This feature, togther with the lower peak engine speeds during acceleration, means less engine revolutions in a given service.

*Abstract of a paper presented at the semi-annual meeting of the New York Electric Railway Association, Bluff Point, N. Y., June 25.

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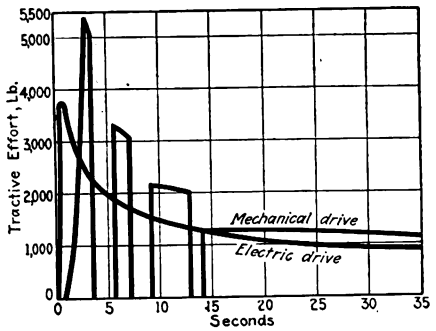


Comparison of Acceleration with Mechanical and Electric Drives

Tests over an extended period in service with two buses using the same engine in each, exact duplicates in every respect except that one has electric drive and the other mechanical, proved that the engine of the electric drive bus operated at maximum speeds of approximately 1,650 r.p.m., while the same engine with the mechanical drive had to be operated at maximum speeds of 2,600 r.p.m. to perform the same schedules. The engine with the mechanical transmission made from 15 per cent to 22 per cent more revolutions per bus-mile than the same engine with electric drive performing the same work.

Torsional strain during acceleration on the engine, chassis, clutch and gears is recognized as contributing to high maintenance. With electric drive these torque surges are eliminated, which should reduce maintenance costs.

From an engineering viewpoint, compare the sharp surges which occur in every acceleration as the gears are shifted and the clutch engaged with the electric drive which starts off and continues to maximum with a gradually increasing torque without at any time putting a severe strain on any part of the mechanism. Dynamometer tests show that the electric drive cuts the peaks of torsion approximately 60 per cent.

Comparative Fuel Consumption

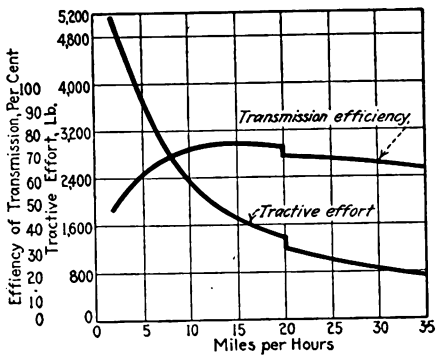
The question which occurs to the average operator is, Do you sacrifice fuel efficiency by the use of electric drive? The over-all efficiency of electric drive is approximately 75 per cent, which is less than mechanical transmission on direct gears, and for this reason it would seem that the fuel efficiency should be less. Results in service show that electric drive does not increase the fuel consumption beyond that required by the additional weight of equipment.

An 11-ton loaded bus equipped with mechanical transmission will operate from 4 to 4.5 miles per gallon of gasoline, or 44 to 50 ton-miles per gallon. The same vehicle equipped with electric drive will weigh approximately 12 tons loaded and will operate 3.5 to 4 miles per gallon of gasoline, or 42 to 48 ton-miles per gallon. This is far less increase in fuel consumption than is caused by the use of a six-cylinder engine instead of a four-cylinder, yet 75 per cent of all buses are today being equipped with six-cylinder machines.

One reason for this is partially the average lower speed of the engine with electric drive and every revolution of the engine takes a certain amount of gasoline, whether that gasoline is consumed and properly utilized or not. Another reason is that with mechanical drive it is necessary to step up through several long trains of gears which are not very efficient and which limit the engine speed when starting to a period of low thermal efficiency. The fact that with electric drive the engine is not called on to deliver high torque at low engine speed permits the use of higher compressions at normal operating speeds, which increases the power and efficiency.

With electric drive the engine speed rises very rapidly to high output speed and then gradually increases to a maximum of 1,600 to 1,700 r.p.m. All through that cycle the electric drive works through the most efficient part of the engine characteristic.

As a matter of fact, any difference in fuel is relatively unimportant, as fuel costs are about 4½ cents per bus-mile, and any factor which affects fuel consumption 10 per cent will affect costs less than ½ cent per bus-mile. The most important item in costs is crew expense, and as this item is approximately 14½ cents per bus-mile, any factor which affects the schedule speed by 10 per cent affects the costs 1½ cents for crew wages only, and, furthermore, affects the fixed charges in the same ratio, because as schedule speed increases the number of buses for the same service decreases.



Speed-Tractive Effort Characteristics and Corresponding Efficiencies of Electric Drive

The period of operation is too short as yet to make available any figures on relative maintenance. However, the Philadelphia Rural Transit Company and the Capitol District Transportation Company have doubled their inspection periods with electric drive and so reduced their garage expense.

After all, the most important point is high schedule speed with smooth acceleration, greater comfort for passengers, quiet operation and greater safety by reason of less manual duty on the part of the operator and better control of the bus.

American Association News

Hotel Reservations at Cleveland

MEMBERS planning to attend the convention of the association next October who have not yet sent in their reservations for accommodations in Cleveland, in accordance with a circular letter of April 27, 1926, of the hotel and housing committee, are advised to do so at the earliest possible moment. All such communications should be addressed to Paul E. Wilson, chairman hotel and housing committee, American Electric Railway Association, 403 Chamber of Commerce Building, Cleveland, Ohio.

Metropolitan Section Prepares to Show Its Form

MEMBERS of the Metropolitan Section are now preparing to go into training for the many athletic events scheduled for the second annual outing. Pelham Bay Park has been selected as the scene of these activities. The date is Aug. 11. First on the program will be the golf tournament, which is scheduled to commence at 9 o'clock in the morning. Details concerning the course, conditions for the tournament, etc., will be announced later by the chairman of the golf committee, E. B. Smith of the American Brake Shoe & Foundry Company.

No general arrangement has been made covering a mid-day meal for the members of the section who go on the outing. It is thought that those who play golf probably will wish to get lunch at the club where the tournament is held. Others will be expected to bring their own lunches or get them at some neighboring lunchroom.

Athletic events on the program for the afternoon are of varied character. They include:

1. 100-Yard Dash.
2. Fat Men's Race (minimum weight, 220 lb.).
3. Tug of War between Manufacturers and Railway Men. (Each side will endeavor to drag the other through a mud hole or water hazard.)
4. Wheelbarrow Race. (Each contestant will be blindfolded and given a wheelbarrow to be placed as near as possible to some predetermined object, such as a tree, pole, etc.)
5. Boat Race. (Each contestant will row a given distance carrying a passenger in the stern of his boat.)
6. Quoits.
7. Baseball Game between Manufacturers and Railway Men. (It is understood that the railway men have discovered material of a very high order for the battery of their team.)

Activities of the afternoon will be followed by a dinner that is scheduled to start at 6 o'clock. Prizes for the athletic events will be awarded at the dinner.

Members planning to attend this outing are urged to procure their tickets as soon as possible. Each railway company has at least one representative on the ticket committee. Applications should be made to these representatives for whatever tickets are desired. Others may procure tickets from G. H. Ord, chairman; J. F. Craig or C. P. Westlake.

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The News of the Industry

Jitney Issue Reopened

Resort Made to Injunctions and Counter Injunctions at Detroit—More Moves Likely

The fate of the jitneys operating in Detroit streets wavered with the closing of the month of June and was not definitely decided even when the Michigan Supreme Court sustained its former decision upholding the validity of the ordinance passed by the Detroit City Council barring the jitneys from the main thoroughfares.

Despite an announcement by the general manager of the Department of Street Railways that it would have 41 motor coaches purchased from the D. U. R. for runs on Jefferson Avenue, Grand River Avenue and Fort Street, and additional cars on Woodward Avenue, with a new skip-stop system to speed up service to care for the regular jitney patrons, Police Commissioner Croul stated that no immediate steps would be taken to drive the jitneys off the streets. The police department, instead, was working out a system of parallel routes for the jitneys. It was intended to ask the Council to revamp the jitney ordinance.

An opinion on the matter asked of the Corporation Counsel's office by Colonel Wallace, general manager of the D. S. R., was to the effect that the Michigan Supreme Court had upheld the validity of the jitney ordinance and that the ordinance should be enforced until amended. On June 30 Mayor Smith ordered that no jitneys be permitted to operate on the main streets of Detroit after that date. The Council refused to consider a resolution to extend the time for enforcement of the ordinance until further order of the Council.

Mayor Smith stated emphatically that the only amendment to which he would agree was one strengthening the ordinance and throwing the jitneys off the streets altogether. It was cited that if the Department of Street Railways is to give the best possible service for the lowest possible fare, it should have a monopoly, and that the fares collected by the jitneys should go to the D. S. R.

The president of the Council expressed the opinion that the best interests of the people cannot be served with several competing transportation systems operating in the streets and that the monopoly should be extended also to include the motor buses. He further stated that the D. S. R. is not the only consideration; safety must also be considered.

Representatives of the jitney drivers argued that it was an unwise move from a civic standpoint arbitrarily to order $500,000 worth of rolling stock off the streets when transportation facilities are none too plentiful. The jitney was referred to as the only present means of rapid transit offered to the public of Detroit. The president of one of the drivers' associations declared that the jitneys are not taking a fighting attitude and will not try to run against any official orders, but there is an urgent need for them and they are asking that they be allowed to remain.

A brief attempt was made to enforce the ordinance on July 1, but all attempts were abandoned after 10 a.m., at which hour the police and Corporation Counsel were served with copies of an injunction signed by Circuit Judge Harry J. Dingeman. The injunction restrained the city authorities from interfering with the operation of the jitneys until after a hearing set for July 7. Attempts at enforcement before the writs were served consisted in keeping the vehicles moving in the streets instead of permitting them to stand at their regular loading stations.

The Corporation Counsel's office gave out an opinion that the Circuit Court had no jurisdiction in the case as the validity of the ordinance had been upheld by the Supreme Court. A hearing was requested within 24 hours, and despite the contention of the Corporation Counsel that the injunction was invalid, Mayor Smith declared that the city would observe the terms of the injunction until such time as it was dissolved.

Legal skirmishes followed in quick succession on July 2, but at the end of the day the jitneys were still running. The Supreme Court handed down a ruling upholding the validity of the ordinance and refused to grant a rehearing of the case as asked by attorneys for the jitney drivers.

In the forenoon of July 2 Judge Murphy dissolved the injunction granted by Judge Harry Dingeman which restrained the city from enforcing the ordinance, and in the afternoon of the same day he granted a temporary restraining order forbidding the police, Mayor Smith and the Sheriff's office from interfering with jitney operations. This later action by Judge Murphy was taken on a "taxpayer's suit" and granted a reprieve until July 7. A public hearing was held by the Council on July 6.

Subway Motormen of Interborough, New York, Strike

Operators and Switchmen Secede from Brotherhood Organization—Contract with Other Men Renewed Recently—Full Statements of Company's Position

Strikers Ask $1 Hour

MOTORMEN for the Interborough receive from 69 to 82 cents an hour, depending on length of service. The scale for the first year is $38.64 a week and $45.92 after six years' service.

Switchmen at present receive from 58 to 61 cents. Their average weekly earnings for the first year are $32.48. In the third year they receive $34.16.

The strikers demand $1 an hour for motormen and 75 cents for switchmen. They and the other Interborough employees work seven days in the week.

NEWSPAPER accounts of the strike of the motormen and switchmen of the Interborough Rapid Transit Company, New York, declared effective at midnight on July 5, make the situation appear much worse than it really is. Service is inadequate, it is true, but the lines are being operated with a degree of skill that is unusual considering the defections from the ranks of the men. These defections totaled about half the force of workers on the subway division, with a scattering of men from the elevated lines. The company has the situation well in hand, and is gradually building up its personnel to the required quota.

But it is the issues involved that are of real interest. Officials of the Brotherhood of Interborough Rapid Transit Company Employees and of the company signed an agreement on June 30 continuing for a year the wage scale agreement which expired at midnight on June 30. The new agreement covers all 28 locals of the brotherhood. The action was taken at an executive conference attended by 62 representatives of the union and three I.R.T. officials. M. J. Mangan, secretary of the brotherhood, and Frank Hedley, president and general manager of the I.R.T., made the announcement. Prior to the meeting, the majority of the locals were prepared to renew the old agreement, but those representing the motormen and switchmen held out for a wage increase.

There had been rumors before of possible dissension among the motormen and switchmen, but this was the first real indication that the situation might get beyond the point of possible settlement by mediation between the two parties. On July 2 there followed

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A Scene During the Subway Strike with New York Policemen Waiting in a Subway Coach at Van Cortlandt Park Station to Go with Strike-Breaking Motormen

an ultimatum that unless their demands were met by 6 o'clock that night, at least 579 motormen and switchmen out of a total of 752 employed on the subway lines would cease work at a minute after midnight Tuesday morning. To the still loyal members of the brotherhood Frank Hedley, president of the Interborough, explained that power never had been vested in the subway motormen and switchmen's union to reject or refuse to be bound by the action of the general committee of the brotherhood. Because he believed the subway motormen and switchmen were being made tools of by a few ambitious men among them desirous of promoting their own ends, he said he was going to give them a reasonable opportunity for second thought. If they persisted in withdrawing from the brotherhood and joined this "outlaw organization," he said, "it will be necessary for me to terminate their employment."

So serious had the prospects now become that the Transit Commission held conferences on Sunday with representatives of both the railway and the motormen. The representatives of the motormen called first. They were Edward P. Lavin, Harry Bark and Joseph Phelan. The delegation informed the commission that they had decided to accept the commission's offer to arbitrate the wage question. Mr. Hedley and James L. Quackenbush, general counsel of the railway, were received by the commission immediately after its conference with the motormen's representatives. Each conference occupied close to one hour, and upon the retirement of the Interborough company's representatives Chairman John F. Gilchrist and his colleagues announced that the commission had made to the representatives of the company the same offer it had made to the representatives of the motormen, namely, to act as arbitrators of the wage dispute, if acceptable to both sides. The Interborough company's representative stated, that by reason of their agreement with the Brotherhood of Interborough Employees, the officers of the company could not act without consulting the general committee which had been called to meet at 10 a.m. the following day. They therefore asked that they be allowed until noon that day to give their answer. The representatives of the motormen and switchmen agreed to this.

Mr. Hedley took the stand he did because the contract between the Interborough and the Brotherhood of Interborough Employees provides that all matters of dispute must be submitted to arbitration, to be conducted on behalf of the brotherhood by its general committee, which shall name one arbitrator, the company the other, and in the event that the two fail to agree upon the third, the third shall be selected by a justice of the Supreme Court. He pointed out that he had been urged to stand by the brotherhood and that he had assured the organization he would do so. He said that to consent to treat with the seceders even indirectly through the commission might be regarded by the brotherhood as a breach of contract with that body.

On the morning of July 5 a meeting of the general committtee of the brotherhood was held. All of the 62 delegates were present except Messrs. Lavin, Bark and Phelan, representatives of the subway motormen and switchmen. The unanimous opinion of the general committee of the brotherhood, which represents all employees except the subway motormen and switchmen, was that for Mr. Hedley to consent to arbitrate any matter with any group of men who have left the brotherhood would be regarded by the general committee as a breach of faith by him as well as a violation of the contract between the company and the brotherhood.

In consequence Mr. Hedley informed the commission that he was unable to see how he could adopt the suggestion of the commission. He was sure that to do so would jeopardize the public interest in a deplorable manner. He said that any conduct of his which led the loyal members of the brotherhood to believe that they had been betrayed and that their organization was about to be disrupted might result in provoking some 12,000 or 13,000 men to leave the service.

Strike Breakers Quartered in Car Shop to Be Available for Duty

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While he was powerless in the circumstances to accept arbitration with the seceders, he requested the transit commission to exercise its powers under the statute and to institute on its own motion a public hearing to find and report to the public all of the facts bearing in any way upon the causes which have led to the existing situation. He felt that a request from the commission to dissatisfied subway motormen and switchmen to continue in the service until the commission had concluded its investigation and reported its conclusions to the public, would insure the continuance of service.

In conclusion Mr. Hedley said that while he desired tranquillity, if he must make a choice, he preferred to face a strike of a few hundred motormen rather than to face a strike which would involve practically the entire force of the company included in the brotherhood.

In view of Mr. Hedley's statement there was no mistaking the company's stand. The situation was up to the representatives of the men who had seceded from the brotherhood. In an effort to make good their boasts they called out such men as they had succeeded in enticing into the new organization, which they termed the Consolidated Railroad Workers.

All the other transportation agencies were quick to come to the aid of the public. In response to a call issued by the Transit Commission, a conference was held in the commission's office on July 2, attended by the operating heads of all the large transportation systems, (except the Interborough Company) and Commissioner Albert Goldman of the Department of Plant and Structures, which has supervision of the municipal bus lines. The entire Transit Commission participated.

Chairman Gilchrist told the conferees that there was a possibility of a strike upon the Interborough Rapid Transit system, and that, a stoppage or curtailment of its service would work great hardship upon the people of New York; and that he had called them together for the purpose of taking precautionary measures.

All of the conferees pledged their co-operation and promised to do all that is possible in the way of providing additional service. It was also suggested that some of the trolley lines which intersect, arrange to exchange facilities, so that the cars of one company may operate temporarily over the tracks of another. Each company also agreed to supply extra cars, both by drawing upon their reserve, and by transferring from crosstown lines to longitudinal lines.

Commissioner Goldman of the Department of Plant and Structures stated that his department would be able to supply from 100 to 150 extra buses, which would be placed on streets where they would be most needed.

At the conclusion of the conference each company was requested to submit to the commission a typewritten statement showing the extent of the extra service to be provided and such changes in operation as it will be necessary to impart to the public, so as to minimize the confusion which may arise from a change in the daily routine. As soon as this statement was received and tabulated, the commission prepared a statement for the information and guidance of the public.

The following reports show that other transportation agencies have carried considerably more than normal traffic:

Company	Passengers Carried in Excess of Total of July 7, 1925
B. M. T. subway and elevated lines	439,420
Third Ave. surface lines	239,012
B. M. T. surface lines	141,940
Fifth Avenue Coach	108,817
Brooklyn City Railroad	77,060
New York Railways	40,480
Ninth Ave. surface line	40,160
Fourth Ave. surface line	31,520
Eighth Ave. surface line	15,600
New York Central	15,000
Total	1,112,989

The real picture of the accomplishments of the company is best told by the record of service which it has been able to give and by the figures of defection from the ranks and the number of new men trained to fill the strikers' places. Despite the effort to involve the elevated road in the walkout, service on the elevated lines has been practically normal at all times. Subway service, suffered the first day, for only 30 to 50 per cent of normal service was given. On Wednesday service was about 70 per cent normal and on Thursday the percentage had been increased to 77 per cent normal. The regular number of men employed as motormen and switchmen is 752. Of these more than 700 were induced to go out the first day. Former motormen to the number of 113 and former switchmen to the number of eighteen returned to the service by Wednesday night. Up to Thursday 1,081 men had been examined, of whom 77 were rejected for physical reasons and 276 because of their inability to qualify. By Thursday night the company had available through its intensive system of employment and selection 610 motormen and 249 switchmen, or more than 100 in excess of the normal requirements.

Strike On in Indianapolis

Amalgamated Men, Small Part of Entire Force, Walked Out on July 5—Service 75 Per Cent Efficient—People Little Inconvenienced

Fewer than 40 per cent of the 1,400 motormen and conductors of the Indianapolis Street Railway, Indianapolis, Ind., went on strike July 5 as the result of a meeting of employees affiliated with the Amalgamated Association. Among other things the men demand reinstatement of between 65 and 70 employees alleged to have been discharged for union activities, recognition of the union, a substantial increase in wages, the amount to be left to an arbitration board, the arbitration of all questions on which the company and union cannot agree, and improvement of working conditions.

A résumé of the traffic situation during the first few days of the strike shows the company operating about 75 per cent normal. On no lines are the cars tied up. The buses are maintaining virtually perfect schedules. The general public does not seem particularly concerned about the strike.

During the past three or four years the Indianapolis Street Railway has escaped censure because it has laid its problems fully before the public and it is generally known the company is not making any money and that its rate demands have been very moderate.

Late on July 6 officials of the company notified the men that all strikers would be restored to their usual jobs if they reported for work not later than 6 p.m. on July 7. The sudden action of the company, coupled with the short time given for reporting, indicates that officials believe they have the situation well in hand and will be able to resume regular schedules without the aid of the strikers.

John M. Parker and Robert Armstrong, international vice-presidents of the Amalgamated, who have been in Indianapolis for several weeks organizing the union, made brief talks at the meeting at which the question of going out on strike was proposed, but they left before the strike vote was taken.

On behalf of the company its officials on July 6 requested that contempt proceedings be brought against certain employees and officials of the union. Deputies in the District Attorney's office said they were investigating the situation and would bring proceedings if the evidence warranted action. The announcement was made after Alexander G. Cavins, Assistant District Attorney, had consulted with C. W. McPhall, head of the Department of Justice in the Indiana federal district, and after he had conferred with attorneys for the railway.

Officials of the Indianapolis police force have increased the working hours of patrolmen from eight to twelve hours, giving the department a third more men at all times. Emergency squads, heavily armed, are held in reserve at headquarters, ready to be dispatched to the scene of any trouble.

The public is suffering little inconvenience because of the strike of motormen and conductors. At morning and evening rush hours the strike is apparent, but at other intervals during the day and night little difference is noticed. Officials of the company say that 75 men returned to work before the dead-line on July 7, after which the strikers lost their seniority rights. In addition the company has hired 240 new men who have had experience before in car operation, and as soon as they have been amalgamated into active service it is thought cars will be operated with no interruption at all.

It was said by Albert Ward, United States District Attorney, that no action would be taken immediately toward citing for contempt of court some of the leaders in the strike movement for alleged violation of the injunction order issued July 3 by Judge Robert C. Baltzell. Mr. Ward said he was awaiting a report from the Department of Justice before taking action. Up to the present time law violations have been few. Police appear to be vigilant and special details are held at substations.

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Philadelphia-Camden Bridge Opened

The great suspension bridge linking Philadelphia and Camden, across the Delaware River, was opened on July 1. The bridge is 1.82 miles long, while its main span alone is 1,750 ft. The main roadway of the bridge can accommodate three lines of traffic in each direction, while paralleling it tracks are reserved for trolley lines and high-speed interurban electric trains running to South Jersey towns. An upper level is provided for pedestrians.

With the opening of the bridge Philadelphia and Camden were linked for the first time by a through transportation service. Buses are run from Kaighn's Point ferry of the Philadelphia & Reading Railway, in Camden, to the Camden bridge plaza. Crossing the bridge, the route divides, buses proceeding west by way of Vine Street, Twenty-second and Race, returning over Race Street, and others by way of Eighth Street and Market to and around City Hall, returning over Market and Seventh to the bridge, thence to the Kaighn Avenue ferry.

The buses that operate over Market Street carry only interstate passengers. Stops are made at each street intersection to discharge passengers on the westbound trip and to receive passengers only on the eastbound trip. The fare is 10 cents.

Buses are also operated from plaza to plaza over the bridge at a 5-cent fare. The Philadelphia Rapid Transit Company and the Public Service Railway of New Jersey, which are co-operating in supplying the present service, are studying the desirability of P.R.T. now furnishing a street car service from Camden center city to the Philadelphia plaza station for a 7½-cent P.R.T. fare, pending the building of the proposed Chestnut Street surface car subway connecting with the new line.

The Delaware Bridge Joint Commission, with representatives of New Jersey and Pennsylvania, was created in 1919, and in 1920 Ralph Modjeski, chief designer of the bridge, began his plans. Congress and the War Department approved the project, and construction work began on the Philadelphia side on Jan. 6, 1922.

7-Cent Fares to Continue in Rye and Port Chester

The Public Service Commission of New York under an order issued on June 30 authorized the New York & Stamford Railway, effective on July 1, to continue the present 7-cent fare in Rye and Port Chester until Nov. 1, 1926, unless otherwise ordered and a 5-cent fare in zone 1 between Mechanic Street in New Rochelle and the Harrison-Rye dividing line.

Evidence showed that in 1925 there was a deficit of $3,367 and an estimated deficit in 1926, based on five months operation, of $78,900 based on the fares fixed in May 1925. The company further estimated a deficit with the 5-cent fare in zone 1 for 1926 of $146,267. A 7-cent fare prevails on the company's lines in Connecticut.

It is difficult to see how, in the face of such operating results and estimates, the commission holds, the company can continue to carry on its operations very long. It appears, however, that it does not expect to do so because the company finds that several months must elapse before bus lines can be started and that public interest demands operation of the lines until the establishment of the bus system.

No doubt the cessation of the railway service at the present time, the commission holds, would be prejudicial to the public interest, and in view of the actual operating results the commission is justified in continuing the present 7-cent fares in the zones within Rye and Port Chester.

Agreement Reached in Tacoma

Terms Announced Under Which Company There Will Operate for Temporary Period

Just 23 days after the new administration of the city of Tacoma, Wash., came into office a definite agreement was reached with the Tacoma Railway & Power Company, providing for at least a temporary settlement of the transportation problem during a test period of from six months to one year. The agreement was reached without any evidence of the bickering and recriminating that have marked the past eight years attempt to come to an agreement, and Mayor Melvin G. Tennant is being congratulated by Tacoma citizens for his fair-minded attitude toward the railway. The company was represented by Richard T. Sullivan, manager; Frank D. Oakley, attorney; C. S. Reynolds, public relations superintendent, and E. Conover, statistician.

Under the proposed test plan, cash fares will drop from 10 cents to 8 cents. Street car tokens will be sold at the rate of fifteen for $1 at agencies throughout the city. Tokens heretofore have been 8⅓ cents. The weekly pass plan will be eliminated. This will mean an increase of fare for certain users, but for others it is expected that the rate of fifteen tokens for $1 will figure out at no higher fare per ride. Traction officials figure there are about 500 out of the present 5,000 to 6,000 pass users who are "professionals," in that they use their passes many times every week. It is said this class is now getting service at less than cost, at the expense of other riders.

Transfers, exchangeable between the private line and the municipal belt line, will accompany the cash or token fares. This will mean a saving for the tideflats worker, who has been forced to pay the usual fare on the private lines and 5 cents more on the tideflats line.

Opportunity is reserved to revise the fare bases during the period of the test. This revision might be up or down, as the result of the test dictates. If at the end of a two-months period it is demonstrated that the fares are beyond hope of producing revenue sufficient to cover the cost of operation, maintenance and fixed charges and leave an annual sum of $270,000, which the city officials have agreed is reasonable to be devoted to depreciation and return on investment, it is proposed that the fares be changed in a trial to produce more revenue. On the other hand, if the earnings appear to warrant it a lower fare may be tried.

Under the proposed plan representatives of the city and company will meet once a week to go over figures of the week's business and consider means of increasing efficiency, service and returns, or of reducing costs.

Competing buses will be eliminated under the proposed operation. Buses will be used by the railway only where extensions of service are needed. Three such extensions have been agreed upon.

Wages Advanced in Peoria

After negotiations which have been going on since May 1, Arbitrators Henry Mansfield for the men and E. E. Soules for the Illinois Power & Light Corporation, Peoria, Ill., have reached an agreement in adjusting the wages of the railway and bus employees. Their finding gives all platform men, motor coach, carhouse and shop men an advance of 2½ cents an hour. The award is retroactive to May 1. It will be binding until April 30, 1927. The new rates for trainmen are 48½ cents an hour for the first year, 50½ cents an hour for the second year and 52½ cents an hour thereafter. One-man car operators will receive 5 cents an hour extra. The company operates practically all one-man cars. The new rates for the bus men are 53½ cents an hour for the first year, 55½ cents an hour for the second year and 57½ cents an hour for the third year and thereafter.

Hearings on Fare Petitions Scheduled

Hearings on the petition of the New York State Railways for a higher fare rate in Rome and Oneida will be held before the Public Service Commission at Albany on July 12. In Rome and in Oneida a new maximum rate of fare of at least three tickets for 25 cents and a cash fare of 10 cents are sought in place of the 7-cent fare which has been in existence in Rome since May 25, 1920, and in Oneida since Feb. 7, 1923.

Extra Suits and Valets, Too, in Pittsburgh

Employees of the Pittsburgh Railways, Pittsburgh, Pa., have fallen upon delectable days. Trainmen will hereafter have the choice of two suits of clothes to pick from in lieu of the traditional one and will have the attention of valets to repair linings, replace buttons and clean and press trousers. This metamorphosis came about through an announcement by the company that nine tailor shops with expert tailors in charge had been opened at the company administration building. The new suits will adhere to the present mode of blue serge with pockets and will be topped with the traditional caps on which numbers will be stamped. This action of the company in permitting its employees to a choice of garment is regarded, so one criterion avers, as the first move in a campaign to have the Pittsburgh Railways men set the fashions of the smoky city.

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Transportation Committee for Cincinnati

Representatives of the Cincinnati Street Railway and the major bus lines of Cincinnnati, Ohio, have organized the "Greater Cincinnati Transportation Committee" to settle all difficulties and problems of transportation arising between electric railway and bus lines. The committee comprises Walter A. Draper, president of the Cincinnati Street Railway; Edwin Becker, representing the Cincinnati Motor Bus Company; Thomas L. Tallentire, president of the City Transit, Inc., and C. McGreight, president of the Blue Bus Company. Edgar Dow Gilman, director of street cars and motor buses of Cincinnati, and W. J. Wiggeringloh, safety director of Norwood, Ohio, are ex officio members. The committee has decided to meet at intervals to discuss transportation matters.

Arbitration Board in Montreal Negotiates on Wages

An arbitration board is hearing the wage dispute between the Montreal & Southern Counties Railway, Montreal, Canada, and its motormen and conductors. The men have petitioned for an increase of from 5 cents to 7 cents a day and for a basic nine-hour day. Bernard Rose, K. C., is chairman of the board. At a recent meeting A. E. Crilley, chief of wage bureau of the Canadian National Railways, held that the cost of living had increased 49 per cent since 1914 and rates of pay had jumped 108 per cent on the interurban lines and 100 per cent on the suburban lines; that to accede to the men's demands would add $34,000 annually to operating costs. W. J. Babe, vice-president of the Brotherhood of Railroad Trainmen, questioned the cost of the raise as claimed by Mr. Crilley. Members of the board hearing the dispute traveled over sections of the road recently on an inspection tour to gain first-hand knowledge of the manner in which operations are conducted. The Montreal & Southern Counties Railway operates 29 miles of line.

Provisions of Hamilton Agreement Outlined

In accordance with the new agreement entered into recently between Hamilton, Ont., and the Hamilton Street Railway, the company undertakes to improve its service by the expenditure of about $1,250,000 during the next three years for new cars, buses and carhouses. The vote of the electors approving the contract was referred to in the ELECTRIC RAILWAY JOURNAL, issue of May 15, page 859. This public decision terminated a period of dissension which started in December last year following the defeat of two railway by-laws, one providing for the city's purchasing the system and the other for granting to the Hamilton Street Railway a 25-year franchise. At that time negotiations resulted in a continuation of the service pending the completion of a new contract.

The essential points of the new agreement provide that the fares shall be just and reasonable; that for the next two years the present 5-cent fare shall remain in force; that the company is to have the exclusive privilege of carrying people by any means except cabs and taxicabs; that the existing jitney licenses shall be issued and no transfers of licenses allowed; that after the expiration of two years no jitney licenses will be renewed. Other features of the agreement refer to the financial obligations assumed by the company in relationship to the city. In the past the city collected about $100,000 a year for mileage and percentage. These charges are dropped. The cost of snow removal used to be divided equally between the city and the company. According to the new agreement the city will bear 60 per cent of the cost and the company 40 per cent. The company will also be permitted to run one-man cars and to carry advertising on the outside of the cars. Both of these were formerly forbidden.

News Notes

Six-Cent Fare Continued.—The Transit Commission has authorized the New York & Queens County Railway, operating between Corona and College Point and between Flushing and Jamaica, in Queens, N. Y., to continue its 6-cent fare for another year. The increase from 5 cents to 6 cents was ordered by the Supreme Court in Long Island City in 1924, when Lincoln C. Andrews, receiver of the company, asked that 1 cent be added to the fare for every $100,000 spent by the company for paving between its tracks.

Wage Contract Renewed.—The contract between the Shreveport Railways, Shreveport, La., and its employees, which was in force prior to July 1, 1926, has been continued for another year, without modification.

One-Man Cars Will Be Tried.—One-man cars will be placed in service in Memphis, Tenn., within the next few weeks by the Memphis Street Railway to effect a saving in operation of costs to be applied to better service. Collectors of fares will be placed on the ground at busy corners downtown.

Increased Fares in Hannibal.—The Hannibal Railway & Electric Company, Hannibal, Mo., has been granted permission by the Missouri Public Service Commission to increase its fares to 8 cents for adults and 4 cents for children. Tokens are two for 15 cents and children's tokens 3¾ cents apiece. These rates are a 2-cent increase for adults and a 1-cent increase for children over the former rates. The new rate is expected to show a return of 10.7 per cent for depreciation and profit. The commission fixed the value of the property at $219,711.

Increased Tariffs on Special Tickets Sought.—The Chicago, Aurora & Elgin Railroad, Aurora, Ill., has filed a petition with the Illinois Commerce Commission asking for authority to raise its tariffs 20 per cent on its monthly commutation tickets, ten and 25-ride coupons and special one-day limit tickets. No increase is sought for regular fares and school children's fares. If the increase is granted it will be effective July 15. President Budd asserted that the return is not sufficient to provide for necessary development and that existing rates are lower than the rates of other competitive lines. He stated that the actual return to the entire property was only 3.54 per cent last year. On June 15 the company filed a petition with the commission in which permission was asked to increase passenger rates 15 per cent.

Fare Case Postponed.—The hearing scheduled for July 6 on the petition of the United Traction Company, Albany, N. Y., for increased fares in various municipalities served by it has been postponed until July 27.

Token Carriers Free in Akron.—The Northern Ohio Power & Light Company, Akron, Ohio, is giving free to its car riders for the time being a nickel carfare token carrier easily carried in the pocket. It will serve as a preventive against the loss of metal tokens and will help speed up service. Patrons are instructed to hand the conductor a quarter and say, "Four checks and a carrier."

Choice Between Bus and Railway Service.—A more flexible development in transportation service has been started by the Wisconsin Power & Light Company on its intercity line connecting Fond du Lac, Oshkosh and Neenah. Under this new plan patrons will have the choice of electric railway or bus service. Effective July 1, alternate hourly service is offered, with interurbans leaving the terminal on odd hours and buses on the even hours. The fares for each service will remain the same, with interchangeable commutation tickets.

President's Office Changed.—The address of the president of the Southwestern Public Service Association has been changed from Mineral Wells, Tex., to Dallas, Tex. The office is held by Harold E. Borton, whose election to the presidency was referred to recently in the ELECTRIC RAILWAY JOURNAL.

East St. Louis Track Case Under Advisement.—Judge Lindley in the federal court of Danville, Ill., on June 25 heard arguments on the application for a permanent injunction to restrain the city of East St. Louis from tearing up the tracks of the East St. Louis Railway on Third Street. The case was taken under advisement by the court. The question of whether the Public Utilities Commission or the municipalities shall control local public utilities is of state-wide interest. In Chicago, a similar question will likely arise with the expiration of the surface car franchises. That city was represented at the East St. Louis hearing.

New Line Completed in St. Petersburg.—The Shore Acres extension of the Masonic Home street car line became a part of the Municipal Railway of St. Petersburg, St. Petersburg, Fla., on July 1 when a deed to the development was turned over to city officials by heads of the Shore Acres and Snell Isle development companies. Dedica-

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tion ceremonies were held at the end of the line in Shore Acres Center. This extension of 3 miles is the longest addition to the system since the car line was run out West Central in 1913. It cost the developers approximately $90,000 and was turned over to the city free of any encumbrance.

Wage Scales Continued. — A new working agreement has been made between employees on the old Northwestern Ohio Electric line connecting Toledo, Oak Harbor and Port Clinton and the Ohio Public Service Corporation, present owner. The contract provides for continuing the wage scales, which average about 57 cents an hour, but permits employees to reach the maximum scale at the end of one year instead of three years. The agreement expires in November.

Wage Board Holds Hearing.—An arbitration board selected to hear testimony of the East St. Louis & Suburban Railway, the Alton, Granite & St. Louis Traction Company and their employees regarding the adequacy of the present wages paid to carmen and other workers held its first hearing in East St. Louis, Ill., June 28. The board consists of five members. B. F. Thomas and C. E. Smith represent the company, W. L. Perry local union No. 805 and J. L. McMurdo local union No. 125, while Frank Slater, an attorney of St. Louis, Mo., is chairman and neutral member of the board. The carmen are affiliated with the Amalgamated.

Injunction Petition Dismissed.—Judge Henry C. McDowell, in the Federal District Court at Lynchburg, Va., has dismissed the petition of the Lynchburg Traction & Light Company against the city of Lynchburg for a permanent injunction to restrain the city from enforcing its ordinance for a 5-cent fare in the parts of the city annexed from Campbell County on Jan. 1, of this year. The court held that it had no jurisdiction and that the ordinance was not repugnant to the Constitution of the United States. The case was dismissed without prejudice to the complainant company.

Railway-Bus Between Milwaukee and Madison. — Co-ordinated railway and bus service between Milwaukee and Madison will be offered by the Milwaukee Electric Railway & Light Company commencing on July 8, which will result in faster and more frequent service. Through bus service over Highway 19 between these cities will be discontinued. Under the new feeder arrangement buses from Madison will connect at Watertown with the company's newly completed rapid transit line, which has cut the running time between Milwaukee and Watertown to three hours. Patrons wishing to travel via bus between these two cities will be provided with through bus service over Highway 41 hereafter.

Would Abandon Two Lines.—Application has been made to the Dover and New Philadelphia City Councils by the Northern Ohio Power & Light Company to abandon what is known as the "New Line" between the two cities. The distance is a little more than 3 miles. The company will offer bus service for the remainder of the franchise, or for two years.

Recent Bus Developments

Further Expansion of Akron Bus Service

The twenty 29-passenger, modern six-wheel buses now being built for the Akron express lines of the Northern Ohio Power & Light Company are expected to begin to arrive July 10 from the Kuhlman Car Company, which is building the bodies. Chassis are the product of the Six-Wheel Company, Philadelphia. They are single-deck buses.

At the same time six other six-wheel buses of the 27-passenger type will be delivered for use in Canton. The Canton buses are also modern to the minute. They will be used on the Sixth Street, Prospect, Ninth Street and Maryland Avenue lines. They will probably be in service by July 15.

The Akron Market Street express line will be started July 15. It will operate across town. It is hoped at the same time to extend the Main Street-Cuyahoga Falls express line to Firestone Park over South Main Street for convenience of patrons in that section.

Details of operation are now being worked out and stops provided.

Engines used in these buses are of a six-cylinder type. They will provide a high-class service between East Akron and West Hill at a 10-cent fare.

International May Operate Buffalo Taxis

Negotiations are reported to be under way by the International Bus Corporation, Buffalo, a subsidiary of the International Railway, for a merger of two taxi lines in Buffalo with the bus company. The taxi lines involved in the negotiations are the Yellow Cab Company and the Van Dyke Taxi & Transfer Company. These are the two largest taxicab companies operating in Buffalo and the plan under consideration is reported to be somewhat similar to the merger of transportation lines in Philadelphia by Mitten Management, Inc.

Council Postpones Abandonment —Bus Plan in Davenport

The City Council of Davenport, Iowa, has postponed action on the application of the Tri-City Railway to abandon a portion of its trackage, to reroute the Fejervary Park and Le Claire Street and Oakdale line and to begin the operation of buses on a portion of its system here. Approval of the application was expected at an adjourned meeting of the Council on June 22, but minor changes were asked in the resolution indorsing the application and final action was held over until the next Council meeting, set for July 7.

It is also rumored that a majority in favor of the application was lacking at the last meeting and that postponement of the vote was taken partly for this reason. Specifications on eventual replacement of paving on streets where car lines are to be abandoned is said to have been one of the points on which a difference of opinion developed in the Council.

Four-Mile Line in Operation in Chicago Suburbs

Operation of buses on Roosevelt Road between Ninth Avenue in Maywood, Ill., and Seventeenth Avenue in Broadview, Ill., has been begun by the Chicago & West Towns Railway. The new route is an extension of the company's old Roosevelt Road line in Maywood. It is 4.1 miles in length. In accordance with the terms of the certificate granted by the Illinois Commerce Commission on June 17, two buses have been placed in this service.

New Terminal Opened in Baltimore

With Gov. Albert C. Ritchie of Maryland and Mayor Howard W. Jackson of Baltimore taking part in the ceremonies, the Union Bus Terminal Company opened its union terminal at Redwood and Liberty Streets, Baltimore, on June 30. The building is a handsome two-story structure with ample room for all departments and for the convenience of the public. July 1 brought about the actual placing in service of the new terminal. At that time six important bus lines that have been starting from various points in the city began operations from the new station. It is expected that others will make it their headquarters soon.

The companies that are using the terminal are the Washington Motor Coach Company, which operates buses every hour between Baltimore and Washington; the Furlin Shore Lines, making the terminal its only stop in Baltimore in connection with its Baltimore-Atlantic City service; the Palace Coach Line, Inc., operating between Washington and New York; the Conoway Motor Company, maintaining service between Baltimore and Westminster, Taneytown and Emmitsburg, Md.; the People's Rapid Transit Company, operating from Baltimore to Washington, Philadelphia, New York and Atlantic City, and the Red Star Lines, maintaining service from Baltimore to York, Harrisburg and Philadelphia. Among the owners of lines operated from the terminal are Day & Zimmermann and the Philadelphia Rapid Transit Company.

Not Permitted to Operate Until September.—The Public Service Commission extended on June 29 the time in which Wilbur P. Menke, operator of buses in Philadelphia and Montgomery Counties, can operate his cars from June 1 to Aug. 31. On the latter date all rights and privileges granted to him by the commission will cease, and the Philadelphia Rural Transit Company,

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subsidiary of the Philadelphia Rapid Transit Company, will furnish the bus service.

Would Run Line of Three Miles.—The Bus Transportation Company, a subsidiary of the Denver Tramway, Denver, Col., which lost out in the May, 1925, election when it sought to operate buses as feeders to the railway, has asked the Public Utilities Commission for permission to operate buses from the end of the car line at Aurora to the Fitzsimmons Hospital, a distance of about 3 miles. There have never been any street cars beyond Aurora. The plea has been docketed.

Buses in Prospect. — The Scranton Railway, Scranton, Pa., recently received permission from the Public Service Commission to abandon its 7,100 ft. of track from the New York, Susquehanna & Western Railroad crossing in the Borough of Old Forge to the Luzerne County line. This branch will be out of service by July 11. The Wyoming Bus Company, a subsidiary of the Wilkes-Barre Railway and the Glen Bus Company, have applied to the Public Service Commission for certificates of public convenience for the operation of buses over this territory.

Opposes Bus Line.—The Milwaukee Electric Railway & Light Company has expressed its opposition to the application of the American Coach Lines, Inc., which plans to provide service between the east side and downtown sections of Milwaukee, Wis. The American Coach Lines, Inc., now operates the Green Bay-Milwaukee intercity bus line. Action on the application has been laid over by the Council in order to give property owners and business men an opportunity to express their views on the necessity of the new line. The railway, which supplies service over the routes proposed, contends it has prior rights to these streets; that they are at present already overcrowded with traffic, and that to permit another bus line in the downtown section would be unfair to the public and merchants.

Route Extension Denied.—A petition by the Gary Railways for an extension of its bus routes in East Chicago, Ind., was denied by the Indiana Public Service Commission. That body held that the territory for which the petition was written is already amply provided with bus service.

Would Operate Buses Instead of Cars.—The United Light & Power Company has asked the Nebraska Railway Commission for authority to begin substitution of buses for street cars in the city of Lincoln. In this city the company recently purchased all of the stock of the Lincoln Traction Company. Outlying lines to the state penitentiary and state hospital have been selected for abandonment first.

Bus Substitution in Prospect.—The Olean, Bradford & Salamanca Railway, Olean, N. Y., has announced that it will replace one of the interurban cars on the Olean-Bradford line with a bus. Abandonment of the interurban line between Portville and Bolivar is planned by the railway and a hearing on the company's application will be held by the Public Service Commission. If the interurban route is abandoned, the railway will substitute bus service between Portville and Bolivar. The company recently abandoned its electric line between Salamanca and Little Valley and is now operating buses there.

Opposes Bus Certificate.—The Worcester Consolidated Street Railway, Worcester, Mass., at a recent hearing before the Massachusetts Department of Public Utilities, opposed the granting of a permanent certificate of public convenience and necessity to the Carlstrom Bus Lines for three sections of the present route of the lines between Worcester and Marlboro and between Westboro and Hopkinton. Competition with the street railway was the basis for the opposition.

Buses to Be Installed.—The City Council of Alexandria, La., has been authorized to abandon the Municipal Street Railway and to install buses. It was also granted the privilege of giving a franchise to a private concern to operate buses. The Municipal Street Railway of Alexandria operates 7 miles. It was purchased by the city from the Southern Traction & Power Company.

New Bus Line in Toledo Planned.—Electric railway service on Front Street, Toledo, Ohio, is rapidly being replaced by bus service, according to a statement in the May report of the Community Traction Company. It is said that the entire line will be equipped to operate with new buses on Aug. 1.

Bus Service May Follow Abandonment.—The Indianapolis Street Railway, Indianapolis, Ind., has received authority from the Public Service Commission to abandon its railway service in Pershing Avenue. This consists of a one-car feeder service between Tenth Street and Emrichsville. At the insistence of Frank Wampler, commissioner, the commission stipulated that the service shall not be abandoned until the construction work on improving the street actually is begun by the city. After the street car service is abandoned the commission will require the company to provide bus feeder service at the rush hours.

Tulsa-Oklahoma City Bus Line Proposed.—Bus service between Tulsa and Oklahoma City, Okla., is proposed in an application submitted to the Corporation Commission by the Union Transportation Company of Tulsa. This company is under the same management as the Oklahoma Union Railway. If the Corporation Commission grants the application the fare will be the same as the railroad chair car rate and the time four hours and 35 minutes. The route will pass through Kellyville, Bristow, Stroud, Chandler, Meeker and Choctaw.

Bus Line Between Syracuse and Auburn.—The Public Service Commission on June 18 granted permission to the Mid-State Coach Lines, Inc., bus subsidiary of the Auburn & Syracuse Electric Railroad, to operate a bus line between the city of Syracuse and the city of Auburn, N. Y. The route will start at the interurban trolley station in Syracuse and will proceed over the Genesee Turnpike to the city line of Auburn, and thence to the trolley terminal on State Street in that city. The total distance traveled will be approximately 25 miles. Consents to the operation of the proposed line have been granted by the cities of Syracuse and Auburn and by the various towns and villages along the line. Five round trips will be operated daily and the through fare will be $1. It is proposed to use modern suburban buses. The Mid-State Coach Lines, Inc., now operates bus lines in the city of Auburn and in the city of Oswego.

Will Cover Former Railway Ground.—The Public Service Commission granted a certificate recently to the Schenck Transportation Company, Inc., to operate a bus line between Mineola and the Nassau-Queens county line, serving Mineola, Floral Park, Bellerose and parts of the towns of Hempstead and North Hempstead. The bus line will give service in territory formerly served by the New York & Long Island Traction Company.

Partial Bus Service Planned in Ottumwa.—The City Council of Ottumwa, Iowa, passed a resolution recently specifying the abandonment of railway service on the Court Hill line and the substitution of bus service. It is proposed to charge the Iowa Southern Utilities Company, successor to the Ottumwa Traction Company, a license fee of $25 a year for each bus. The company will buy three new buses for the line. The same schedule and fare will be kept.

Temporary Service in Colorado.—The Colorado Springs & Interurban Railway has been authorized by the Public Utilities Commission to operate buses between Colorado Springs and Manitou from June 15 to Oct. 1, every year. The distance is about 3 miles. It also covers the route by electric railway.

From Philadelphia to Niagara by Bus.—The Philadelphia Rapid Transit Company recently announced the starting of a new bus service between Philadelphia, Pa., and Niagara Falls, N. Y., with the first tour on July 3. The trip will occupy two days each way, with stop-over privileges in Buffalo. The northbound route will follow the Lackawanna Trail, through the Delaware Water Gap and the Pocono Mountains, with a stop the first night at Binghamton, N. Y. The return trip will be made over the Susquehanna Trail, with Williamsport, Pa., as the stopping place. Buses leave Philadelphia every Wednesday and Saturday and Buffalo every Tuesday and Saturday.

New Bus Service Installed.—A new city bus line extending into the northwest section of Sheboygan, Wis., has been placed in service by the Wisconsin Power & Light Company in response to a petition presented to the Common Council. The service will be provided under a temporary arrangement by which the line may be discontinued if patronage should prove unsatisfactory. The company recently established bus service to the southwest section.

Buses Await Commissioner's Approval.—The City Council of Massillon, Ohio, has agreed to permit the abandonment of the Northern Ohio Power & Light Company's line and substitution of buses if the Stark County Commissioners will approve the same. Application has been filed with the County Commissioners.

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Financial and Corporate

Sale of Maryland Road Under Foreclosure July 27

In connection with the Circuit Court decree of June 17 appointing Walter C. Capper and Elmer J. Carter, trustees, to sell all the real and personal property, franchises and equipment of the Cumberland & Westernport Electric Railway, Cumberland, Md., the property will be offered for sale on July 27. The decree follows default in payment of the interest and principal on bonds secured by mortgages of which the Real Estate Trust Company, Philadelphia, is trustee.

The railway operates trolleys from Cumberland to Frostburg along the National Highway and buses from Frostburg to Midland, Lonaconing, Barton and Westernport, cars having been withdrawn a year ago from its rails between these points. The line is a consolidation of three separate companies. The property will be offered in three separate parcels and then sold as a whole. The franchise covers a right-of-way between Cumberland and Frostburg and through the thickly settled sections of the entire George's Creek Valley.

Havana Property Passes to Electric Bond & Share

Purchase of the common stock from the voting trustees of the Havana Electric Utilities Company, the successor to the Havana Electric Railway, Light & Power Company, by the Electric Bond & Share Company has been consummated. The deal terminates the voting trust of the purchased company, and out of the purchase price of $33 a share the holders of voting trust certificates will receive $31.50 a share.

The Electric Bond & Share was already the owner of a substantial number of the certificates and a majority of the outstanding preferred stock. It has been said that the latest purchase was preliminary to a rearrangement of the affairs of the operating subsidiary. The expectation is that Electric Bond & Share will transfer its holdings to the American & Foreign Power Company, Inc.

Ohio Traction Deal Approved

Stockholders of the Ohio Traction Company have approved the plan drafted by committees representing the preferred and common shareholders for merging the assets of the company with those of the Cincinnati Car Company. The new company will be known as the Cincinnati Car Company. There will be an organization meeting soon at which officers will be elected. Each holder of preferred stock is to receive 2½ shares of stock without par value in the reorganized company for every share held previously and each holder of common will receive one share without par value for each three shares of deposited common stock. The plan of the committees calls for the purchase of all assets for approximately $6,000,000. The assets included $1,700,000 in cash on hand and liberty bonds, the Traction Building, Chester Park, the Cincinnati Car Company shops and 86,661 shares of Cincinnati Street Railway. In addition the committees will assume all existing liabilities, including ground rents under perpetual leases on the Traction Building and ground rents under perpetual leases on the Chester Park property.

Reorganization of Properties in Middle West Explained

The pending reorganization of the North American Light & Power Company, the holding company which owns the common stock of the Illinois Power & Light Corporation, the Missouri Power & Light Company and other related public utility properties, will not affect the Illinois Power & Light Corporation, Missouri Power & Light Company, or any of the operating subsidiaries of the North American Light & Power Company. All of them will continue to be operated as at present.

In the reorganization of the holding company, Clement Studebaker, Jr., will retain his holdings of the common stock and will remain as president and directing head of the holding company and all its subsidiaries. Certain new financing is in prospect, after which several new interests will come into the company and become associated with Mr. Studebaker in the ownership of common stock, among them the North American Company and Middle West Utilities Company. When the reorganization is completed the entire common stock ownership will be in these interests.

The new line-up will add to the financial and credit background and strength of the reorganized holding company and will facilitate the interconnection of these groups. The operating properties now controlled by the North American Light & Power Company adjoin in many places the operating properties of the Middle West Utilities Company and its allied companies. This is also true of the North American Company, although none of these operates in the same place.

Negotiations have long been in progress for the interconnection by high-voltage, long-distance transmission lines of the power sources of the three holding companies concerned and their subsidiary operating companies. Such interconnections will cover practically the entire Middle West.

As indicated previously the operating properties of the North American Light & Power Company include the Missouri Power & Light Company, the Illinois Power & Light Corporation and its subsidiaries in Des Moines, Iowa, and surrounding territory and in Topeka, Kan., and surrounding territory. It owns also the McKinley Bridge at St. Louis and the Illinois Traction System, the longest electric trunk line railroad in the world.

Falling Off in Passenger Revenue on Gloversville Line

The passenger revenues on the electric division of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., for the year ended Dec. 31, 1925, were $689,449, against $722,405 in 1924. The corporate surplus on Dec. 31, 1925, was $434,015 and depreciation reserves $686,980. These facts were contained in the fifty-fifth annual report to the stockholders.

SUMMARY OF PASSENGER TRAFFIC, FONDA, JOHNSTOWN AND GLOVERSVILLE RAILROAD

Year	Number	Mileage	Revenue
1905	3,888,198	19,440,990	$384,698
1906	4,546,843	22,734,215	434,120
1907	5,033,855	25,169,095	478,311
1908	5,000,041	25,000,205	468,375
1909	4,893,647	24,468,235	474,720
1910	5,536,312	27,681,560	534,665
1911	5,827,561	29,137,805	560,881
1912	6,090,627	30,453,135	565,836
1913	6,563,826	32,819,130	594,515
1914	6,695,788	33,478,940	598,846
1915	5,994,376	29,971,880	536,479
1916	6,877,764	34,388,820	610,094
1917	7,240,114	36,200,570	662,177
1918	6,672,802	33,364,010	675,477
1919	6,380,973	31,904,865	749,807
1920	6,612,659	33,063,295	828,760
1921	5,269,512	26,347,560	806,869
1922	5,579,227	27,896,135	816,464
1923	5,419,650	27,098,250	778,124
1924	5,019,498	25,097,490	722,405
1925	4,912,818	24,564,085	689,448

INCOME ACCOUNT OF THE FONDA, JOHNSTOWN AND GLOVERSVILLE RAILROAD COMPANY

Railway Operating Revenues:	1925	1924
Freight revenue, steam division	$453,287	$454,614
Passenger revenue, steam division	36,977	39,038
Passenger revenue, electric division	689,448	722,405
Mail revenue	5,025	5,754
Express revenue	40,476	38,060
All other revenues from transportation	8,421	6,904
Revenue from other railway operations	12,205	13,087
Total operating revenues	1,245,843	1,279,864
Railway operating expenses:		
Maintenance of way and structures	$165,077	$164,159
Maintenance of equipment	149,362	147,508
Traffic expenses	7,935	7,518
Power	68,948	70,879
Transportation expenses	351,050	361,643
General expenses	78,781	84,172
Total operating expenses	$821,156	$835,882
Net revenue from railway operations	$424,686	$443,982
Railway tax accruals	86,199	92,235
Railway operating income	$338,487	$351,747
Miscellaneous operations (Sacandaga, N.Y., summer resort) —income	20,413	18,791
Operating income	$358,900	$370,539
Non-operating income	65,120	62,346
Gross income	$424,021	$432,885
Deductions from gross income other than interest charges	62,900	62,346
Balance (available for interest charges)	$361,121	$370,539
Interest charges	318,167	315,240
Net income (available for dividends)	$42,953	$55,298
Total dividends for year (preferred stock)	30,000	30,000
Balance to profit and loss	$12,953	$25,298

Capital expenditures for the year have been confined to paving in cities, required by statute, and to the improvement of existing property. There was charged to investment, road and equipment expenditures for additions and betterments as follows: Paving cities of Amsterdam, Johnstown and Gloversville, $4,964; other improvements, $4,730, or a total of $9,694.

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No securities have been issued since 1911 other than $550,000 of 4½ per cent bonds in the year 1922 to retire an equal amount of 6 per cent bonds maturing in October and November of that year. All additions to property and equipment since 1911, amounting to $766,781, have been met from surplus earnings.

The Fonda, Johnstown & Gloversville Railroad operates 82 miles of line.

An Innovation in Financial Advertising

The old order changes in investement practices as in everything else. It is a very interesting development, too, this latest announcement, of concern to utility operators and manufacturers. In the usual course of business the investment house participation in the financing of commercial, industrial and public utility companies is a process of the latter seeking out the former as a purchaser. Now, however, one of the leading investment houses in the country, Hornblower & Weeks, New York, is advertising its preparedness to purchase the entire bond issues of sizable and sound American railroads, utilities and industrial companies.

The popular conception of the investment house is that of a seller of securities. This is only natural, because its contact with the public is largely as a distributor of securities to individual investors. The question of the source of these securities is one to which the average layman gives little attention. The investment house, however, exercises a dual function, and purchasing security issues is fully as important as retailing them. So the firm of Hornblower & Weeks, a member of the New York, Boston, Chicago, Cleveland, Detroit, Providence and Salt Lake City Stock Exchanges and of the Investment Bankers Association of America and the American Bankers Association, rendering a specialized service to investors, is stressing its service to the corporation. These facilities include a stock department, handling stock accounts either on a cash or conservative loan basis; a bond department, which buys and sells all issues of bonds and notes of the United States and foreign governments, municipalities, railroads and equipment trusts and public utility and industrial corporations. This department also deals in high grade industrial and public utility stocks. Its unlisted securities department purchases or sells and secures quotations on all unlisted securities wherever a market exists. A statistical department analyzes securities, reports on market conditions, financial statements of different companies, appraises inventories of securities, furnishes all statistical data and assists in the making of tax returns. Its underwriting department arranges financing for municipalities, railroads, public utility and industrial corporations in any form desired. An expert engineering division is at the disposal of this department and it employs legal talent which specializes in corporate finance. A note department negotiates loans secured by approved collateral for corporations and individuals.

Basis Announced for Terre Haute Exchange

Holders of the common stock of the Terre Haute, Indianapolis & Eastern Traction Company have received letters from a committee representing the shareholders suggesting an exchange of their stock for preferred stock of the Indiana Electric Corporation, which is to be the name of a new corporation resulting from the merger of the Terre Haute, Indianapolis & Eastern and the Central Indiana Power Company.

The committee named the Land Title & Trust Company, Philadelphia, as depository. The proposed financial set-up provides for the exchange of ten shares of common stock of the Terre Haute, Indianapolis & Eastern for one share of participating adjusted preferred stock of a par value of $100 of the new corporation. Holders of the 5 per cent cumulative preferred stock of the Terre Haute, Indianapolis & Eastern have provided for a share for share exchange for the preferred stock of the new company.

Traffic Fare and Wage Figures Reported

Electric railway passenger traffic in the month of May continued to show an improvement over the corresponding month of 1925. The number of revenue passengers, including revenue bus passengers, reported to the American Electric Railway Association by 207 companies for May, 1926, compared with May, 1925, was as follows:

May, 1926	806,401,269
May, 1925	792,564,416
Increase, per cent	1.93

The average cash fare in cities of 25,000 population and over was:

	Cents
June 1, 1926	7.6946
May 1, 1926	7.6689
June 1, 1925	7.5330

Average maximum hourly rates paid motormen and conductors in two-man service by companies operating 100 miles or more of single track:

	Average Hourly Rate (Cents)	Index Number 1913 = 100 (Per Cent)
June 1, 1926	56.73	208.18
May 1, 1926	56.67	207.96
June 1, 1925	56.20	206.24

Mauch Chunk Road Sold

The East Penn Electric Company, a subsidiary of the Pennsylvania Power & Light Company, has purchased the road and equipment of the Mauch Chunk Transit Company, Mauch Chunk.

It is the intention of the East Penn Electric Company to overhaul the road and to equip it with modern cars. This road traverses one of the beauty spots of America.

Pittsburgh Refinancing Plan Completed

Plans for refinancing of the Pittsburgh Railways, Pittsburgh, Pa., subsidiary of the Philadelphia Company, is practically completed. A general refunding mortgage bond issue will be sold to retire all the outstanding mortgage bonds of the component companies. These amount to about $11,575,000. Of these, two issues totaling $489,000 have matured, but holders agreed to accept continuation of regular interest pending the recapitalization.

Denver a Stockholder in Its Tramway

The city of Denver, Col., became a stockholder in the Denver Tramway by accident. The tramway owed the city some back franchise taxes and did not have the ready money, so it sent some of its preferred stock, 275 shares. On June 19 the city received a check for $1,031, dividends on its stock. Mayor Stapleton said: "I've got some stock to sell and I'm looking for a buyer." The City Council agreed to take the stock to co-operate with the tramway in its reorganization.

Allowed to Operate for Ninety Days.—Judge Will M. Sparks has granted authority in the Probate Court at Rushville, Ind., to permit the Indianapolis & Cincinnati Traction Company to operate 90 days longer. Judge Sparks acted favorably on a petition filed by Charles L. Henry, receiver and former president of the company, asking for an order to issue receiver certificates in the sum of $156,000 to renew outstanding certificates falling due. The petition set out that the company did not have the money to meet the notes, and to keep the line operating it would be necessary to sell more 90-day certificates and to renew the notes which came due on June 26. Attorneys for the company's creditors objected to having the petition granted.

Vacancy on Directorate Filled.—Allen D. Jones, general auditor of the Interstate Public Service Company, Indianapolis, Ind., has been elected a member of the board of directors to succeed the late Bert Weedon.

Stock Acquisition to Build Up Line.—The Public Service Commission has authorized the Mohawk-Hudson Power Corporation to acquire and hold more than 10 per cent of the preferred and common stock of the Eastern New York Utilities Corporation, which now serves Rensselaer, Hudson and other municipalities in New York and operates an electric railroad between Albany and Hudson, covering 58 miles. The Mohawk-Hudson Corporation contemplates building up the electric road by adding bus feeders both to carry passengers and freight, thereby increasing the revenues of the electric railroad.

Four Months Traffic Report Shows Improvement.—The United Railways & Electric Company, Baltimore, Md., carried 75,364,849 passengers during the first four months of 1926, against 74,716,758 for the corresponding period of the previous year.

Purchase of Substations Arranged.—Purchase for $119,000 of the West Seattle and James Street substations of the Puget Sound Power & Light Company is provided in an ordinance introduced in the City Council recently by the utilities committee. The deal for the stations has been delayed for more than a year because the Council and the company were unable to agree.

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Book Reviews

The Highway and Its Vehicles

By Hilaire Belloc. The Studio, Ltd., London. 40 pages of text, 131 plates. 3 guineas.

The manner of our ancestors in their boudoirs, at banquets and on battlefields has been the subject of story and song for centuries, but not so often have they been met on the highways, and then only in very isolated cases. Through the concentration of a historian of no mean gifts, a fascinating and chronological record of our forefathers on the roads has now been presented. As if his words were not sufficiently convincing nor stimulating, Hilaire Belloc has enhanced the interest of his account, "The Highway and Its Vehicles," with 130 illustrations (24 of which are in color) collected by the Studio Company of London in a limited edition. The flight of a Flemish lady, pilgrims leaving Canterbury, Queen Elizabeth's visit to Blackfriars, a Florentine fête and a Milan masquerade are pictorially prominent in the romance of the highway, as explored by Mr. Belloc. This time, however, he has deviated from his usual practice. The gallant who halts the progress of the French sedan chair to kiss the hand of her ladyship, the stagecoach quipster traveling from London to Windsor, the carrier of the Spanish litter and the driver of the Russian droshky travel unnoticed past him, but the vehicles they ride in fascinate him and allure the reader, too.

Whither the vehicles go, the highway is sure to follow, with the bridge trailing after. This is a logical precedence, according to this historian. Then, too, there is historical evidence that the vehicle preceded the highway and was the cause of it. In early times barbarians moved about accompanied by wagons which did not traverse any roads, and the chariots of Greece and Roman Britain and Gaul fought upon unmade ground. A more modern proof is to be found in American colonization, where, he claims, the "Covered Wagon" has symbolized the nineteenth century movement toward the Rockies.

It was the invention of the wheel, a device to grind corn, mold clay, announce the direction of the wind and much later to effect Swanson close-ups, that brought about the vehicle that brought about the highway. The wheel is the work of man—"a creation he can well feel proud of."

It was not until the seventeenth century that general travel on wheels superseded the muleback and horseback era. Then came a change in the highway known as the turnpike, and by the nineteenth century general transportation by coach had ceased to be the exception and was the rule. Along with the evolution of the modern highway he flashes a picture showing the bicycle, the internal combustion engine, the railway epoch and the various transport eras down to the motor car period of the last twenty years.

But now all these processes have ceased, according to Mr. Belloc, and "we are in the midst of a vast, sudden and hitherto undigested and only half-comprehended revolution in the highway and its vehicles." The advent of the internal combustion engine producing the modern motor car has resulted in the combination of three incompatible things—the old narrow local highway gage, in most countries winding lanes with "blind" corners, and high speed. Something must give way—which is it to be? There are three factors which enter into the problem: First, the high cost of production; second, the disturbance of individual interest, and, third, our uncertainty about the future. But the greatest of these is the doubt about future transport. This hesitancy whether to metamorphize quickly a transportation system is a natural reaction in a generation which has seen so many and such rapid changes in that field. Mr. Belloc sees an interesting parallel in the tramway systems of European towns, which have occasion to feel the inroads of the motor car.

In the larger sense the new vehicle has not "made" the modern highway, as yet. However, Mr. Belloc's explorations on the highway lead him to suggest the end of the process—the restriction of heavy and rapid traffic to the main roads, provided the motor car has come to stay and is not replaced by any different form of vehicle.

Weary as we are from the wranglings over modern highway congestion, a glance at this pictorial epic of Europe on foot, on horseback and in coaches will delight the eye and a perusal of this romantic history will offer a needed respite. From the standpoint of printing, typography and illustration "The Highway and Its Vehicles" is the epitome of art.

Electrical Characteristics of Transmission Circuits

Compiled by William Nesbit, Westinghouse Technical Night School Press, East Pittsburgh, Pa. 317 pages. $6.

This is a revised and enlarged edition, a reprint of a series of articles which appeared in the *Electric Journal* in 1922, with all the material of the previous work brought up to date and a considerable amount of new material as well. There are 22 chapters in this book with 28 charts and 102 tables.

A Bibliography on Research

By the National Research Council, Division of Engineering and Industrial Research, New York, N. Y. 46 pages.

This booklet lists selected articles from the technical press of 1923, 1924 and 1925. The primary purpose in compiling and cataloging these references, according to Maurice Holland, director of the Division of Engineering and Industrial Research, was an effort on the part of the division to "feel the pulse of industry" and to maintain a close contact with its research activities.

The Ethics of Business

By Edgar. L. Heermance. Harper & Brothers, New York, N. Y. 244 pages. Price $2.

Whatever the business, the industrial desideratum is public service. Although the chance to secure a substantial surplus is what leads the business man to risk his capital in new adventures, his sole thought is not business in terms of salary and profit. Less is heard of the "right" of the business man to run his business as he pleases, irrespective of any social purpose to be fulfilled. This is the message of Edgar Heermance in his presentation of the evolution of business ethics. He sees business today on safe ground after years of encounters with the storms of competition, commercial dishonesty, base advertising and credit inflation. The tempests were all weathered through the influence of the American Trade Association, an organization of employers. Out of the efforts of the association merged a changed philosophy on fair competition, fair profit, credit and contracts. The change from misleading and fraudulent advertising to the truth movement, started by A. T. Stewart and advocated later by John Wanamaker, was welcomed in an era when the need for house cleaning in the advertising profession was very evident. Several pages are devoted to outdoor advertising industry, in which the author has little tolerance for an indifference toward beauty of display. He considers good will the greatest asset in business. It is not a dutiful ideal, but rather a Utopian one.

In relations between competitors is seen the emergence of a great ethical principle, commonly called co-operation. Mr. Heermance prefers to call it the principle of common interest. He says when men in the same line of trade recognize that they have a common interest, and act accordingly, with due regard for the rights of the public, their relations become to that extent more normal, harmonious and productive.

In addition to his theories on the evolution of standards in business, the writer has recorded attempts made to improve codes in American industries. Witness an example of this in the code of electric railway associations and other utilities, which maintains that "a business that is legally protected against competition should be ever conscious of its ethical duty, untiringly vigilant in the protection of its good name, generously just in meeting its every obligation."

Whatever the achievement of business ethics, one feels more convinced than ever, after reading Mr. Heermance's book, that the idea of "every man for himself" suffered defeat by its own tactics and that the more satisfying and lasting philosophy "for the good of the people" is rewarded, and in the present world, too.

The book really is intended as an introduction to the study of social ethics, "ethics considered consistently from the social point of view." The student of sociology will find in the book much food for speculative thought. The casual reader will find the book full of interesting and revelatory data on methods in promulgating standards.

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Personal Items

W. J. Harvie Resigns

Well Known Official Retires from New York State Road—Succeeded by L. E. Lippitt

William J. Harvie has resigned as general manager of the Auburn & Syracuse Electric Railroad, Syracuse, N. Y., and Lawrence E. Lippitt has been named as his successor by Talmadge C. Cherry, president of the road.

Mr. Harvie served as vice-president and general manager of the system for the past eight years. He retires because of ill health. Mr. Lippitt has been auditor and treasurer of the company for ten years. Mr. Harvie also resigned as vice-president of the Mid-State Coach Lines, motor bus subsidiary of the Auburn & Syracuse Railroad, and severed all connections with the industry, for the time being, in an effort to rebuild his health. He has left with a party of Auburn business men on a trip to upper Canada.

Nearly all of Mr. Harvie's electric railway work has been done with railways in central New York. He was born in Buffalo, N. Y. After receiving his high school education in that city he was employed in the operating offices of the Western Union Telegraph Company. He attended the Syracuse University, from which he was graduated in 1899 with the degree of electrical engineer. Previous to the year of his graduation from the university he had entered the electric railway industry in the overhead department of the Syracuse Rapid Transit Railway.

The latter part of 1900 Mr. Harvie was employed by the Syracuse, Lake Shore & Baldwinsville Railway, in various capacities in the car shops and power house. In 1901 he became connected with the Syracuse & Suburban Railroad as electrical engineer in charge of its power plant, car equipment and overhead lines.

In the fall of 1901 he became associated with the Andrews-Vanderbilt syndicate in charge of the construction work in Oneida for the Oneida Railway and also in charge of the overhead construction of the Little Falls extension of the Utica & Mohawk Valley Railway. In 1902 he was appointed electrical engineer of the Utica & Mohawk Valley Railway in charge of its power installation. This comprised one of the first 20,000-volt transmission lines with substations operated in the East. Later he was given charge of the mechanical department, being responsible for the operation of car shops located in Utica, Mohawk and Rome.

During 1905 and 1906 and the early part of 1907 the West Shore Railroad between Utica and Syracuse was electrified under Mr. Harvie's direct supervision, the construction being the "under-running third-rail type," which was one of the first installations of its kind in this country. Mr. Harvie was appointed chief engineer of the Syracuse Rapid Transit Railway and Oneida Railway in 1908, retaining his supervision over the Utica properties.

W. J. Harvie

Mr. Harvie was elected president of the New York State Electric Railway Association at the meeting at Bluff Point in 1925. He has always taken great interest in the work of the New York association and also of the national associations, particularly of the American Electric Railway Engineering Association, of which he was president in 1910-11. He has also served on a number of committees of the American Electric Railway Association.

E. K. Miles Promoted at Syracuse

E. K. Miles has succeeded the late John Duffy as superintendent of transportation of the Syracuse, N. Y., lines of the New York State Railways. Mr. Miles was appointed by B. E. Tilton, vice-president and general manager. The new appointee had been assisting Mr. Duffy for some time, and during the latter's illness had practically taken over the entire work. The title of superintendent of transportation is a new one in the company and eliminates that of general superintendent, which Mr. Duffy had as supervisory official of both the Utica and Syracuse lines.

E. K. Miles

Mr. Miles became associated with the New York State Railways in 1908 as a motorman. He served in this capacity for eight years and then for two years he worked as a railway mail clerk. In December, 1918, he returned to the service of the New York State Railways as motorman instructor and four years ago he was made division superintendent in charge of the runs from the Tallman Street carhouse. Early this year Mr. Miles was appointed assistant to the general superintendent. It was at that time that F. Raymond Latta, then holding the position of assistant, resigned. Mr. Miles was considered a good choice for the responsibilities of this work. From the standpoint of experience he was well equipped in the fundamentals of the transportation department and his years of apprenticeship on the cars and as division superintendent gave him an understanding of all the necessary elements.

W. Kesley Schoepf Testimonial in Book Form

Permanent remembrance of the banquet given to veteran employees of the Cincinnati Traction Company, Cincinnati, Ohio, on Oct. 28 last by W. Kesley Schoepf, who retired as president after a quarter century of service, has been made in a book edited and published under the auspices of the Optimists Club and the Queen City Club of Cincinnati.

The address of Mr. Schoepf, which is printed in full, gives an insight into his character which is known only to his intimate associates. Loyalty to the men who had worked for the company during the period of his connection with it was an outstanding characteristic.

The volume also contains the other addresses made at the banquet, a list of the 454 men who received gold watches as a token of Mr. Schoepf's esteem and many letters of felicitation sent to him by his associates and employees. All of these breathe a spirit of the friendship and esteem in which he was held.

The book also contains several photographs of Mr. Schoepf, of the gifts which were bestowed by him and on him, and reproductions of pages from the album presented by the employees and bearing their signatures. It has a total of about 150 pages.

J. F. Egolf Goes to Chicago

John F. Egolf, general manager of the Aurora, Elgin & Fox River Electric Railway, Aurora, Ill., has become assistant to the vice-president of the Chicago Rapid Transit Company, Chicago, Ill. Mr. Egolf is well known in the railway field for the metamorphosis he effected in Aurora, steering that property out of a financial storm to a comparative calm. Also he is prominent for his activities as president of the Illinois Electric Railway Association.

He served as conductor on the Columbus Street Railway from 1898 to 1902, and then in the mechanical department of that company as a car repair man. In 1903 he went with the Columbus, Buckeye Lake & Newark Railway as a motorman, and again

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served for two years on the platform, after which he was transferred to the dispatcher's office. This company was later absorbed by the Ohio Electric Railway, whereupon Mr. Egolf was sent to Springfield, Ohio, as chief dispatcher. In 1907 he was appointed assistant superintendent.

As varied as was his career up to that date, it didn't in any way exhaust his possibilities. He became dispatcher and chief dispatcher with the Chicago, Lake Shore & South Bend Railroad, was manager of the Springfield & Xenia Railway and later became affiliated with the Interurban Railway & Terminal Company, where he had charge of all operations until 1922.

In that year he became general manager for the receiver of the Fox River division of the Aurora, Elgin & Chicago Railroad. This property was subsequently purchased by the Western United Corporation and early in 1925 Stone & Webster were engaged to operate it along with all the other subsidiaries of the Western United Corporation. Throughout these changes Mr. Egolf has been retained as general manager, having charge in that capacity of all the railway properties of the Aurora, Elgin & Fox River company.

Besides his natural inclination for work Mr. Egolf was gifted with special intuitive powers to understand men and their viewpoint. This idea, which made him regard his platform men as transportation salesmen, contributed in good measure to the development of the Fox River property.

A. W. Thompson Heads U. G. I.

Pittsburgh Railways Head, Under Whom Coffin Award Was Won, Selected to Succeed S. T. Bodine with Immense Holding Company—Assumes New Duties on Sept. 1

ARTHUR W. THOMPSON, Pittsburgh, was elected president of the United Gas Improvement Company, Philadelphia, on July 20. He succeeds Samuel T. Bodine, who was elevated to the newly created post of chairman of the board of directors. Mr. Thompson is president of the Philadelphia Company, which operates all of the utility companies in the Pittsburgh district. He is closely associated with the Mellon banking interests of that city and he also is a director of the Pennsylvania Railroad. He will assume his new office on Sept. 1. It was the Pittsburgh Railways, of which he is the head, that won the Coffin award last year and it was Mr. Thompson who personally accepted the award at Atlantic City in behalf of the company, its employees and the city.

In a statement Mr. Bodine said:

> It gives me great pleasure to announce the fact that I have succeeded in my efforts further to strengthen the organization of our company by obtaining the services of Arthur W. Thompson and that my recommendation has been unanimously approved by the board of directors and made effective by my election as chairman of the board of directors and Mr. Thompson's election as president, both elections becoming effective on Sept. 1, 1926.

Mr. Thompson is at present and has been for a number of years president of the Philadelphia Company and of its various subsidiaries which operate the gas, electric and transportation utilities of Pittsburgh, including the Duquesne Light Company, whose electric plant is confessedly one of the most efficient in the United States. He is in the prime of life and is one of the recognizedly successful leaders in the public utility field.

As chairman of the board of directors Mr. Bodine will continue to serve the shareholders as actively as in the past and with the same authority in shaping and directing the policies of the company.

The United Gas Improvement Company is a large operator of public utility properties, especially electric light plants outside of Philadelphia. It has a large interest in the Public Service Corporation of New Jersey. Many moves regarded as especially significant have been made recently in its affairs and the affairs of the companies affiliated with it. Among them these changes have been noted:

Retirement of the outstanding preferred stocks by both the United Gas Improvement Company and the Philadelphia Electric Company.

A. W. Thompson

A financial readjustment plan of the Public Service Corporation's gas and electric companies' holdings.

A plan for the readjustment of the capital structure of Public Service railway holdings, with the possibility that a new company will be organized, thus eliminating railway operations from any merger plan of the future.

Election of Thomas S. Gates of Drexel & Company to the board of directors of the Public Service Corporation of New Jersey.

Election of Thomas N. McCarter, president of the Public Service Corporation of New Jersey, to the board of directors of the United Gas Improvement Company.

Election of Edward Hopkinson, Jr., one of the best-known banking and public utility lawyers in Philadelphia, to membership in the firm of Drexel & Company.

Edward T. Stotesbury, senior member of Drexel & Company, is a director of the United Gas Improvement Company. Horatio G. Lloyd, another member of the Drexel firm, is on the board of the Philadelphia Electric Company. Drexel & Company are recognized as the bankers of the United Gas Improvement Company, the Philadelphia Electric Company and the Public Service Corporation of New Jersey.

Mr. Thompson, the new president of the United Gas Improvement Company, was born in Erie on May 8, 1875. He was graduated from Allegheny College, Meadville, in 1897 with a degree of C.E.

While still in college he began work as rodman on location with the Pittsburgh, Bessemer & Lake Erie Railroad. Shortly after his graduation he joined the Baltimore & Ohio Railroad's engineering staff as chief of a party of surveyors. In his eighteen years service with that system he rose to be third vice-president in charge of traffic and commercial development.

On June 1, 1918, he was made federal manager by the United States Railroad Administration of several large Eastern railroads. He became president of the Philadelphia Company in February, 1919. Since that time he has made considerable progress in building up the varied properties of the company, especially the railway system.

On July 2 Mr. Thompson announced his resignation to the public of Pittsburgh. In leaving Pittsburgh Mr. Thompson said he would retain his position in the board of directors of the Union Trust Company, Pittsburgh and other directorates not subsidiary to the Philadelphia Company. He has not resigned his place on the directorate of the Pittsburgh Chamber of Commerce and other civic organizations. His large personal staff brought by him from Baltimore seven years ago, he said, probably would remain with the Philadelphia Company, only two or three secretaries going with him.

Obituary

W. S. Hamilton

William S. Hamilton, Rochester, supervisor of stores for the New York State Railways, Rochester, Syracuse and Utica Divisions, and brother of James F. Hamilton, president of the company, died on June 25 at the Syracuse General Hospital after an illness of ten weeks. He was 56 years old. As noted briefly in the JOURNAL for July 3 Mr. Hamilton was stricken with apoplexy while on a business trip to Syracuse. Born in Birdsall, N. Y., he entered electric railway work at an early age. For twenty years prior to his going to Rochester he lived in Schenectady, where at one time he was superintendent of the Schenectady Railway, but not president, as incorrectly stated in a previous item. His early railway work was with the Buffalo Railway, now the International Railway. He left this company about 1905 to become station master with the Schenectady Railway. He remained with this company for about twenty years, being appointed in 1916 superintendent of transportation and in 1920 general superintendent.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Importance of Industrial Advertising Recognized

Harvard Award of $2,000 Will Be Made for Best Campaign of Year Conducted in Industrial Journals

An award of $2,000 will be given for the first time this year, as a part of the Harvard Advertising Awards, for the advertising campaign of the year coming under the consideration of the jury of award as the campaign most conspicuous for the excellence of its planning and execution which seeks publicity for industrial products primarily through the media of industrial, trade or professional journals.

Industrial products seeking publicity through general popular magazines may compete for the award of $2,000 given for the best national campaign, either of an institutional character or devoted to the advertising of specific products. Four prizes of $1,000 each are offered for individual advertisements most effective in use of text, most effective in pictorial illustration, in combination of both, and in typography.

A gold medal is awarded annually to the individual or organization deemed by the jury of award to merit recognition for distinguished contemporary services to advertising. The Harvard Advertising Awards were founded by Edward W. Bok in 1923 and are administered by the Harvard Business School. Awards are made annually, and advertising material to be considered for the current year must be received by the secretary of the Harvard Business School on or before Dec. 31, 1926. The jury, the personnel of which will be announced later, will make the awards early in January.

Railway Utility Ventilators Specified

Ventilators on the ten new cars being built for the New York, Westchester and Boston Railway by the Pressed Steel Car Company will be supplied by the Railway Utility Company of Chicago, Ill. These ventilators are similar in all respects to those which were specified on the ten cars which constituted a preceding order made some time ago by the suburban line. Specifications on the most recent cars were published in the issue of ELECTRIC RAILWAY JOURNAL for June 26, page 1130.

St. Louis Increases Car Building Facilities

Construction work has been started by the St. Louis Car Company on two new buildings for its plant group located at 8000 N. Broadway, St. Louis, Mo. The buildings will be used for steel fabricating and for the erection of cars. The main unit will be 1,000 ft. in length and 130 ft. in width and equipped with four 10-ton cranes, 60 ft. in span. Light steel materials will be housed in the second building, which is to be 100 ft. in length and 60 ft. in width. This building will be attached to a 250-ft. crane runway steel yard equipped with a 60-ft., 10-ton crane.

Cleveland Convention Exhibit to Be Best Ever

Applications for exhibit space have far exceeded the expectations of the American Railway Association, as revealed at the meeting of the exhibit committee held in Cleveland on July 8. A 180-ft. extension to the new building was decided on to care for this surplus.

The assignment, including 193 exhibitors, has been practically completed for 108,101 sq.ft. of space exclusive of any outdoor exhibits. This far exceeds the requests in any past year at this time. In addition to the above there were ten requests for outside track space which total approximately 800 lin.ft. of trackage.

Last year the overflow from the Million Dollar Pier in Atlantic City had to be cared for in a somewhat unsatisfactory tent annex. This year adequate accommodations will be available in an extension of the west wing of the auditorium, decided upon as a result of the July 8 meeting.

The new building will be of steel and stucco construction, having a minimum headroom of 18 ft. Adequate lighting, both natural and artificial, with the wide aisles and interior decorations planned, will make this a most attractive exhibit space. A solid tongued-and-grooved floor will be used in the new building instead of the barberton gravel flooring originally planned.

This building will be 600 ft. long, extending the full length from St. Clair Avenue to Lakeside Avenue. It will be 200 ft. wide for the portion originally planned and 100 ft. wide for the extension which was decided on. While new drawings are being made showing this extension the original layout is not materially changed, except that the entire new structure will be moved westward and the track areas placed between the present and the new auditoriums.

An extensive pergola or arbor, covered with striped awnings with growing vines at the side, will connect the two buildings. The track exhibit will be on the south of the pergola and the track maintenance exhibits under the awning and arbor connecting the two buildings with a garden on the north side of the pergola.

A great drive is being made for a large exhibit of cars to be placed in the track space between the two buildings. With many requests for such space now on hand and several promises recently received from operators as well as manufacturers, it appears that this will be a truly representative exhibit of modern car development, including both urban and interurban types.

The auditorium proper has two floors. The arena is known as section A and the exhibition hall is known as section B. The new building to be erected is section C, and the D section is the open-air space between the two buildings under the pergola and section E is the track space.

The committee meeting was well attended and the spectacular plans developed by the local Cleveland committee were received with approbation. Those who attended the exhibit meeting and space assignment were: J. H. Alexander, chairman; C. H. Clark, S. J. Cotsworth, John A. Dewhurst representing Charles Gordon, H. Fort Flowers, B. A. Hegeman, Jr., R. Roy Holden, A. L. Kippenberger, J. R. McFarlin, J. C. McQuiston, A. Frank Paul, A. L. Price, A. M. Robinson, James W. Welsh, Fred B. Bullock, assistant to Colonel Alexander; Fred C. J. Dell, director of exhibits, and Thomas J. Segrave, assistant to Mr. Dell.

Haskelite Adds Publishing to Its Other Functions

During the past month a new publication has spread its wings in the air. To the newcomer in the field of house organs has been given the name *Light Weight Champion's Record*, the suitability of this title being easily recognized when it is learned that it is being published by the Haskelite Manufacturing Corporation of Chicago. It is planned to fill the little paper, a 9x12-in. leaflet, with interesting news of the 101 applications for Haskelite and Plymetl, covering all of the industrial fields. As an example of the manner in which this policy will be carried out, the first issue contains brief, pithy notes on the manner in which these lightweight materials have been adapted to street cars, buses, commercial cars, signs and airplanes in various sections of the country.

Powerful Locomotives for the Pennsylvania

Seven of the most powerful electric locomotives ever built are to be constructed by the Pennsylvania Railroad in its shops in Altoona, Pa. The contract for the equipment has been let to the American Brown Boveri Electric Corporation. Each locomotive will have four driving motors with a combined capacity of 3,640 hp., a driving axle load of 75,000 lb. and 80-in. driving wheels. They will be usable either as high-speed passenger locomotives or for pulling the heaviest freight. As freight locomotives they will be able to haul 100 loaded cars at 35 m.p.h., it is said.

It is planned to use the seven new locomotives to replace smaller electric engines now employed in the service between Manhattan Transfer and New York City. Later they may be used on the main line between Philadelphia and Wilmington when that stretch has been completely electrified.

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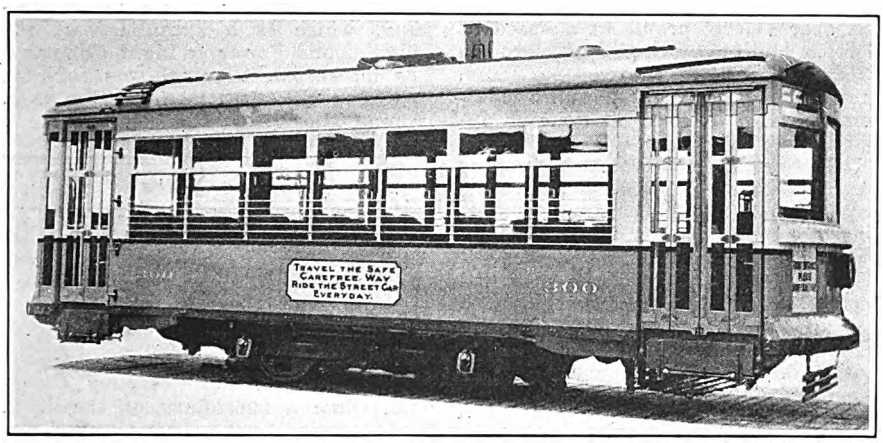
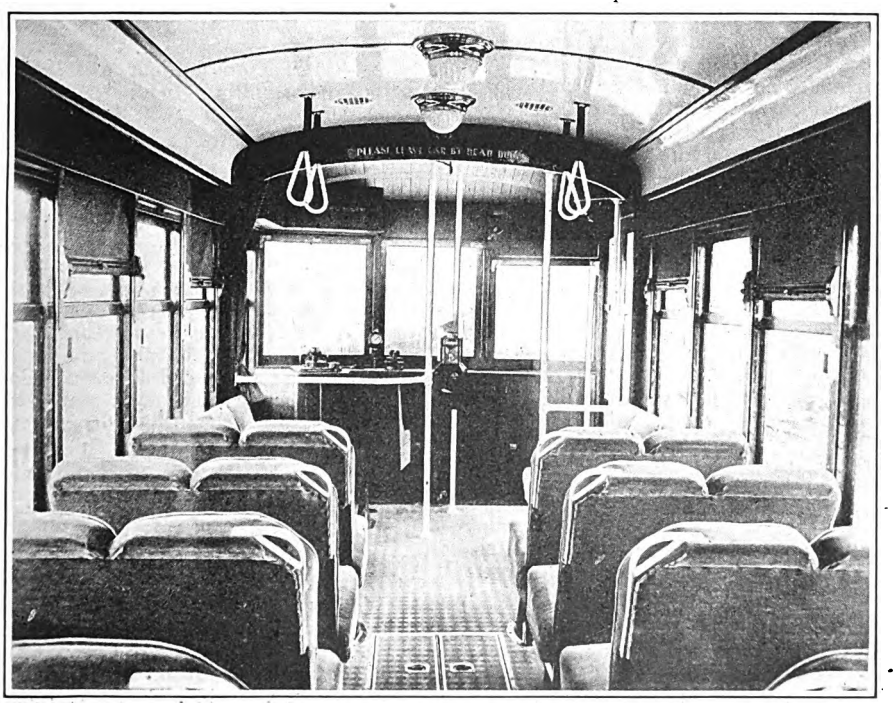
Final Delivery of Little Rock Cars Will Soon Be Made



Work on the 30 single-truck, single-end, one-man safety cars ordered by the Arkansas Central Power Company, Little Rock, Ark, is being rapidly pushed to completion by the American Car Company, St. Louis, Mo. As noted in the issue of ELECTRIC RAILWAY JOURNAL for June 19 delivery has already been made of six of the new units. The cars will seat 33 passengers and are of all-steel construction. Advertising slogans or message signs are painted on both sides of each car. Public interest has reached quite a high point in Little Rock over this equipment. Specifications follow:

Length over all ..... 28 ft. 6½ in.
Truck wheelbase ..... 8 ft. 0 in.
Width over all ..... 8 ft. 3 in.
Height, rail to trolley base ..... 10 ft. 5 in.
Body ..... All steel
Interior trim .. Birch, natural wood finished
Headlining .... ¼-in. Agasote, with Celotex insulation
Roof ..... Arch
Air brakes ..... General Electric
Axles ..... Brill
Bumpers .... Channel with automobile type New Era Spring & Specialty Co. bumper
Car signal system ..... Faraday
Car trimmings ..... Polished bronze
Center and side bearings ..... Brill
Compressors CP-25
Control K-63
Curtain fixtures ..... Rex, National Lock Washer Co.
Curtain material .... Pantasote Pat. J-86, morocco
Destination signs ..... Hunter illuminated
Door-operating mechanism ..... National Pneumatic
Fare boxes ..... Johnson
Fenders ..... HB
Finish ..... Duco
Gears and pinions ..... General Electric
Hand brakes ..... Brill vertical type
Heater equipment ..... Consolidated Car Heating Co. truss plank
Headlights ..... Golden-Glow SM-95
Journal bearings ..... Friction
Journal boxes ..... Brill
Lightning arresters ..... General Electric
Motors ..... Two GE-264-A, inside hung
Sanders ..... Ohio Brass
Sash fixtures ..... Dayton
Seats ..... Brill 105-A, modified
Seating material ..... Chase's X grade plush gray
Springs ..... Brill
Step treads ..... Kass
Trolley catchers ..... Ohio Brass No. 13141
Trolley base ..... General Electric
Trolley wheels ..... General Electric
Trucks .. Brill 79-E with special solid forged side frame
Ventilators ..... Brill exhaust
Wheels .... Southern Car Wheel Co., 26-in.



Unusual Attention Has Been Given to Riding Comfort in Designing the Seats for These Little Rock Cars

Southern Properties Will Soon Receive 33 Light-Weight Cars

Delivery is expected to be made on July 25 of the ten cars recently ordered from the Light Weight Noiseless Electric Street Car Company, Chicago, Ill., by the Tennessee Electric Power Company of Chattanooga, Tenn. This company, one of three Hodenpyl-Hardy properties in the South which have placed similar orders for equipment, plans to place the new units in immediate service following delivery and the necessary testing. Ten cars of the same type will be delivered to the Nashville Railway & Light Company, Nashville, Tenn., about Aug. 15 and thirteen more, also of the same construction, to the Southern Indiana Gas & Electric Company, Evansville, Ind., about Sept. 1. The order for this rolling stock was placed on April 23, 1926. The cars will be for one-man, two-man operation and will have a seating capacity of 44.

Dimensions of the cars in the individual orders are not quite similar, nor is the brake equipment on the several cars. The ten Tennessee Electric Power cars are 8 ft. 6 in. wide and 40 ft. 3½ in. long. The Nashville cars are 8 ft. 2 in. wide and 39 ft. 6 in. long. The Southern Indiana units are 8 ft. 6 in. wide and 37 ft. 9 in. long. The cars in the first-named order are equipped with Westinghouse air brakes and DH-16 compressors. All of the other cars have Westinghouse brakes and CP-27 compressors. Safety Car Devices equipment is used throughout. Specifications follow:

Weights:
Car body ..... 10,000 lb.
Trucks ..... 7,000 lb.
Equipment ..... 10,500 lb.
Total ..... 27,500 lb.
Bolster centers, length ..... 19 ft. 6 in.
Length over all ..... 40 ft. 0 in.
Truck wheelbase ..... 4 ft. 6 in.
Width over all ..... 8 ft. 6 in.
Height, rail to trolley base ... 10 ft. 1 in.
Body ..... Steel frame, Haskelite covered
Interior trim ..... Mahogany
Headlining ..... Haskelite
Roof ..... Arch
Armature bearings ..... SKF roller
Axles ..... Lightweight Noiseless Co.
Bumpers ..... Car builders' standard
Car signal system ... Faraday high tension
Car trimmings ..... Car builders' standard
Center and side bearings Car builders' standard
Compressors .... Westinghouse DH-16; General Electric CP-27
Control K-75
Couplers ..... Lightweight Noiseless Co.
Curtain fixtures ... National Lock Washer
Curtain material ..... Pantasote 85-77
Destination sighs ..... Hunter illuminated
Door-operating mechanism: Consolidated Car Heating Co.
Fare boxes ..... Johnson Fare Box Co.
Fenders ..... Car builders' standard
Gears and pinions .... G. E. noiseless type
Hand brakes ..... Pittsburgh, drop handle
Heater equipment: Consolidated Car Heating Co.
Headlights ..... Golden Glow
Journal bearings ..... Hyatt roller
Journal boxes... Lightweight Noiseless Co.
Lightning arresters .. G. E. aluminum cell
Motors ..... Four GE-258 K, inside hung
Finish ..... Enamel
Sanders ..... Car builders' standard
Sash fixtures ..... Car builders' standard
Seats .... Hale & Kilbourn, Walkover type
Seating material ..... Kemi-Suede
Springs ..... Car builders' standard
Step treads ..... Kass safety tread
Trolley catchers . Ohio Brass and Keystone
Trolley base ..... Ohio Brass
Trolley wheels .... Moore-Jones, 4 in. 5 in.
Trucks: Smith No. 12, light weight, roller bearing
Ventilators ..... Car builders' standard
Wheels ..... 26-in. rolled steel
Special devices, etc.:
Economy meters, exit treadle step control, Sangamo economy power meters used on Tennessee Power Company and Nashville cars.

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Babbitt Consumption Falls Off

A decrease in the total consumption of Babbitt metal for the month of May was noted over the preceding month and also over May, 1925. Calculations made by the Department of Commerce from reports received from 27 firms

1925	Total (Apparent Consumption), Lb.	Sales (By Manufacturers), Lb.	Consumption (By Producers), Lb.
January	5,683,183	4,620,815	1,062,368
February	5,164,619	4,103,340	1,061,279
March	5,644,288	4,395,901	1,248,387
April	5,126,416	3,928,136	1,198,280
May	5,081,668	4,189,558	892,110
Total (five months)	26,700,174	21,237,750	5,462,424
June	5,074,966	4,085,125	989,841
July	5,184,196	3,694,386	1,489,810
August	5,441,823	4,068,706	1,373,117
September	4,621,033	3,579,780	1,041,253
October	5,550,247	4,169,870	1,380,377
November	4,954,683	3,534,026	1,420,657
December	4,878,806	3,910,160	968,646
Total	62,405,928	48,279,803	14,126,125
1926			
January	5,152,694	3,708,383	1,444,311
February	5,139,952	3,867,710	1,272,242
March	5,860,543	4,852,805	1,007,738
April	5,229,199	3,817,253	1,411,946
May	4,797,038	3,640,369	1,156,669
Total (five months)	26,179,426	19,886,520	6,292,906

showed the total apparent consumption to be 4,797,038 lb., as compared with 5,229,199 in April and 5,081,668 in May, 1926. The consumption is calculated from sales by manufacturers and consumption by such firms as consume their own production. The accompanying table shows the sales of the metal as separated from the consumption in the producing plants.

Kawasaki Builds Freight Locomotives in Japan

Last year the South Manchurian Railway ordered three 173-ton electric locomotives for transporting coal from the Fushun Colliery. Contracts for these locomotives were awarded to the Kawasaki Dock Yard Company, Kobe, Japan. All mechanical and electrical equipment was designed and built by the Kawasaki company.

The locomotives have recently been shipped to Fushun and are now in service there. They have a one-hour rating of 1,200 hp. at 1,200 volts d.c. Four 300-hp. motors, with a 17:89 gear ratio, are provided on each locomotive. The wheel arrangement is 0-4-4-0 and the trucks are of the swivel, center cab type. Multiple-unit control is provided on each of the three units. The locomotives are capable of hauling 1,150 tons over a level profile at a speed of 15 m.p.h. and have a rate of acceleration of 0.215 ft. sec.^{2} They have a maximum tractive effort of 40,200 lb. and a maximum speed of 40 km. per hour or approximately 25 m.p.h.

The three units have a high-speed breaker each, Westinghouse EL-14 air brakes, two motor blowers, one motor-generator and two motor air compressors.

Following are some of the principal dimensions of the locomotives: Length over all 13,590 mm., or 30 ft. 5⅝ in.; gage of track, 1,435 mm., or 56½ in.; width over all, 3,000 mm., or 9 ft., 10 1/16 in.; height over all 3,700 mm., or 12 ft. 1⅝ in.; diameter of wheel, 1,250 mm., or 4 ft. 1⅛ in. Weights—Mechanical equipment, 48 tons; electrical equipment, 25 tons; total weight on driver, 73 tons.

Metal, Coal and Material Prices

Metals—New York	July 6, 1926
Copper, electrolytic, cents per lb	13.875
Copper wire, cents per lb	16.00
Lead, cents per lb	8.275
Zinc, cents per lb	7.57
Tin, Straits, cents per lb	62.375
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.425
Somerset mine run, Boston, net tons	1.95
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.825
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.425
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.80
White lead in oil (100-lb. keg), N. Y., cents per lb	15.00
Turpentine (bbl. lots), N. Y., per gal	$0.88

Rolling Stock

Hamilton Street Railway, Hamilton, Ont., in accordance with its new agreement plans to spend $1,250,000 during the next three years for new cars, buses and carhouses.

Johnstown Traction Company, Johnstown, Pa., has just received two new submarine type cars, costing approximately $10,000 each, for use in city service. These cars are exact duplicates of the units which were procured several months ago.

Minneapolis Street Railway, Minneapolis, Minn., has signed a $125,000 contract for the construction of ten gas-electric motor buses, which will be used to start the first bus service through the loop and residential districts of the city. The new service will be initiated as supplementary to the street car service in September, according to T. Julian McGill, vice-president of the company in charge of operations. The buses, which will be operated by the Twin City Motor Bus Company, the bus operating subsidiary, will be of the type now in use at Buffalo, N. Y., and Philadelphia.

Track and Line

Johnstown Traction Company, Johnstown, Pa., is laying new rails on the inbound track on Franklin Street. Rails on the outbound tracks are to be laid later from Main Street to Fockler's Corner.

Boston Elevated Railway, Boston, Mass., plans to cut through the wall on the outbound side of the Kendall Station in the Cambridge subway, and when permission is granted by the Public Utilities Commission will construct an underground passage to the surface. This improvement will serve as a convenient route for the transfer of passengers from the subway to buses.

Pacific Northwest Traction Company, Seattle, Wash., following the approval of an ordinance is permitted to lay double track along Stewart Street from Eighth to Ninth Avenues, at the site of the proposed new $500,000 interurban and bus station. The action is a formal step in the plans for the new terminal planned by the traction company, which is a subsidiary of the Puget Sound Power & Light Company. The interurban terminal was referred to in the ELECTRIC RAILWAY JOURNAL issue of March 20, page 524.

Trade Notes

B. M. Horter, formerly of the Philadelphia office of the Cutler-Hammer Manufacturing Company, has just been appointed manager of the company's Boston office. He succeeds J. M. Fernald, who has resigned.

G. C. Kuhlman Car Company, Cleveland, Ohio, a subsidiary of the J. G. Brill Company, at a meeting of the board of directors on June 23 elected Harry K. Hauck, general manager, a vice-president to succeed J. W. Rawle, resigned. R. H. Watts, who has been secretary and assistant treasurer, resigned the latter office and was elected assistant to vice-president in addition to his office as secretary. T. B. Richardson succeeds Mr. Watts as assistant treasurer. Mr. Hauck joined the Kuhlman organization in June, 1919. Before that he was affiliated with the Carnegie Steel Company and the Bethlehem Steel Corporation. He was graduated from Lafayette College, in Easton, Pa., his native city.

New Advertising Literature

Ohio Brass Company, Mansfield, Ohio, has issued a leaflet reprinted from the May 8, 1926, issue of the *Electrical World*, telling how every 25 seconds another O. B. suspension unit joins its fellow units doing their part in preserving continuity of the world's power supply.

General Electric Company, Schenectady, N. Y., has issued Bulletin G.E.A.-319, describing separable post type insulators for use on outdoor switching installations handling from 88,000 to 220,000 volts.

Leon L. Wolf Waterproof Fabric Company, Cincinnati, Ohio, is distributing a unique little folder exploiting the merits of Kemi-Suede, the new material which is being specified for roofing, flooring, upholstering and curtains for electric traction cars, buses and taxicabs. A cut-out effect shows a swatch of Kemi-Suede over which the reader is asked to rub his thumb as he picks up the unusual folder. Inside is found the pasted-on swatch, together with a brief story about this waterproof material. On the back of the folder is shown a complete list of representatives of the company, as follows: Grayson Railway Supply Company, 600 LaSalle Building, St. Louis; Sisson Supply Company, 1845 Grand Central Terminal, New York; Wolverine Supply Company, 8242 Woodward Avenue, Detroit; J. P. Armstrong, Balboa Building, San Francisco; Lyman Tube & Supply Company, Ltd., Montreal, Toronto, Vancouver, Canada; Parker, Peebles & Knox, Inc., 44 Whitehall Street, New York, for export.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

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Magnetic Brakes Together with Air Give Short, Positive Stop

HIGH schedule speeds are essential if electric railways are to attract the additional riders to which electric cars are entitled. Along with high speed goes the necessity for the most effective braking equipment possible. The International Utilities Corporation, which owns and operates the Buffalo & Erie Railway and the Kentucky Traction & Terminal Company, has developed a form of magnetic track brake for use in addition to the air brakes already on the cars. The installation of these brakes is nearly completed on all cars operated by these two properties. Details of the equipment together with some test results are given in this issue of the JOURNAL.

This form of magnetic track brake was developed primarily to meet emergency conditions that arise continually on any rail system and which require cars to be stopped in the shortest distance possible regardless of rail conditions. Therefore the magnetic brake equipment is hooked up so as to function automatically whenever the air brake handle is thrown to the emergency position. The retarding force developed by the magnetic track brakes is thus added directly to the maximum that can be obtained by the air brakes. Observations on the Buffalo & Erie Railway show that from ten to twelve emergency stops are made daily. Several very bad accidents have already been avoided by cars equipped with the new features.

Results of tests given in the article show that a reduction of the distance required to bring a car to a stop of from 30 to 35 per cent can reasonably be expected. The reduction in time to make stops is sometimes also of vital importance. One case occurred where an automobile came out of a blind driveway and crossed directly in front of an approaching car. The distance was so short that even with the additional braking force of the magnetic brakes the car could not be stopped before reaching the crossing. The increased time element, however, enabled the automobile to get across, so that a collision was avoided.

An interesting feature of the magnetic equipment is the use of air pressure to force the magnetic shoes down in contact with the rail. This provision enables the magnetic shoes to be carried at a distance of 2½ in. above the running rail. The necessity for a small air gap is thus done away with and there is no need for particular attention to the maintenance of tracks and adjustment of the shoes in order to get maximum braking results.

The framework which supports the magnetic shoes is spring hung, so that it is not a dead weight overhanging the truck structure. The attachment of the magnetic shoes to the trucks of the double-truck cars is back of the trailing wheels and is of link form. The additional retarding force is thus a pull through these links. Results from the trial equipments, which have now been in service more than six months, show that the addition of the magnetic brakes has had no unfavorable results on the truck structure. The wearing parts of the magnetic shoes are replaceable and adjustments for wear can be made easily.

At this time, when electric railways are using all possible means to make cars safer and better and to provide more attractive service, this innovation in braking equipment is of particular value and results will be watched with interest.

Axle Bearings Should Receive More Careful Inspection

EXCESSIVELY worn axle bearings are causing much trouble in electric railway equipments. They are allowed to become loose and are not given the careful attention they demand. The minimum air gap between armature and pole faces determines when armature bearings must be renewed. If armature bearings are allowed to continue in service with the small air gap the inspector knows that the armature will soon rub the pole faces and probably be damaged beyond repair. He may lose his job as a result and so he will not take chances. The equipment inspector has no such definite gage for axle bearings and does not check them closely.

Axle bearings should be given the same careful attention as armature bearings. It is a mistake to assume that by keeping them in service longer reduced cost will result. The cost of maintaining axle bearings may be lower, but other maintenance costs will mount rapidly instead. Loose axle bearings are disastrous to gears and pinions. From one-half to two-thirds of the mileage that could be obtained with accurately meshed gearing is lost by axles and shafts being out of adjustment and by too great spread between centers.

Maintenance practices that have improved axle bearing conditions in Kansas City are described in the paper by R. W. Bailey presented at the Midwest Electric Railway Association, abstracted elsewhere in this issue. The Kansas City Railways uses die-cast axle bearings. The cost of these is but one-half that of bronze bearings, so they can be replaced at frequent intervals and close limits for bearing wear can be used. With a die-cast type of axle bearing old material can be melted and used for the new bearings, and as the bearings are cast with all windows, keyways, oil grooves, etc., no finishing or machining is necessary.

Particular care is also used in fitting each bearing to

This is the issue in July that is devoted essentially to maintenance subjects

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the axle about which it is to operate. Whenever a pair of wheels is changed the axle bearings are returned to the shop and new ones are fitted.

Car trucks cause more rattling and disturbing noises than any other part of the equipment. The most important parts of the truck are the bearings. Axle bearings, particularly, should be given more careful inspection and should be renewed more frequently.

Why Do Operators Often Design and Build Their Own Cars?

NOT long ago a new face appeared in the executive office of a large railway property. It developed that this man was employed to design cars to be built either in outside establishments or in the well-equipped shops of the company. The same company is using many buses, it also uses substation equipment and many standard and sometimes easily constructed maintenance units.

Why the complex on cars? What was the psychology back of this desire to design only this one physical thing used in the conduct of the property? Does this company have a peculiar bias or perhaps a hobby on this particular part of its equipment, while taking a normal attitude toward other parts of its property? Or is this caused by lack of originality and initiative on the part of long-established car building companies, resulting in failure to anticipate the needs of this operator?

It is not alone this one incident that raises these questions, but that this tendency has appeared over and over again in many parts of the country. Many cases of car designing complexes on the part of operating companies could be cited. But it is unfortunate that such a condition continues in the face of the magnificent effort now being made to pull this essential industry out of the mire of despondency.

Just as one trained soldier is worth many untrained civilians when in battle, so should one corps of car designers with vision and experience, backed by a management with a desire to lead, be able to outdistance the entire operating group in the question of design. Certainly, since the operating companies have had the spirit to weather the distress and difficulty of recent years and still aspire to seek something better, the car building companies should be able and willing to assume the leadership in design and manufacture.

Wrong Impressions Are Worse than No Consciousness at All

THIS thought is suggested by a recent track-renewal job that was being done in conjunction with the widening and repaving of a business street in a city which is an important transportation center. The work was so extensive as to necessitate temporary suspension of the electric railway service on this street. In the early stages it looked as if the electric railway line was being abandoned. This was the impression gained even by some electric railway men who were passing through the city and were among the large numbers of out-of-town people to see the work in progress. Perhaps this conclusion was justified, as there was nothing to indicate otherwise, but it illustrates the great tendency of the public mind to believe that the electric railway has reached the peak of its usefulness.

The local business man who has his store remodeled seldom fails to make known, at least to the passers-by, that it is "being enlarged in order better to accommodate our growing patronage" or "still further to improve service to our customers." But the merchants of transportation have not learned equally well the value of pointing out to their patrons the better-service significance of new improvements and investments, although the improvements made by the electric railway, which is established to serve the whole community, are of much more general interest. True, it may not always be practicable to point out the better service represented in ordinary track reconstruction, yet posters telling, for instance, something of the cost per mile would add to the common knowledge and, in the case cited, could have prevented some misinformation of a kind which just now is altogether too plentiful.

People see the motor bus being introduced both as an addition and as an adjunct to their present transportation. Some have seen it replace as well as extend electric railway service. Not being in a position to know its limitations, many overestimate its possibilities and so expect less from the electric railway of the future. This is a state of mind which makes it essential, more than ever before, that the people, all potential railway customers, be correctly informed. It must be remembered that the average individual comprehends very little of the activities, the problems and the plans of his local electric railway. Strangely enough, even the indispensability of this public servant is not always obvious, much less appreciated. No panacea can be offered for this condition. Each company must be alert to take advantage of every opportunity to achieve and maintain in the public mind a proper conception of its purpose and its importance. A sympathetic public must have the facts.

Mr. Coffin's Life Story Is an Inspiration

FEW men have the ability and genius to organize and control capital and labor as did Charles A. Coffin, who passed away this week after a long and useful career. Without his courage, his vision and his perseverance the General Electric Company, which he founded, would probably never have developed into the world-wide organization it became under his direction.

His active connection with that company and its predecessors has covered the entire history of electrical development as it is known today. He was a successful business man in Lynn, Mass., during the early eighties when Elihu Thomson was a struggling inventor, trying to interest people in his newly developed arc light generator and lamp. Finally some of Mr. Thomson's friends appealed to Mr. Coffin to give them the benefit of his commercial experience in the manufacture and sale of this new machinery. For a number of years the company over whose affairs Mr. Coffin presided, the Thomson-Houston Electric Company, devoted itself primarily to Professor Thomson's series lighting system, while its principal competitor, the Edison Electric Manufacturing and associated companies, developed the low-voltage direct-current incandescent lighting system. When the two organizations were brought together the choice of the man to lead the destiny of the combined company fell on Mr. Coffin.

While not specially trained in science or electricity,

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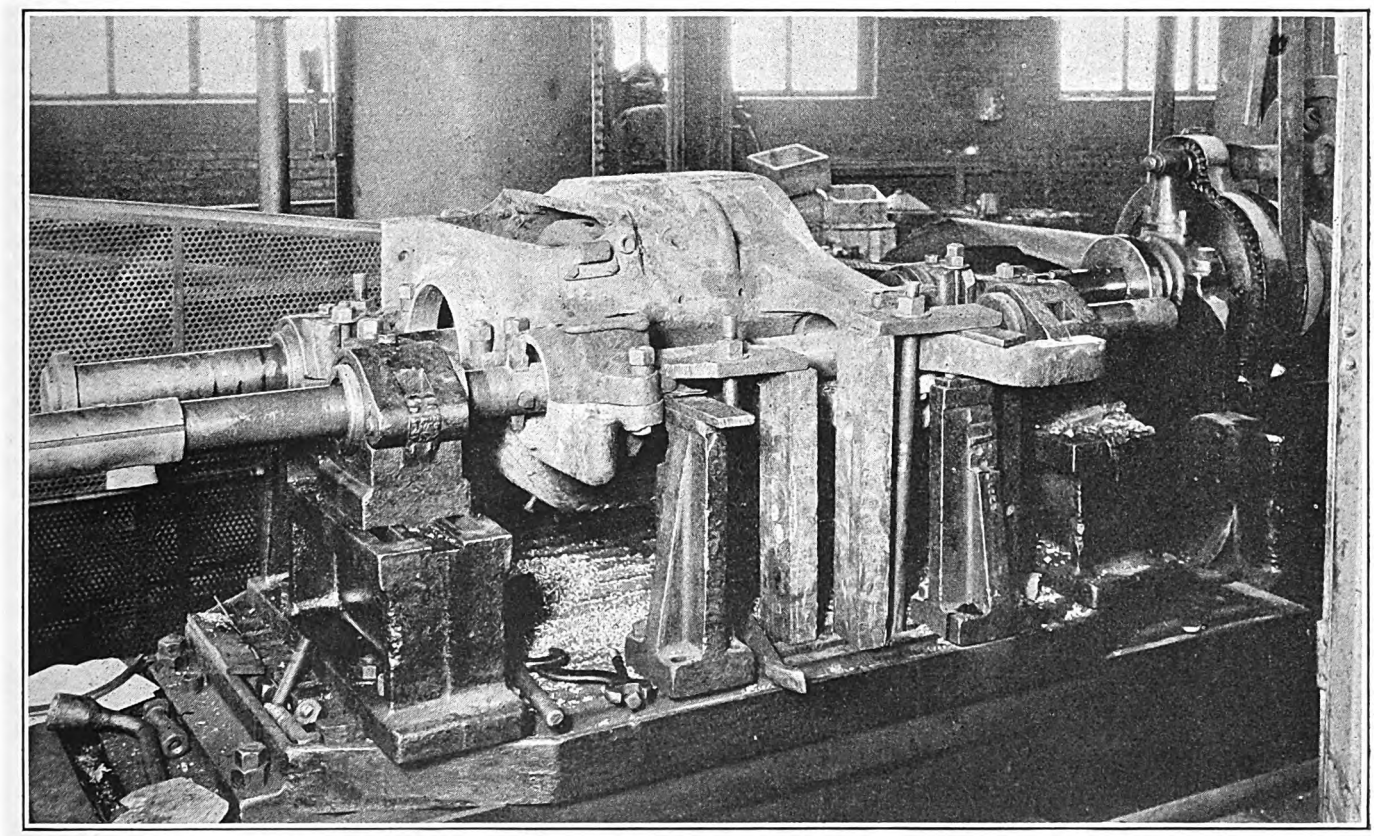
Welding and Remachining Split Frame Motors

To Carry Out a Program for Welding, Building Up and Remachining Worn Motor Frame Fits Successfully Requires a Definite Plan for the Work—Such a Program Is Outlined Here

By J. M. Zimmerman
Renewal Parts Engineering, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.



A Westinghouse 101-B Split Frame Motor Mounted on the Boring Mill Table After the Cast-Iron Drum Has Been Located Properly in the Frame. The Split Must Be Above the Center Line of the Boring Bar

RAILWAY shopmen, when starting a program for arc welding and reboring motor frames, are often at a loss to know the proper method of welding, machining, how to measure the machined frame and within what limits certain dimensions must be kept. The following program was outlined for the Washington Railway & Electric Company at the beginning of its practice of welding and reboring split frame motors and has proved entirely satisfactory.

Welding in order to build up worn fits of the motor frame is a very important part in rehabilitating a railway motor. Improper welding is liable to warp the frame. If this happens, the upper and lower halves may not fit properly, so as to clamp the housings and axle bearing tightly. If the motor frame is well reinforced it may be possible to rebore for oversize housings and bearings without welding. It is cheaper to rebore the housing fit oversize and purchase oversize housings than to weld the housing bore and remachine it to standard size; this will eliminate the cost of welding. However, the extra cost of welding the housing bore may be more than offset by the inconvenience of carrying more than one size of housing in stock.

Welding the Housing Fit

The inside housing fit on the motor frame may be worn from $\frac{1}{16}$ in. to $\frac{1}{8}$ in. Unless this face is built up by welding, the armature end play will be greater than that for which the motor was originally designed. Both the inside and outside housing fits should be welded so as to allow sufficient metal for finishing both sides. In welding this part of the frame the bead should be "put down" perpendicular to the circumference in the housing bore and not with the circumference. If it is "put down" the latter way, when the metal cools and shrinks it will set up strains which will

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tend to warp the motor frame, because the length of the weld is longer and, due to the housing bore, the frame cannot resist the pulling action of the weld when it cools. On the other hand, the shrinkage of the short weld will be small as compared to a long weld. The accompanying illustration shows the procedure and the notes refer to the methods.

If the housing bore is to be welded, the beads should be "put down" parallel with the axis of the bore and not with the circumference of the bore. This again brings up the same possibility of warping the frame as explained in the preceding paragraph.

It is preferable not to weld the axle-bearing bore of the frame. All motor frames which have the gear case arm cast as part of the frame are not as well reinforced as other parts of the frame, so at this point

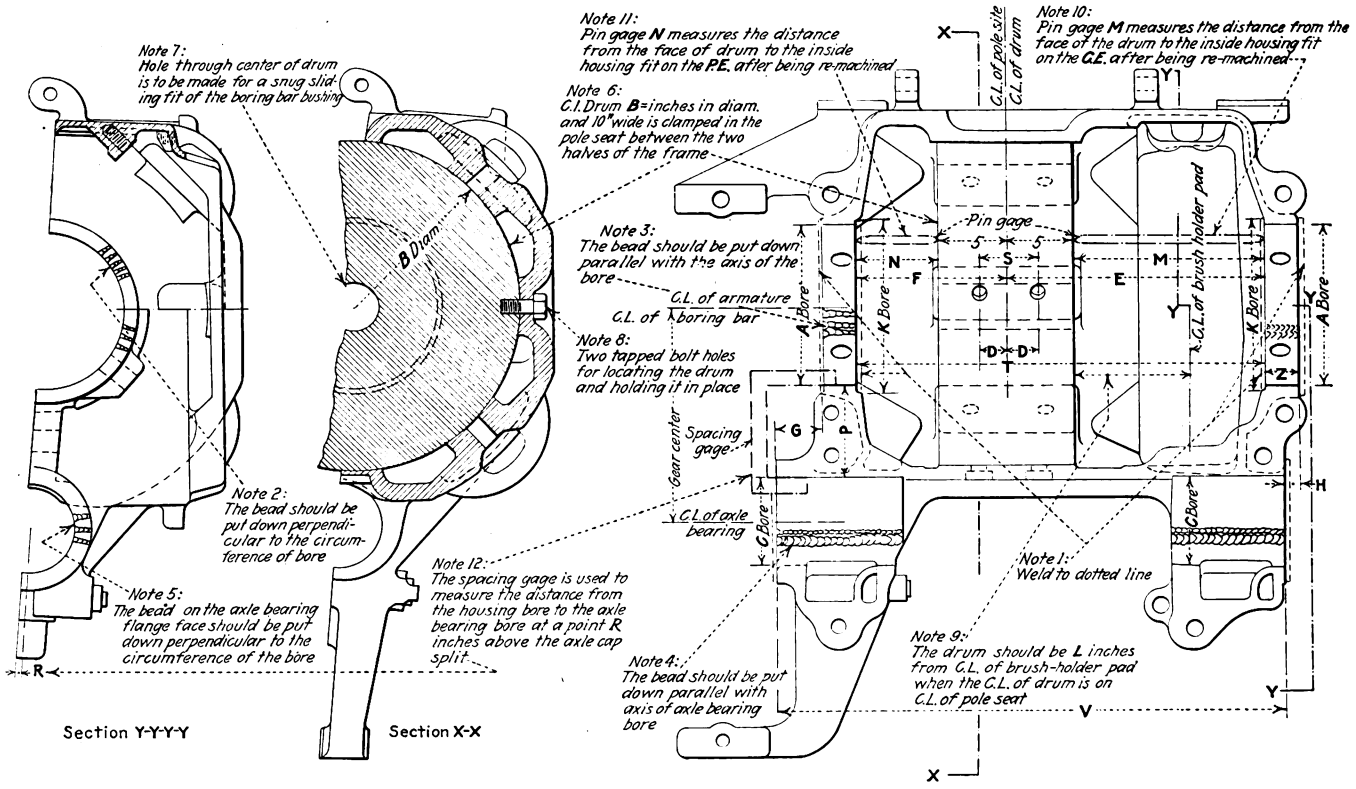

Diagram of Welding Operations and Machining Operations on Westinghouse Split Frame Motor

the warping will be more pronounced if the welding operation is not done with the most extreme care. If the axle cap warps during the welding operation the frame fit can be planed. However, the average railway shop is not equipped to plane the motor frame should the axle cap fit on the motor frame become warped. It is easier and cheaper to rebore the frame and axle cap $\frac{1}{8}$ in. oversize and purchase $\frac{1}{8}$-in. oversize bearings. This eliminates welding costs. If the welding operation is to be done, the beads should be "put down" parallel with the axis of the axle bearing bore and not with the circumference of the bore. If they are "put down" the latter way, the warping will be more pronounced, as explained in a preceding paragraph.

The frame is always worn at the axle-bearing flange face due to loose axle bearings. In order to use a standard axle-bearing flange it is advisable to weld this face and machine it to standard size. When welding, the beads should be "put down" perpendicular to the circumference of the bore and not with the circumference.

In welding any part of a motor frame after each complete layer has been "put down" and the metal is cold it is well to hammer the entire surface of the weld either with an air or a riveting hammer. This will stretch the newly laid metal, thus relieving the shrinkage strains which are caused by the metal shrinking when it cools. This allows the motor frame to spring back to its original shape.

A low-carbon wire will give the best results. A high-carbon wire should not be used in welding the motor frame because the weld will be too hard to machine.

Good values of current to use for "putting down" the beads are 200 amp. with $\frac{3}{16}$-in. rod and 160 amp. with $\frac{5}{32}$-in. rod.

The reboring can be done on either a single or double-spindle horizontal boring mill. With the use of a simple spacing gage to measure the gear center distance a very efficient job of reboring can be accomplished with a single-spindle boring mill. This particular operating company started its reboring program on the Westinghouse 306 split frame motor. In explaining the procedure of machining and measuring it will be necessary to use several numerical dimensions of this motor. However, all the dimensions shown in the accompanying illustration are letters instead of numbers, so that it may be used with any motor-frame drawing.

In order to machine the housing bores of the frame so that they will be concentric with the pole bore a cast-iron drum was placed between the two halves of the motor frame. This drum was *B* inches in diameter. The width of this drum should be exactly 10 in. because the machinist will measure from the face of this drum to the inside housing fit on the motor frame with a pin gage. The hole through the center of the drum is to be a snug sliding fit for the boring-bar bushing.

Two holes were drilled and tapped *S* inches apart, *D* inches from the center of the drum and accurately

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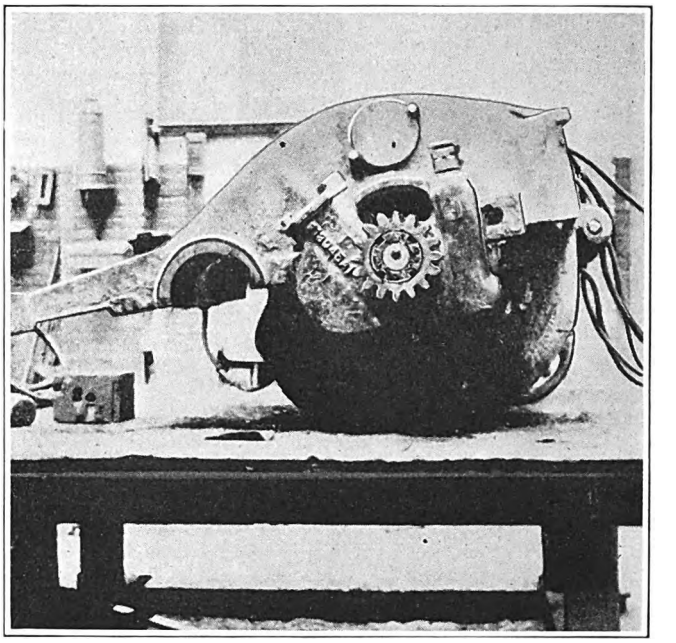
located. By means of these holes it is possible accurately to center the drum and bolt it so that the center line of the drum and the center line of the pole seat match.

The drum should be placed in the upper half of the motor frame, making certain that the center of the drum is in the center of the pole seat. It is better to have the drum closer to the pinion-end housing fit because it will increase the clearance between the brushholder box and the commutator neck. The location of the drum with respect to the center line of the pole seat measures L inches from the center of the brushholder pad. (On some motors the staggering of the brushes is produced by having the left-hand brushholder pad farther from the center of the pole seat than the right-hand brushholder pad.) If this dimension is adhered to the clearance between the brushholder box and the commutator neck will not be changed.

After the drum is bolted to the upper half of the frame the lower half is assembled, with a sufficient number of shims between the split so that a 0.017-in. feeler gage can be placed between the axle cap and the motor frame. This will insure positive clamping of the axle bearings and housings. A necessary precaution is to keep the split free from dirt and rough spots.

When clamping the motor frame on the boring-mill table the hole in the drum for the boring bar will locate the housing bore accurately. However, it is necessary to set the frame so that the parting of the axle cap will be R inches lower than the center of the boring bar. This is done so that the split of the axle bearing will be R inches higher than the split between the axle cap and the motor frame, which prevents the split of the axle bearing and the axle cap from coming at the same point. This dimension R on most split frame motors is $\frac{1}{8}$ in.

In order to insure correct armature end play so that the center line of the armature core will rotate in the center of the magnetic field it is necessary accurately

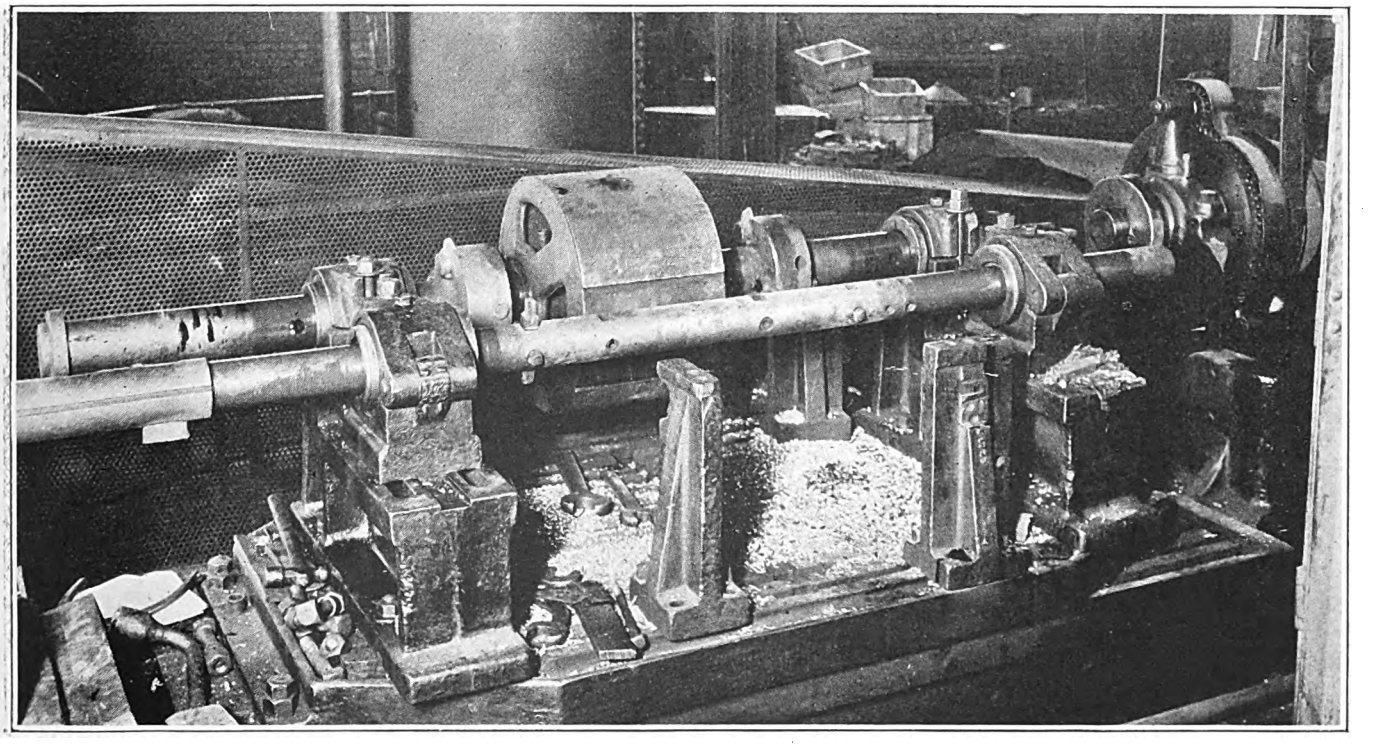


A Westinghouse 306 Split Frame Motor that Was Rebored, Welded and Equipped with Oil Sealed Housings

to machine the inside housing fits so that the dimensions E and F will not be changed. It is practically impossible to measure these dimensions after the cast-iron drum is clamped between the halves of the frame. However, if the center of the drum and the center of the pole seat coincide they can be measured in a simple manner with the pin gages M and N.

The dimensions for the pin gages to be used for the Westinghouse 306 motor are as follows:

E = The distance from inside C.E. housing fit to the center of the pole seat..... = 16⅜ in.
Half the width of the drum..... = 5 in.
M = The pin gage which measures the distance from the inside C.E. housing fit to the face of the drum..... = 11⅜ in.



A Cast-Iron Drum, Shown Fastened to the Boring Bar of the Boring Mill, Is Placed Between the Halves of the Motor to Maintain Concentricity When Machining.

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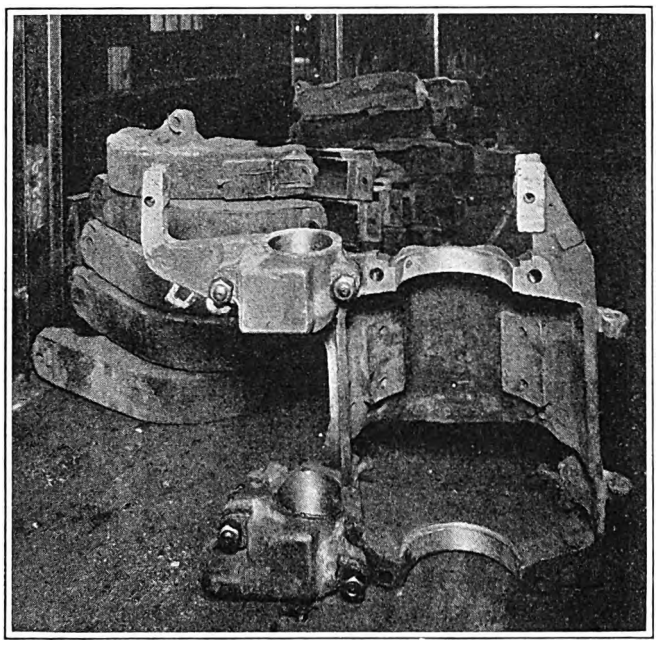
In the same manner:

F = Distance from inside P.E. housing fit to center of the pole seat ..... = 9½ in.
Half the width of the drum ..... = 5 in.
N = The pin gage which measures the distance from the inside P.E. housing fit to the face of the drum ..... = 4½ in.

After the pin gages have once been made they become a permanent gage for that type of motor.

It is very important that the same gear center be maintained. If it is allowed to become smaller the gear and pinion will bind. If it is allowed to become large the pressure will be at the end of the teeth, thus causing rapid tooth wear. In both cases the gears will be noisy.



The Upper Half of a Westinghouse 101-B Split Frame Motor and Axle Caps After Being Welded and Rebored

A spacing gage provides a simple way to measure the gear center distances, as indicated in note 12 of the accompanying illustration. This gage is a simple caliper having an opening of P inches. Dimension P will be 5 in. if the housing bore A is 10½ in. and the axle-bearing bore C is 7½ in. It is found in the following manner:

The radius of the housing bore A = 5¼ in.
The radius of the axle bearing bore C ..... = 3¾ in.
Sum ..... 9 in.
The gear center distance ..... = 14 in.
P = Distance between points of spacing gage ..... = 14 in. — 9 in. = 5 in.

If the bore C is to be made ⅛ in. oversize, then the gage will measure 4 1⅜ in. between points. If the bore C is to be ⅛ in. oversize and the bore A is to be ¼ in. oversize the gage would then be 4 1⅜ in. between points.

The two points of this gage are used to measure the distance between the housing bore A and the axle-bearing bore C on a line R inches above the split of the upper frame. This line is the center line of the housing and axle-bearing bores. It may take a certain amount of "cut and try" machining when making the finish cut on the axle-bearing bore to insure accurate locating of the gear centers.

The following table shows the machining limits which should be adhered to on certain dimensions:

Bore A = —.000 and +.005
Bore C = +.002 and —.002
Dimension T = +1/64 and —1/64
Dimension V = +1/64 and —1/64
Gear center = +.005 in. and —.005 in.

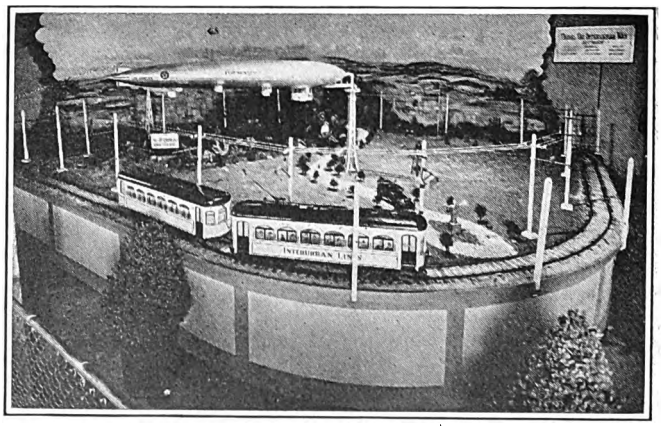
Chicago Men Instructed in Selling Transportation

TEN THOUSAND employees of the Chicago Surface Lines have received a course in salesmanship of transportation through a series of operating conferences held by Superintendent C. H. Evenson of the operating department from Oct. 12 to Nov. 3. Superintendent Evenson spoke twice daily, covering all depots and giving practically all trainmen an opportunity to meet their chief informally without the embarrassment of being "called on the carpet." Surface lines officials reported a good reaction from the conferences. Mr. Evenson stressed the point that the uniformed employees represented the company as far as the public's conception was concerned and their attitude was to a good measure responsible for the sale of transportation. Courtesy and neatness were requirements in getting a good reputation with the public, Mr. Evenson said. He showed the evils of intoxication and the danger of accidents in carelessness. The men were warned not to listen to malcontents but to try to be helpful to each other and to co-operate with the supervisors. They were invited to ask questions, which many of them did. This led to the introduction of a wide variety of problems for discussion. The conferences will be continued.

Northern Texas Traction Produces Novel Exhibit

FOR several years the Northern Texas Traction Company has had a feature exhibition at the annual Fat Stock Show in Fort Worth, Tex. The picture reproduced here shows the 1926 exhibit, depicting the service the interurban lines render to the community.

An added feature this year was a replica of the *Los Angeles* secured to a mooring mast, but arranged so that it slowly revolved around the mast. This with the other small working models of transportation units attracted a large amount of attention.



The Northern Texas Traction Exhibit at the 1926 Fat Stock Show in Fort Worth Was One that Carried the Message of Transportation Home to the Delegates

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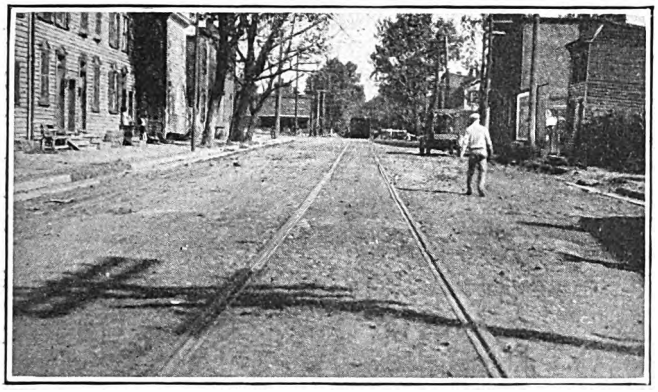


Original Appearance of Track and First Step in the Reconstruction Job

Typical appearance of Washington-Virginia tracks in Alexandria before resurfacing. Track was 9 in. low in spots and as much as 18 in out of line at some points.

The track when excavated was retied and the vertical bends in the rail removed by a vertical rail bender. Bends as much as 4 in. were removed in this manner. New tie plates were put on and electrically welded to the rails. Cupped joints were built up by the electric weld process and ground to a true surface.

Inexpensive Track Reconstruction Proves Satisfactory in Alexandria

When the Washington-Virginia Railway Was Confronted with a Request to Make Track Repairs and Repave Permission Was Obtained to Use an Economical Form of Construction—Cost of Track Repairs Less than One-Third that of New Construction

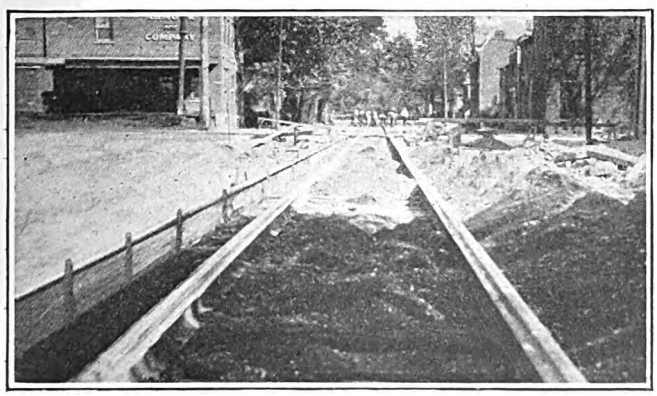
By C. A. S. Sinclair

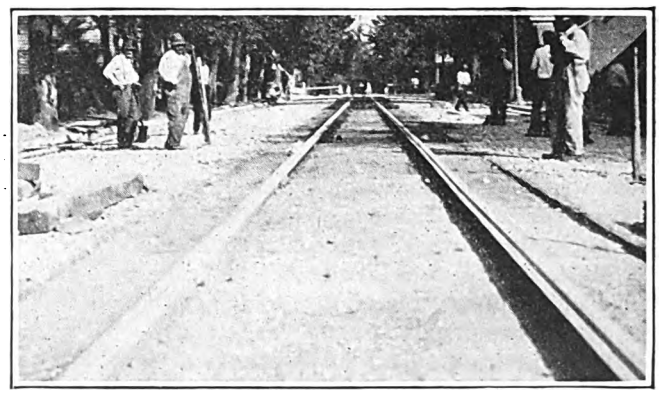
Chief Engineer Washington-Virginia Railway, Washington, D. C.

MORE than twenty years ago considerable portions of the track through the city of Alexandria, Va., were laid in dirt streets with cobblestone paving. Through the ravages of time, it well can be imagined that the street and track became in bad condition, since the entire surface had sunk considerably and unevenly. The city portion of the street was brought to the new grade by placing over it a layer of concrete, and after this had set a surface of penetration macadam was spread over the top and rolled.

Due to receivership conditions, the Washington-Virginia had to perform its portion of the reconstruction with as little outlay of money as was possible. The following plan was worked out and put into effect last year and the first year's experience has proved that this somewhat temporary scheme has worked out satisfactorily for the light traffic conditions on this street. Both the grade and the alignment of the old track were bad and in relaying the track it was necessary to change the alignment as much as 18 in. and the elevation as much as 9 in.

First, the track space was excavated. The twenty-year-old, 7-in. girder rails were found to be somewhat surface bent at the joints. By the use of a





Placing the Gravel and Bringing the Track Up to Grade

About a 4-in. layer of bank gravel was dumped in the trench and the tracks brought to line and grade. This view is typical of one of the six jobs prepared by this temporary process in Alexandria, Va.

Before the two final layers of run-of-bank gravel were placed on the Washington-Virginia tracks in Alexandria, Va., the city had completed laying concrete over the old cobblestone pavement at the side of the tracks, thus furnishing solid shoulders, against which the ballast and gravel fill on top of the ties was pressed by action of the 2-ton steam roller.

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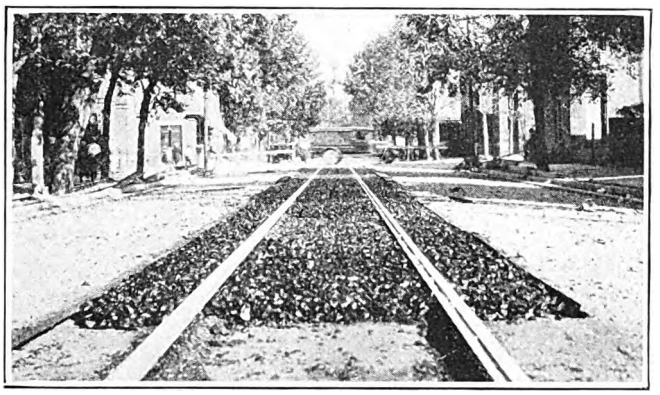
vertical rail bender the rail ends were straightened. New wooden ties were placed under the rails and blocked up so that the track was brought to line and grade. Cupped joints were built up by use of the electric arc and ground down to proper surface. New joint plates were then put on and electrically welded. Some of the rail ends were as much as 4 in. below the surface, but were satisfactorily brought back by the use of the vertical rail bender. A layer of run-of-bank gravel, consisting of about 50 per cent coarse aggregate and the balance sand, was then tamped under the ties. This was placed in layers averaging about 4 in. in depth and thoroughly tamped under the ties as the track was raised to its new position. The gravel used for tamping was made somewhat moist and the placing done with tamping picks.

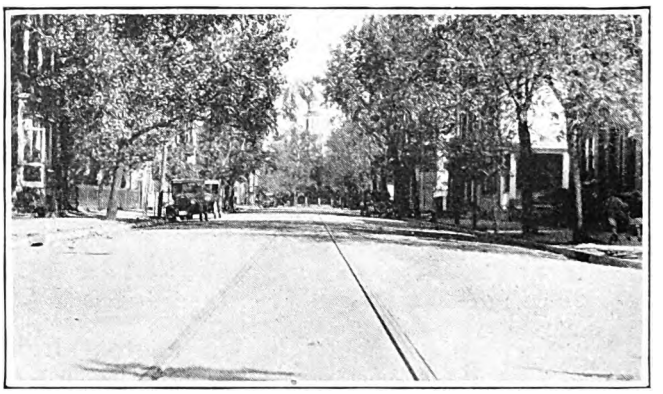
Another layer of run-of-bank gravel was then applied and slightly moistened with water. This second layer was brought considerably above the top of the ties and was thoroughly rolled with a 2½-ton steam roller. Those portions of the track that sank, due to the weight of the steam roller, were then retamped up to position. Then another layer of gravel was applied and rolled so that the top of gravel was a uniform distance (about 4 in.) below the top of the rail. The city portion of the street had been completed before this process was attempted, so that the ballast formed a solid support against either shoulder of the street, the trench being 9 ft. in width.

PAVING SURFACE THEN ADDED

The track at this point was true to line and grade and had a well-packed, steam-rolled ballast foundation brought up to a paving space. An asphalt-type of pavement was selected that would conform to the city portion of the street paving. The city, however, used a hot application, whereas a cold application, known as Headly's Mixite, was used on the railway portion. Crushed stone was treated to a cold asphalt emulsion in one of the company's storage yards and hauled to the job by work train. This mixture was deposited in the track from center dump cars and spread in place. This asphalt-coated stone was laid to a depth of 2 in. and was rolled with a 5-ton steam roller. Just ahead of this job a gang was kept busy painting the side of the rail with asphalt and pargeting the wet surface with asphalt-coated stone screenings ¼ in. to ¾ in. in size. The 2-in. layer of asphalt-coated stone when rolled formed a very dense and compact mass against the rail that has prevented water seepage into the sub-base and ballast.

After the lower coat had been thoroughly rolled and allowed to set slightly a 2-in. topping of asphalt-coated stone, ¼ in. to ¾ in. in size, was put on to about ¾ in. higher than the desired finish. This was brought to a proper crown and slope by a drag templet and again was rolled with the 5-ton steam roller. This surface was then covered with a thin layer of sand and asphalt thoroughly mixed together and applied as a seal coat and again sprinkled with dry cement and rolled again with the 5-ton roller. This furnished a surface equal in appearance to that of the street sides paved by the city.





A Cold Asphalt and Crushed Rock Mixture Was Used for the Paving

This view shows the application of the first 2-in. layer of Headly's Mixite, which is a cold mixture of asphalt and crushed rock. In the foreground can be seen the parget of small asphalt-coated rock laid against the rail web to provide a seal against the rail. A 5-ton steam roller was used to compact the paving material.

The finished surface of this section of the Washington-Virginia tracks in Alexandria appears smooth and matches the city construction in appearance. The city construction on either side of the tracks has a varying thickness of concrete laid over the old cobblestone pavement and is covered with a hot asphalt-treated rock for paving surface.

The expense incidental to all of the trackwork on this reconstruction job covering six city blocks was $2.25 per foot of single track, or less than one-third of the cost estimated on the basis of reconstruction with new rail. The paving surface cost $2.40 per foot of single track, the total charge of reconstruction costing only $4.65 per foot. After nearly a year's usage, with 30-ton cars passing over this track on headways of 7½ minutes in the rush hour to 15 and 20 minutes in the off-peak period, only slight depressions have developed, which were easily patched by the addition of small amounts of asphalt-coated stone. This patching material, being the same as that originally used, does not give a patched effect.

What the ultimate life of this class of work will be is of course not known. There is this important consideration, however. When repairs do become necessary, there is no loss of original material. The gravel can be used again with only slight additions, and the asphalt-coated stone, with the addition of fresh asphalt, can also be used. With the lower cost of digging out this class of material only a small labor charge is needed to make extensive repairs.

There is no question but what this class of construction is much inferior to that with a concrete base, but the results so far obtained indicate that a satisfactory life will be gained under light traffic conditions when money for more permanent type of construction is not available.

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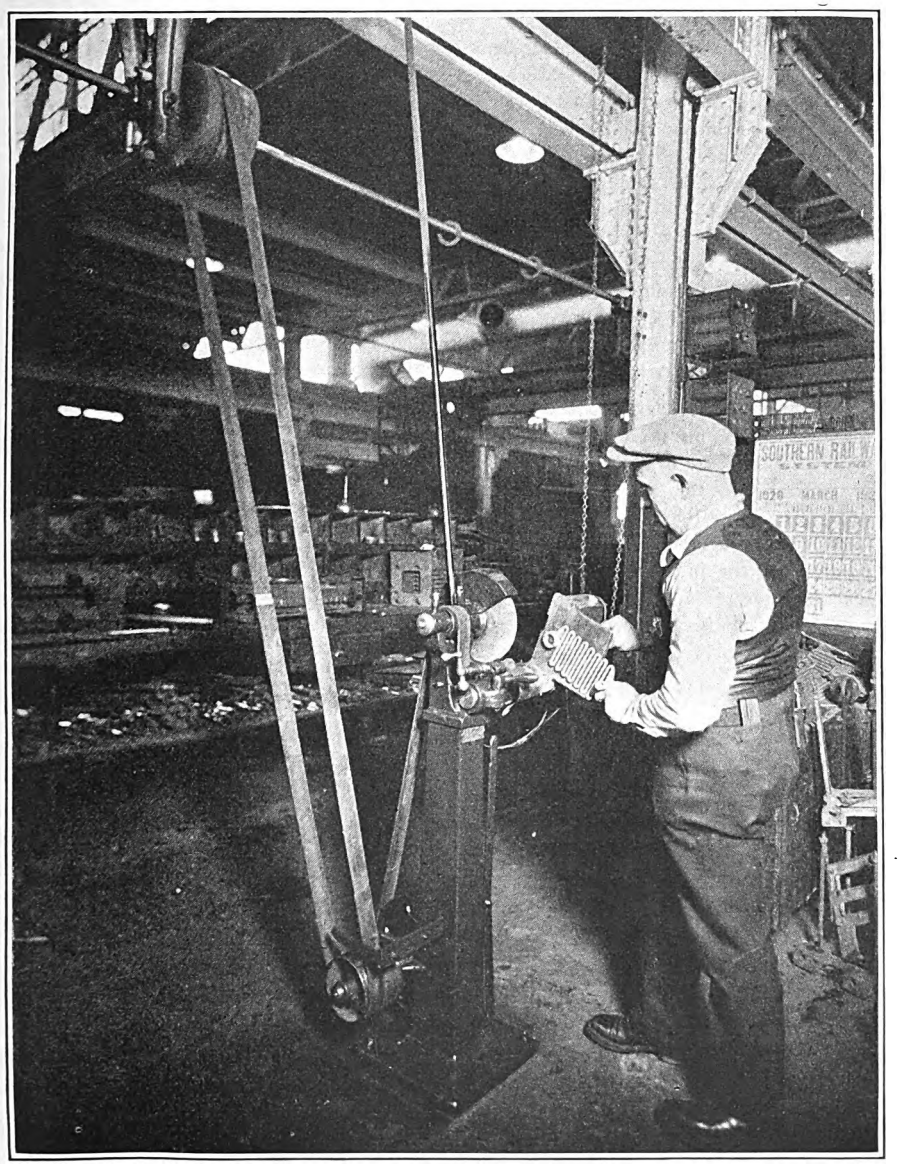
Maintenance Notes

Fixture for Grinding Grid Faces

PROPER contact between adjacent grid bosses is very essential in the assembly of car resistors. To insure accurate grinding of grid contact faces the Department of Street Railways, Detroit, Mich., uses a special attachment for the grinder. A brass face plate with iron center is used for the surface against which the grid is held. The center boss projects so that the hole at the end of the grid will fit over this. In grinding, the grid is held magnetically against the face plate. This plate with the magnetizing coil is mounted on a rod attached to the grinder so that the whole fixture will swing in toward the grinding wheel. Pressure horizontally against the face of the wheel is produced by turning a hand wheel to work a screw drive.

In the operation of grinding the grid is placed against the face plate and the movement of swinging this in to the grinding wheel closes the circuit through a coil on the back of the face plate so as to create a magnetic circuit and hold the grid firmly in position. As soon as the fixture has been swung in to proper position, the operator turns the hand wheel and so brings the boss of the grid against the grinding wheel. The work can thus be carried out rapidly and without danger of the grid face being held at an angle so that improper grinding would result.



A Special Attachment to a Standard Grinder Is Used When Grinding the Contact Face of a Resistance Grid

Raising Low Joints on Open Track

BY D. H. WALKER
Assistant Engineer T. H., I. & E. Traction Company

DURING the last two years the track forces on the Terre Haute, Indianapolis & Eastern Traction Company have used a vertical joint straightener for removing the surface bends at low joints. This device, consisting essentially of an I-beam, screw jack and clevis, has been very successful in eliminating low joints and improving the riding quality of the track. The rail bender was originally devised by W. A. Coleman, superintendent of the Dayton & Western, and used by him on that property. Several benders of the same style as his were made in our shops and tried out and now each division is equipped with these.

In operation this bender is handled by a gang of three or more men. With two men to operate the bender and the foreman to sight the joints an average of about 40 joints per day can be secured, but a crew accustomed to handling the apparatus will average nearer 60 joints per day. This device will straighten the plates as well as the rail. The rail and plates are not simply sprung up, to go back again under the first wheel load, but are actually bent back to original position.

The joint is first dug out and then all bolts tightened. Any necessary bolt renewals are made and the plates then fitted snugly and tightened. Two 1½-in. square steel bars about 10 in. long are then placed on the head of the rail and as near as possible to the ends of the surface bend showing in the rail and the joint plates. The distance between them will thus vary with the degree

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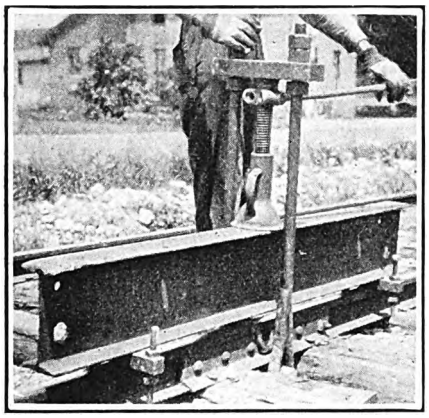
of surface bend in the joint. If it appears that the bend is mostly in the joint plates these bars should be placed near the end of the plates.

A 10-in. I-beam about 6 ft. long is next placed on the two square bars and a bell-base, three-way-head screw jack of 12 or 15-ton capacity placed on the I-beam and directly over the joint. The next piece to be applied is an assembled yoke of three members. Two steel rods 1½ in. in diameter are run through a steel bar 13 in. x 4 in. x 2 in. Each rod is threaded 12 in. on the top and equipped with three hexagonal nuts, two above the bar and one below.

The steel rods have forged eyes in the bottom end with an opening of 2 in. They are 3 ft. 6 in. long from tip of the eye to top of rod and are spaced 8 in. apart through the 13-in. long steel bar. The steel bar has a slightly raised nipple in the center of



Screw Jack Exerts 15 Tons Pressure to Straighten Low Joints on T. H., I. & E. Lines

the bottom between the two rods. This nipple fits in the head of the screw jack and centers the yoke. The eyes in the rods are turned parallel to the rail and a 12-in. long steel rod of 1⅞ in. diameter is thrust through the two and directly under the center of the joint.

The foreman then sights down the rail from a distance while pressure upward is slowly applied through the jack. We have found that the joint should be raised ¼ in. to ⅜ in. above level, which will make it secure and stiff. The foreman sighting the joint should then be sure rails and bars are straightened after the jack pressure is removed. In some cases it is necessary to apply the pressure a second time, as when the jack is released the joint will spring down again, not having been sufficiently bent. It is very necessary to be sure that the joint is bent back be-

Dick Prescott Is Promoted

And Indulges in Reverie

WHEN Dick Prescott, engineer of equipment of the Consolidated Railway & Light Company, and Thomas Mullaney, general foreman, started back to the shop from their visit to the general manager's office they were still somewhat dazed from the surprise to which they had been treated. Mr. Milburn had dictated, in their presence, an executive bulletin promoting Mullaney to the position of superintendent of equipment and making Dick his assistant.

The general manager had been most inspiring as he outlined his hopes and aspirations for the property. He dwelt particularly on the importance of the new idea of selling transportation by improvement of the product itself and pointed out the importance of developing and improving the rolling stock equipment on the property to make it more attractive to passengers.

He complimented Mullaney and Dick on their progressive views as illustrated by the report on maintenance practice that had been submitted to the operating staff.

They returned to the shop filled with new ambition and enthusiasm. Dick, who had entered the electric railway business through necessity rather than choice, was still unable to believe that he had won recognition and promotion so quickly. As it was late in the afternoon when they arrived at the shop, he left Mullaney to clean up his desk, finished up his own work and proceeded home.

Dick's mother was delighted at the good news. They discussed the details of the day's events happily at dinner, and Dick then went into the little living room to enjoy his pipe and read a book.

But his mind refused to follow his eyes, and soon he resigned himself to the eager thoughts that crowded in on him. He began to visualize the opportunities that lay ahead because of the very difficulties in the present railway situation.

Many plans and ideas tumbled through his mind in delicious confusion. He had already won the confidence and friendship of most of the foremen in the Consolidated shop and he now contemplated with pleasure the prospect of building on that a spirit of teamwork which would have for its ultimate objective the winning of public good will and patronage.

"'Every Man a Salesman of the Company,'" thought Dick, "would make a good slogan for the shop to lead off with. That would help to inspire the right kind of thinking and would add to the day's work the pleasure of accomplishment instead of making it a burden of necessity.

"I'm convinced that Mr. Milburn has a wonderful idea," he continued in thought. "Street cars can be made more attractive through improvement in design and better maintenance. If we can do the job right it will not only be a real service to the public in this city but it will win recognition and satisfaction for every man in the outfit."

In this spirit Dick finally turned in for the night, eager for morning and the job ahead.

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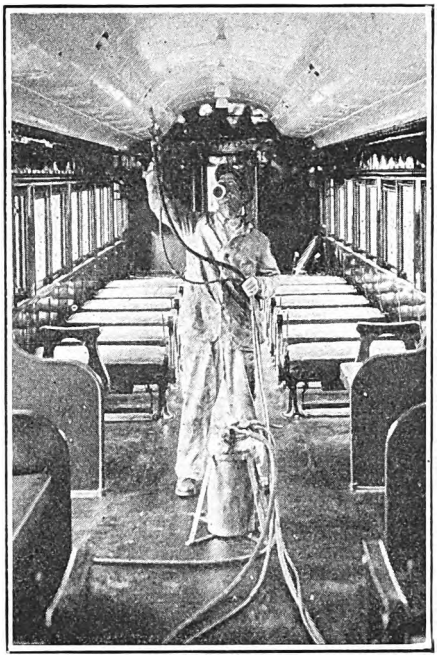
fore the joint and shoulder ties are tamped.

By burning or drilling holes in each end of the I-beam web it is possible for the men to carry it easily from joint to joint by means of lining bars or crowbars thrust through.

In our first experience with this joint straightener we tamped the shoulder ties while the pressure was still on and found that some joints went back down because they were only sprung up. Removing the pressure before tamping overcomes this difficulty, however. Great care must be taken that the joints are not raised too high, as this will cause track even more rough than that due to the low joints. In such a case the joints must simply be dug out and lowered and traffic will then in time beat them down again.

During cold weather, when the rails are chilled in the mornings and there would be danger of snapping them under pressure, heat is applied to the joint before bending. Several devices were used on the different divisions, but each was, in effect, a grate built to fit over the rail and with a fire carried in the grate by means of sheet iron sides. Handles were provided to carry this from joint to joint. Blow torches were tried, but did not prove successful.

In the hands of a foreman who is careful this device will work wonders in improving the riding quality of track. On the 70-lb., 80-lb. and 85-lb. A.S.C.E. rail in our suburban track it is very effective, but we have not tried it much on anything heavier.



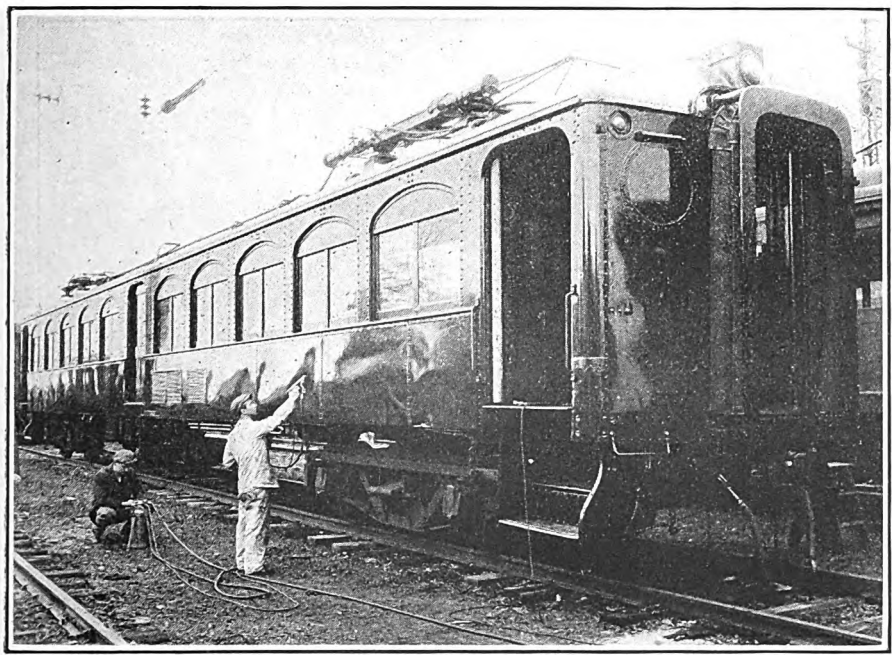
The Operator Uses a Respirator While Spraying the Interior Headlining

Spray Painting Inside Cars

ONE of the few electric railways in the country to use spray painting for headlinings inside cars is the New York, Westchester & Boston, New York City. A white enamel is used and J. T. Hamilton, master mechanic for the railway, reports that a much more satisfactory job is obtained than by brush.

By using the spray method the time of painting headlinings has been reduced about 50 per cent. There is a slight increase in the amount of material used. Before the paint is applied the headlinings are scrubbed with a cleaner and then washed with clean water. One coat of white enamel is then sprayed on.

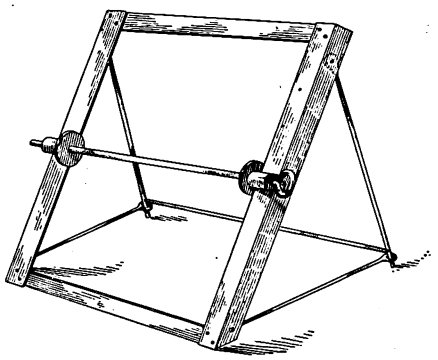
When the railway changed to the spray method for painting the exteriors of cars the time was reduced approximately one-third below that taken by the brush method. Paasche type air brush and spraying equipment is used. The cars are all steel and are 67 ft. long.



Time for Painting Exteriors of Cars Was Reduced One-Third by the Spray Method

Portable Pay-Out Reel Stand

MOST electric railway linemen have experienced trouble from the use of the usual pay-out reel stand on which coils of wire are placed in a horizontal position. Unless particular care is exercised in pulling the wire from the reel several turns will drop down off the side and these are sure to catch in something to cause annoyance and delay. These troubles have been solved by A. A. Riley, supervisor of the stores department for the Columbia Gas & Electric Company, who has devised a stand made with a pipe and angle framework, which can be folded up easily so as to take little space on the line truck.



Improved Type of Pay-Out Reel Stand

The angle frame is 36 in. wide and 42 in. high. All of its joints are welded. The sides are made of 3x3x¼-in. angles and the top and bottom are 2x2x-¼-in. angles. The legs or back supports are made of 1-in. wrought iron pipe. Two tie-rods at the bottom are made of ⅜-in. round iron. The pipe supports are hinged at the top of the frame and the tie-rods are hinged at the bottom and have eyes forged on the loose ends. The pipe supports are set into these eyes so as to form a rigid framework.

As an axle for the cable reels an old Ford driveshaft is used. A handle is welded to one end and the axle is supported on forged hubs, which are welded to the side angles of the framework.

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A reel is placed in position by putting the framework over it and then placing the axle in position through the center hole. The framework can then be raised and the bottom of the back-supporting pipework placed in the eyes of the tie-rods. This stand takes up little space and can be set up anywhere that is most convenient for carrying on the work.

Changing a Single-Track Line to Double

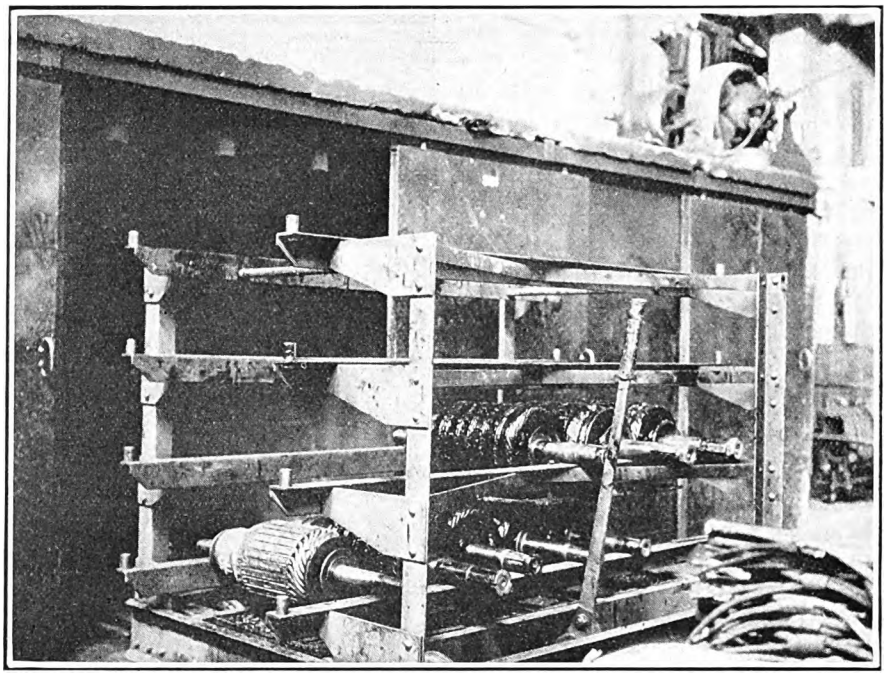
RECONSTRUCTION of the Dunbar route of the British Columbia Electric Railway, Vancouver, Canada, to provide double tracks, which is now taking place, requires 6.1 miles of new rail and an expenditure of $200,000. In doing the work certain sections had to be regraded before the track could be shifted to one side to make room for the steam shovel used to excavate the trench for the new track foundation. A road gang followed the shovel and loaded ballast from the roadbed of the old track to be hauled to points where new ballasting was being done.

A fine grading gang followed. They set up the form boards for the concrete slab foundations of the new track and trimmed the subgrade to a uniform surface. This was gaged to correct depth and cross section by use of a template board. Track-laying gangs completed the work.

Roller Bearing Armature Baking Rack

NO ONE wants to spend much time getting material in and out of a good-sized baking oven, especially during a St. Louis summer. Besides, it isn't economical. For this reason an armature rack was constructed in the shop of the United Railways of St. Louis which even when loaded to its capacity of 25 armatures can almost be operated by a child.

The general construction can be seen from the accompanying view. The rack proper is constructed from structural steel and mounted on two axles with small flanged wheels rolling on rail set in the floor. It is mounted on the two axles using Hyatt roller bearings. Although the truck has been used daily in and out of the bake oven the bearings remain very efficient in reducing the roller friction of the truck. On account of the heat no oil is used, but a graphite dressing was applied to the roller surfaces when installed. Nothing has been done since that time.

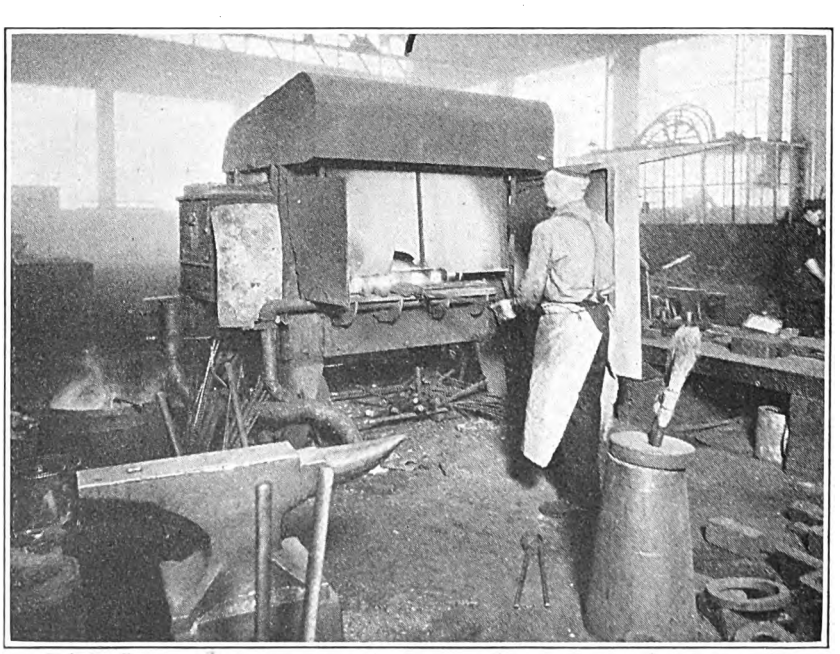


This Rack Has a Capacity of 25 Armatures and Can Be Moved Easily Due to Use of Roller Bearings

To start the truck out of the oven a ratchet arrangement has been attached to the axle in the foreground, which is operated by the handle seen on the front side of the truck. A single pull on this ratchet starts the truck rolling forward and once started it can easily be pulled by one man the rest of the way even when loaded to capacity with armatures. The bake oven doors are thus open for a minimum of time through the use of this truck.

Oil Furnaces Replace Coke Forges

MATERIAL improvement in the quality and quantity of work produced in the blacksmith department of the Department of Street Railways, Detroit, Mich., has been brought about through the installation of six new oil-fired forging furnaces in place of coke-fired forges. A carbonizing furnace with pyrometer equipment has also been added. An advantage found from the oil-fired furnaces is that there is much less danger of burning the material than where coke-fired forges are used. As



Heating Picks Preparatory to Repointing in One of the Oil-Fired Furnaces

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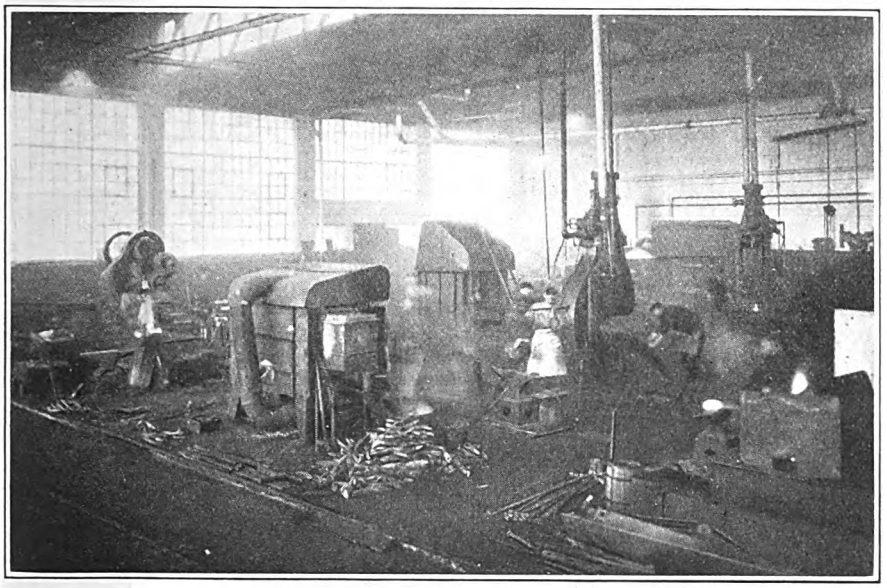


General View of the Blacksmith Department with Oil-Fired Furnaces Installed by the Department of Street Railways, Detroit, Mich.

a result more material can be placed in the furnace at one time and so the various laborers are kept busy at their anvils instead of standing around waiting for the material to reach the desired temperature. Very little difference is found in the cost of heating material by oil as compared with coke, but the blacksmith department is much freer of smoke and fumes and there are no coal or ashes to handle with oil-fired equipment.

The new oil furnaces were supplied by the Ferguson Furnace Company, Toledo, Ohio. The oil supply was piped up and air connections were made to the blowers. The old down-draft forges were provided with a suction line so these were disconnected and the new furnaces were hooked up to this.

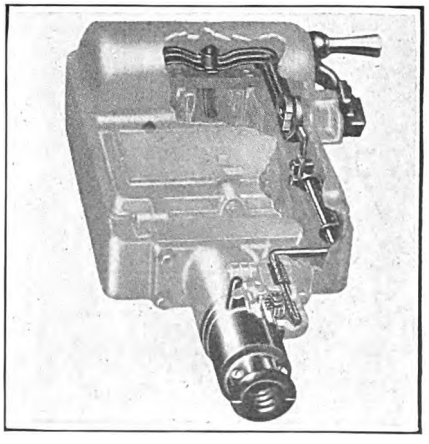
New Equipment Available

Interlocking Plugs with Safety Switches

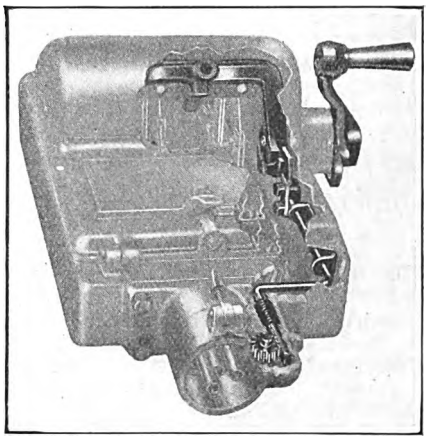
FOR use with portable electrical appliances, such as welding machines, track grinders, rivet heaters and other motor-driven machines, used by electric railways, a safety switch with fuse has just been placed on the market by the Crouse-Hinds Company, Syracuse, N. Y., in which it is impossible to withdraw the plug or open the door of the compartment unless the switch is open. Interlocking also provides that the switch cannot be closed unless the plug is fully inserted and the door of the fuse compartment closed.

The switch and plug interlocking mechanism is simple, consisting of a rack and pinion with a spring, rod and catch which engages a segment on the rocker arm of the switch. The switch door interlocking mechanism includes a lug on the hinge of the door, which also engages a segment of the rocker arm of the switch. The plug interlock consists of a wing nut and I-bolt on the housing, which engages a forked lug on the plug handle. This prevents accidental withdrawal of the plug due to the weight of the cable even when the switch is open.

The plug contacts are protected by a shell or sleeve which is cast as an integral part of the aluminum handle. This is strong enough that the plugs are able to withstand unusually hard usage. The plugs and receptacles are polarized and the contacts are self-aligning. The insulating parts of both plug and receptacle are held in place without screws and cannot become loosened by vibration. Electrical contact is maintained between the interlocking device in the condulet and the shell of the plug, which effectually grounds the plug to the conduit system.



Switch Closed with Plug Locked In



Plug Removed, Switch Locked Open

New Line of Relays

TO SUPERSEDE the Imperial type relays a new line, Type S-R, has just been placed on the market by the Roller-Smith Company, New York, N. Y. Improvements in these relays include longer scales, which insure greater accuracy; increased torque and a type of case to match standard lines of indicating instruments.

These relays are for use on either direct or alternating current circuits and include relays for reverse current, overload, underload, closed circuit underloads, over-voltage and under-voltage. The instrument mechanism has a platinum spring contact attached to its pointer which co-operates with a similar one carried by an externally adjustable pilot needle. The pilot needle is set by means of a slotted head button projecting from the front of the relay case. The circuit established on engagement of the contacts energizes an electromagnet which is mounted below on the same base with the instrument. The switch operated by the electromagnet effects whatever external circuit change the relay is designed for. The construction provides a much wider range of adjustment than heretofore available.

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Association News & Discussions

Midwest Association Holds Spirited Meeting in Denver

High-Grade Program of Management and Technical Subjects Provokes Lively Discussion at Three-Day Meeting—Improvement of Railway Service to Compete with Automobiles Receives Attention

MORE than 200 railway men and their ladies from the states of Missouri, Colorado, Oklahoma, Arkansas, Nebraska and Utah put in an active three days in spirited discussion of current local transportation problems during the annual meeting of the Midwest Electric Railway Association on July 8, 9 and 10 in Denver, Col. Despite the weight of current difficulties and the depletion of railway revenues by automobile competition, there was manifested an atmosphere of confidence toward the future and a determination to find ways and means of popularizing common-carrier transportation so as to win rates of fare adequate to make operations profitable.

Prepared papers and addresses were presented on various managerial and technical phases of railway operations. These included the following: "Fares and Fare Collection Methods," by B. W. Frauenthal, general traffic agent United Railways, St. Louis; "Modern Maintenance of Equipment," by R. W. Bailey, superintendent of power and equipment Kansas City Railways; "Effect of the Automobile on Mass Transportation," by E. E. Stenger, president Denver Tramway Corporation; "The Human Element in Industry," by F. G. Buffe, general manager for receivers Kansas City Railways; "The Interurban Bus," by B. W. Arnold, general manager Chicago, North Shore & Milwaukee Railroad; "The Industry Needs a Modern Business Viewpoint," by Charles Gordon, editor ELECTRIC RAILWAY JOURNAL; "Progress in Track Construction," by Nelson R. Love, chief engineer Denver Tramway Corporation. At the annual banquet, held on Saturday night among delightful surroundings at the Denver Motor Club, situated high in the mountains west of Denver, Frank R. Coates, president American Electric Railway Association, was the guest of honor and principal speaker. His address and the papers by Messrs. Bailey and Love are abstracted elsewhere in this issue. The papers by Messrs. Frauenthal, Buffe and Gordon will appear later.

PAPERS ACTIVELY DISCUSSED

In his opening remarks and response to the welcome extended by Mayor Stapleton of Denver, President Robert B. Campbell expressed confidence for the future. He strongly urged the need of conferences and serious discussions among railway executives, looking to the frank interchange of experience and ideas. He particularly emphasized the value of discussion from the floor to supplement prepared papers and addresses on the program. As a result, each of the subjects presented provoked much questioning, comment and debate.

"Fares and Fare Collection Methods" was discussed by A. E. Reynolds, Springfield, Mo.; Aldon J. Anderson, Salt Lake City; F. S. Welty, Omaha, Neb.; H. S. Robertson, Denver, Col.; A. Blunk, St. Joseph, Mo.; D. L. Fennell, Kansas City, Mo.; H. W. Patten, Wichita, Kan.; B. Hillburn, Tulsa, Okla., and F. G. Buffe, Kansas City, Mo. Mr. Anderson outlined the experience in Salt Lake City with the weekly pass following an increase in the single-ride fare. He said that this had resulted in doubling the sale of $1.25 weekly passes. Mr. Welty emphasized the importance of simplicity in transfers for one-man operation and Mr. Robertson described the methods used in Denver to keep transfers simple. Mr. Blunk discussed the problems of transfer handling for pay-leave operation in comparison with pay-enter. Mr. Fennell took the position that transfer punching should be held to a minimum under any conditions, since excessive punching slows down two-man operation as well as one-man. Mr. Patten discussed the use in Wichita of three different transfer colors for various periods of the day.

On the use of tickets, Mr. Hillburn said that in Tulsa an effort is made to build ticket sales to a maximum for the purpose of combating jitney competition. He favored a large differential in price between cash and ticket fares. Mr. Buffe decried the tendency to split pennies in fare collection and strongly advocated simplicity in the fare structure.

Many features of Mr. Bailey's paper on maintenance practice provoked questions and discussion. In presenting his ideas Mr. Bailey said that he had considered primarily the maintenance of existing equipment to meet modern requirements, since there is not enough modern equipment in service to talk about. In answer to a question from John Sutherland, master mechanic Tri-City Railway, Davenport, Mr. Bailey said the reduction in pull-ins recorded in his paper amounted to an increase in miles per pull-in of from 1,500 to 5,000. Other questions were raised relative to the experience of Kansas City in reducing bolt breakage. Mr. Bailey said that the automotive industry had learned in the past that upset head bolts without a fillet under the head are unreliable. As an important step in eliminating bolt breakage he

More than 200 Railway Executives and Their Ladies Attended the Fourth Annual

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explained that the lengths of wrenches used with various sizes of bolts are standardized. Workmen are not permitted to use any other wrenches, and the use of a pipe on the handle is forbidden.

Reduction in the amount of lubricants used in Omaha following improvement in maintenance practice was mentioned by Mr. Welty. Mr. Bailey and R. S. Neal explained the design of die cast bearings to prevent breakage of the flange. Mr. Neal said that the secret of success lay in maintaining certain proportions between the height of the bearing flange and the body of the bearing to prevent excessive strain being set up in the metal. H. Detrick, master mechanic Denver Tramway, mentioned the importance of giving increased attention to the reduction of noise on cars. Fred Steffens, master mechanic St. Joseph Railway, Light, Heat & Power Company, said that their practice was to keep the same set of pinions and gears together throughout their life.

Commutator Leads Swedged

Other questions were directed at Mr. Bailey regarding the swedging of commutator leads. He replied that the process cost about the same as soldering, but had entirely eliminated open circuits. Mr. Gustaveson of the Westinghouse Electric & Manufacturing Company also discussed this practice. He favored the method and stated that reports made to his company by John S. Dean had also been favorable. He pointed out particularly the ease with which leads may be replaced by swedging in comparison with soldering.

Speaking on "the effect of the automobile on mass transportation," E. Stenger, president Denver Tramway Corporation, called attention to the automobile's influence on the trend of transportation development. "From the beginning of transportation," he said, "the tendency has been consistently toward economy. The growth of rail transportation was in this direction, and the resulting effect of economical facilities for the movement of passengers and commodities led to the development of modern communities which are dependent for their existence on economical and speedy transportation.

"With the automobile has come a new form of individual transportation. It has been thrust upon us suddenly and its growth has been phenomenal. As a transportation problem the automobile is distinctly an American problem, since its use is comparatively limited outside the United States. Even in this country the conditions which it brings about vary with cities of different size. Because of the rapidity of automobile development it is impossible to look far into the future or to forecast its ultimate effect on community life and other transportation agencies.

"Growth of the automobile is not in line with the previous trend toward economy. Other factors have dictated its widespread use. Similarly, the automobile has an opposite effect on community growth than have the railroads, since it is leading to decentralization rather than concentration of population. Thus, today, there are two strong opposing transportation forces.

Economy Has Become Secondary

"Centralization of communities leads to many economies. These are chiefly apparent in utilities, police and fire protection, etc. The opposite tendency acts against community economy."

Mr. Stenger outlined the results of careful surveys in Denver to indicate that the convenience of access to car lines alone has little influence on choice between cars and autos for local transportation. He expressed the opinion that pride or social distinction may be an important influence. Summarizing, he said: "There is going on a fundamental change in the nature of transportation demand. In looking for a solution of the difficulties of common carriers we must strike out along new lines. It is impossible to guide the future on the experience or precedents of the past."

Discussing Mr. Stenger's remarks, Mr. Welty advocated the elimination of parking as an aid to the situation. Mr. Buffe called attention to the experience of Denver as a striking illustration of the need for even more intensive effort to meet automobile competition. "Although Denver has gone as far as any property in the Midwest Association territory in carrying out the principles of improvement which we are all advocating," said Mr. Buffe, "the situation still seems to present a paradox and illustrates the need for still more careful analysis of the factors which influence railway riding. Commenting on Kansas City's experience, he said that the social appeal of the bus as operated there does not offer a solution, since the buses have taken their passengers largely from former street car riders.

Merchants Don't Recognize Parking Evil

On the subject of parking elimination, he remarked that railway receipts in Kansas City had jumped $750 per day during one week of anti-parking regulation. Downtown merchants are loath to recognize the facts of parking, however, and have a strong tendency to work against their own best interests. A survey of the shopping district in Kansas City showed that if

COMING MEETINGS OF *Electric Railway and Allied Associations*

July 22—New England Street Railway Club, annual outing, Portland, Me.

July 23-24—Central Electric Railway Accountants' Association, meeting, Drake Hotel, Chicago, Ill.

July 28-30—Electric Railway Association of Equipment Men, Southern Properties, semi-annual meeting, Chattanooga, Tenn.

Aug. 11—Metropolitan Section A.E.R.A., annual outing, Pelham Bay Park, New York.

Aug. 12-13—Wisconsin Public Utility Association, Railway Section, La Crosse, Wis.

Sept. 17-18—Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

Meeting of the Midwest Electric Railway Association at Denver July 8-10, 1926

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all parked cars carried two shoppers the total would amount to 2,000 customers. Street cars, on the other hand, carried 10,000 shoppers to the downtown district.

Further discussion of the merchandising of electric railway service ensued. Mr. Reynolds illustrated the need for advertising, from experience during the national Rotary Club convention in Denver. "With an average minimum automobile transportation cost of 11 cents per mile," he said, "the railways have an excellent opportunity of competing on a favorable basis." Mr. Gordon commented on the difference between a constructive car ride selling campaign and an appeal for relief of the railway as such, or an attempt directly to influence the use of automobiles. Mr. Fennell said that automobile dealers' associations usually object strenuously to any attempt to increase car riding.

Change in Attitude of Management

F. G. Buffe's paper on "The Human Element in Industry" was received with acclaim and provoked many favorable comments. A complete abstract will be published next week. In the discussion Mr. Stenger remarked that there has been a decided change in the attitude of management toward labor. "Today, he said, "the relations are squarely on a man to man basis, and management has learned that best results are thus obtained."

Due to the absence of B. W. Arnold, assistant general manager Chicago, North Shore & Milwaukee Railroad, his paper on interurban bus operation was read by President Campbell. "The time has passed," said Mr. Campbell, "when we can say 'to hell with the bus.' Buses can't be operated on the same basis as electric cars and we have to pay for the experience of learning where and how to operate them."

Mental Flexibility Needed

"Flexibility in our mental attitude and open-mindedness toward the best methods of organizing and utilizing the bus or motor coach as a transportation tool should characterize our entrance into this broadened field of transportation," said Mr. Arnold in his paper. "I feel that we are only on the threshold of bus development," he added. "The operation of motor coach service has three functions to perform—properly to serve the territory adjacent to the railroad property, to add revenue to the railroad and to create and maintain improved public relations.

"In this era of prosperity, which is providing almost every family with an automobile, it is necessary, if we are to make motor coach operation a success, to demonstrate the many advantages of this form of transportation. Its service must be made dependable, safe, clean and rapid. Schedules must be carefully studied before installation and must then be rigidly maintained. Business must be solicited for coaches just as for railway lines. One additional passenger per trip frequently spells the difference between profit and loss.

"Our chartered coach business has been a large factor in carrying the cost of pioneering new lines. Every lodge, club, real estate firm or private party is a prospective customer for chartered business that can be handled in off-peak periods. Highway development makes possible the operation of long coach trips. The North Shore Line has sent chartered coaches from Chicago to New York and the White Mountains.

Driver Selection Important

"Driver selection and training is of paramount importance to successful coach operation. There is more of the personally conducted tour atmosphere to a coach ride than on a railroad, and the driver is a large element in the success or failure of the trip. Selection of proper equipment follows closely in importance. Garage facilities, cleaning, inspection and maintenance are contributory to success or failure.

"Rates on the North Shore feeder coach lines are on the basis of 3.6 cents for tickets and 4 cents cash. At all main line stations the agent handles motor coach tickets and stations are used jointly by railroad and motor coach. At other than railroad stations arrangements are made with drug stores, hotels, etc., to handle tickets on a commission basis and provide suitable waiting room space and toilet facilities for patrons."

Mr. Arnold summarized the basis of all successful transportation operation, whether railway or motor coach, by saying, "If you are pessimistic as to the future of the transportation business don't get in; if you are in, get out."

Mileage Contracts Questioned

The practice of purchasing tires on mileage contracts was questioned as a sound business proposition by Mr. Bailey. He said that under present conditions of keen competition among manufacturers it is possible for railways almost to write their own tire contracts. He expressed the opinion that it would be only a matter of time before this practice would be abolished. Mr. Campbell differed with Mr. Bailey and maintained that purchase of tires on a mileage basis is a perfectly proper and practicable arrangement. In defense of his views, Mr. Bailey maintained that unless manufacturers could make a profit on such contracts this practice could not be continued. He held that if, on the other hand, manufacturers did make a profit on such contracts operators could save money by instituting their own tire service. Considerable discussion ensued regarding the design of bus tires, size of wheels and performance of brakes. Mr. Bailey said that elaborate tests which have been conducted in Kansas City to obtain data on the performance of tires and brakes will be ready for publication in the near future.

A Modern Business Viewpoint

"The Industry Needs a Modern Business Viewpoint" was the subject of a paper by Charles Gordon. This was supplemented with remarks concerning the need for improvement in electric railway cars. Mr. Gordon also explained the work of the American Electric Railway Association committee on essential features of modern cars, which has just rendered its report and which was published in abstract in the June 26 issue of ELECTRIC RAILWAY JOURNAL, page 1086. In answer to questions, the relation between the work of this committee and the committee on unification of car design was also explained. Considerable discussion arose as to the condition of existing electric railway equipment and the need for new cars in the industry. The significance of the effort in Grand Rapids to popularize electric railway service by providing a character of equipment which would have a strong appeal to prospective riders was also discussed. The basis of the surveys made by ELECTRIC RAILWAY JOURNAL on the age of cars was questioned by Mr. Welty. In answer to this, Mr. Gordon explained that the age of cars was in itself of little significance except as it is combined with the developments which have taken place in car construction since existing cars were put in service. Mr. Bailey commented on the difficulty of obtaining the necessary money to provide new cars even though the improvements available warrant substitution of new equipment for that now in service. He said that estimates made by the electrical manufacturers of the savings to be effected by new equipment in Kansas City did not show a profitable financing basis.

Mr. Blunk of St. Joseph cited the predicament of the small operator in purchasing new cars. He said that the small property which cannot afford the development cost of special cars is forced to take equipment offered by the car builders and that the selection is usually limited to duplicates of recently completed orders for larger properties. Mr. Campbell reported the experience of Coffeyville, Kan., where he said that according to L. L. Francis, secretary and manager, five new cars are paying for themselves through decreased operating cost and increased revenue. Mr. Bailey reported plans in Kansas City to test out thoroughly the possibilities of improved cars in attracting patronage.

Continued Development Important

The responsibility of the car builder in bringing about car development and the advantages which would follow the general acceptance by railway operators of more uniform types of cars manufactured for stock by various builders was pointed out by Mr. Gordon. He emphasized, however, the importance of avoiding any arrangement which would tend to stifle development. H. R. Gass, sales engineer St. Louis Car Company, explained the difficulty which confronts the car builder in bringing about orderly development and reduced cost of cars. "In the past ten years," he said, "it has been impossible not only to sell the same type of car to more than one property but even to sell the same car more than once to the same property. The resulting development cost," he said, "has a decided influence on the cost of cars. Operators have adopted the practice of specifying their equipment in most minute detail and there has been little opportunity for the manufacturer to take the initiative in development." P. H. Conroy, sales

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engineer Tool Steel Gear & Pinion Company, declared that the industry has been asleep to the need for developing attractive cars. He particularly called attention to the tendency to provide seats that are too narrow and uncomfortable.

D. L. Fennell commented on the cooperation of the technical papers in making the Midwest Association a success, and in response to a vote of thanks for the work of ELECTRIC RAILWAY JOURNAL in behalf of the association and the industry Mr. Gordon expressed confidence in the ability of the industry to overcome existing difficulties.

PROGRESS IN TRACK CONSTRUCTION

The paper by Nelson R. Love on "Progress in Track Construction" aroused much interest in the possibilities of improving existing construction practice. Mr. Love described the use of a single-truck car equipped with grinding bricks for removing rail corrugation and said that this method was approximately one-tenth as costly as the former grinding equipment used. In answer to questions, Mr. Love explained further the process of grinding rolled steel wheels in Denver to maintain approximately accurate contours during their life. In answer to questions by Messrs. Bailey and Blunk, he said that the section of flexible track now in service in Denver is still in the experimental stage and has not been adopted for standard construction. He also commented on the use of carbon arc seam welds and pointed out that this practice permits the same equipment to be used for special work repairs, building up cupped joints, etc.

The following officers and members of the executive committee were unanimously elected for the ensuing year: President, A. E. Reynolds, vice-president and general manager Springfield Traction Company, Springfield, Mo.; vice-president, H. B. Cobban, secretary-treasurer and general manager Northeast Oklahoma Railroad, Miami, Okla.; secretary-treasurer, J. A. Weimer, superintendent of transportation Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo. Executive committee to fill expiring terms: R. A. Leussler, general manager Omaha & Council Bluffs Street Railway, Omaha, Neb.; H. W. Patten, general superintendent Wichita Railroad & Light Company, Wichita, Kan.; Bert Hillburn, general manager Tulsa Street Railway, Tulsa, Okla.; S. B. Irelan, general manager St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.; R. B. Campbell, secretary-treasurer and general manager Arkansas Valley Interurban Railway, Wichita, Kan. Executive committee members with unexpired terms who continue in office are: R. J. Lockwood, assistant manager for receiver United Railways of St. Louis, St. Louis, Mo.; F. G. Buffe, general manager for receivers Kansas City Railways, Kansas City, Mo.; Ernest Stenger, president Denver Tramway, Denver, Col.

F. R. Coates, president of the American Electric Railway Association, was elected a life member of the Midwest Association by unanimous vote. An invitation was extended by Mr. Hillburn to hold the next meeting in Tulsa, Okla. This was referred to the executive committee. A vote of thanks was extended to the various speakers who prepared papers and to the officials of the Denver Tramway and their ladies, who provided an excellent entertainment program during the convention.

Transportation Must Be Put on a Profitable Basis*

Greater Co-operation Between Utilities Is Needed—Buses Are Not Destined to Replace Railways—New York Needs to Divorce Transportation and Politics

BY FRANK R. COATES
President American Electric Railway Association

PRIMARILY I want to make a plea for closer co-operation of all branches of the utility business. Utility men outside the local transportation business can be of great assistance to us by helping tell the public the facts about our situation. I use the word "situation" because I dislike the term "problems," which has so frequently been applied in recent years to local transportation matters. The fact is, there have been no great variety of so-called "problems." Just one or two fundamental economic questions have had to be answered in every community. Where these have been answered in the right way local transportation has got back on its feet, good service has been rendered and companies and communities have prospered. Where these questions have not been answered fairly or fully transportation still is crippled. Furthermore, it is likely to be for some time to come.

The outstanding questions to be answered by every community in connection with its local transportation are these: First, is there a demand for public transportation, and, second, if there is this demand, shall the local company be permitted to earn a fair return on its investment?

As to the first question, is there a demand for common-carrier transportation, we are likely to answer it quickly either yes or no. Yet it demands study. There is that school of thought which insists that there should be public transportation in every community. Obviously this position will not stand analysis. There are plenty of communities throughout the country today that will not support public-carrier transportation unless you designate a few hacks or taxicabs by such a term. Certainly there are plenty of communities that cannot support a street railway system nor even a bus system, yet, unfortunately for the local transportation business, many of these communities do have public service transportation. It is in such communities that electric railways are in particularly bad financial shape.

Transportation companies in such communities are dying, of course. In fact, that is where the mortality is greatest. You have heard a great deal in recent years about dying electric railway companies. The fact is that they have died in about 60 communities in the United States, and the average company which has died has run just seven cars. There is no doubt that electric railway properties never should have been built in these communities, and when you hear that such an electric railway property has died it is no reflection on our industry in any way. It is a reflection on the judgment of the men who built the lines.

There is, however, in the larger communities a very great demand for public transportation, and this demand is going to increase. It is going to increase for both electric cars and buses.

NEED FOR RAILWAY INCREASING

The fact that no community in the United States of more than 50,000 persons now is being served solely by buses proves the necessity for the electric railway. As cities grow larger, populations become more dense and the mass transportation problem increases, the need for the electric car becomes more apparent. Increased traffic congestion, with its consequent lack of parking places, also is driving the private car owner back to the street car. These and many other causes, which are readily apparent in every community of any size, quickly show the need for common-carrier transportation service.

Recognition of this need for service is widespread, and coupled with this comes recognition of the second point I previously made, that a street car company must be given a chance to earn a profit the same as any other business. Most enlightened communities throughout the country long since have recognized the fact that a transportation company must be entitled to earn a profit the same as any other business or it will cease to function. In other words, if the street car horse is going to work, it must be fed. I want to make it very clear that this is not a poverty plea, or that it is intended to leave the impression that most communities are striving to starve their transportation companies to death. They are not. There has been a very decided movement on the part of local, state and national officials throughout the country in the last five years to play fair with the electric railways.

Fare increases have been granted very generally, and today the average fare throughout the United States is approximately 7.6 cents. In many communities the fare is 10 cents. An honest effort has been made in most communities to arrive at fair rates for car companies.

*Abstract of address presented before annual meeting of Midwest Electric Railway Association, Denver, Col., July 8-10, 1926.

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Increased fares, however, have not always proved the best solution. Many operators are of the opinion that fares may easily be made too high. High fares often discourage riding. There are other means of assisting local transportation companies to prosperity. A dollar saved is a dollar earned, and if electric railway companies, particularly those which are badly overtaxed throughout the country, are given relief from paving and other taxes they may become more prosperous. Likewise, transportation companies can be aided materially toward prosperity by giving them clear rights of way so that they can make speed. A quick ride is an attractive ride, and the way to make it quick is to put into effect parking regulations which will cause the streets to be used as thoroughfares and not as storehouses.

It is impossible for me to lay down more than general rules for making electric railway companies prosperous. Of course, there are certain fundamentals, some of which I have mentioned, that will apply in every case, but also in every case there are local conditions which are of the greatest importance. The way to arrive at proper conclusions in these situations is to bring in the best minds of your respective communities, tell them the whole story and work out a plan of operation on a basis fair to all.

New York Situation Explained

You have seen much in the papers recently about the New York City local transportation situation. Since this affords a striking example of a city which has driven its transportation horse to exhaustion through failure to supply it with proper sustenance, I want to dwell just a little bit on this situation. A good deal of comment has been published about the possibility of New York City doing away with all of its trolley cars because they are a nuisance and cause traffic congestion. One proposed solution of this problem is to substitute buses for the trolley cars, and the most remarkable part about it is that this proposal to bring about traffic congestion relief would mean the substitution of five buses for every three street cars. It is probably the only case in the history of the world where it has been suggested that the way to make more space available is to occupy more of the available space.

In a nutshell the trouble in New York is that the 5-cent fare has failed. The surface lines have not failed. The 5-cent fare has not paid operating expenses. The rolling stock of the lines has gone down badly. Traffic congestion in the city is terrible. This also has hampered the surface line companies greatly in rendering service.

Despite these drawbacks, the surface lines of New York City today are carrying almost 40 per cent of all riders in the greater city. The subways, elevated lines and buses carry the remaining 60 per cent. Incidentally, the number carried by buses is a very small proportion. The biggest bus line in the entire city, the Fifth Avenue Coach Company, last year carried only 70,000,000 revenue passengers, whereas the surface lines alone carried more than 1,000,000,000.

New York is one of the last large strongholds of the 5-cent fare. This political plank is a standard one for the controlling political party in the city of New York. No politician believes that he can be elected on any other platform. Therefore they all came out strongly for the 5-cent fare. The last administration was elected on this platform and so were preceding administrations. Now the administration is face to face with the fact that transportation is breaking down and that it cannot be built up under the 5-cent fare. Therefore it must find some way to give good transportation, because this is vital to the life of the city, but at the same time it hesitates to get away from the 5-cent fare plank.

Recently the situation came to a crisis when two things happened: First, a coach company obtained control of the New York Railways, which operates some electric car lines that are in very bad condition. The coach company then proposed to the city that it abandon some of the surface car lines the coach company controls, which have not paid for many years, and substitute buses thereon, chiefly at a 10-cent fare. The fare feature of this situation is a very important one for you to remember. The coach company proposed that it give a few short haul riders at a nickel, but most of its rides were to be 10 cents.

Simultaneously ex-Comptroller Craig came to the city with a proposal that it buy from him certain obsolete electric lines controlled by the New York Central Railway. He said that these lines were a nuisance and that the owners would relinquish their franchises if they were paid $7,000,000.

Neither of these propositions, that by the coach company nor the one by ex-Comptroller Craig, has been accepted, but they have caused much uninformed comment about New York surface line conditions. If all the electric lines involved in the two propositions were abandoned not 5 per cent of the surface passenger traffic in the city would be affected. Yet the impression has gone out that these two minor proposals involve the greater part of the New York surface line systems. Nothing could be further from the truth.

Despite the unfortunate impression which has been created in many parts of the country that New York trolleys are to be abandoned generally, much good has come out of the proposal to substitute buses for trolley cars in New York City. City officials who a few months ago took at face value the promises of bus manufacturers to supplant electric car service with buses, give adequate service and relieve congestion have learned that such a promise cannot be performed. Therefore they are moving very slowly in the granting of bus franchises, and my prediction is that the ultimate solution of the New York City transit problem will be co-ordinated electric car and bus service, with the present transportation companies operating most of the buses. If this sort of arrangement is made fares will be kept at a minimum. If it is not made, and independent bus companies are permitted to parallel existing transportation lines, citizens of New York are going to be faced with tremendously high local fares and no transfer privileges.

It is utterly ridiculous for any one to say that buses can supplant electric cars in the handling of mass transportation. Careful tests, made both here and abroad, prove conclusively that buses cannot handle traffic in rush-hour periods as expeditiously or conveniently as street cars. The relative ability of buses and street cars to carry passengers is shown by their past performances. During the last calendar year, operating under ideal conditions on Fifth Avenue, 385 buses carried an average of 196,000 passenger per bus annually. Operating throughout the city on branch lines and under all sorts of conditions, practically none of which were as good as those enjoyed by the buses on Fifth Avenue, 3,388 street cars, representing all surface cars in New York City, carried an annual average of 336,000 persons per car per year. In the Bronx all the street cars carried an average load of 415,000 per car. This included transfer passengers on both buses and street cars.

It will readily be seen from these figures that cars carried, in round numbers, between 70 and 100 per cent more passengers per vehicle than buses. In other words, it would require between five and six buses to replace every three street cars in New York City. Thus, instead of relieving traffic congestion, the substitution of the bus for the street car would simply add to it. Not only would you have five vehicles standing where three were before, but with the increase in number of vehicles the number of stops would also increase.

The assertion that buses would relieve traffic congestion by stopping at the curb does not apply on any street where there is parking. The utter impossibility of buses making stops at the curve on Seventh Avenue, Madison Avenue and similar congested New York thoroughfares is readily apparent. They would have to stop in the middle of the street. A standing bus will congest just as much traffic when standing parallel with the curb as a street car, and if it happens to stop crosswise on the street while attempting to weave in and out of traffic, it will stop much more than a street car.

Studies on Traffic Congestion

The United States Department of Commerce recently made a study of the causes of traffic congestion in the retail districts of various cities. Of all the cities reporting, the maximum congestion charged against the street car by any group was 3 per cent. The smallest percentage of traffic congestion charged against the street car was 4/10 of 1 per cent. The report points out that delays which are charged to street cars really should be charged against vehicles that are delaying the cars. "Just as the chain is no stronger than its weakest link, so traffic can move no faster on any one lane than the slowest moving vehicle, and that slowest moving vehicle may be any vehicle occupying the street car lane," it says.

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The real test of the ability of the bus to supplant the street car in giving service would come during the peak traffic hours. Fifty per cent of all traffic handled in New York is moved during two hours in the morning and two hours in the evening. At that time also street congestion from other vehicles going to and from work is at its worst. It is one thing to carry sightseers along Fifth Avenue in a leisurely way and quite another to deliver crowds going to work or to their homes during peak-hour traffic.

London's experience proves this. Over there when the buses reached a point where they could carry 40 per cent of all the traffic street congestion became so great that it was necessary to begin to remove buses. There were something like 6,000 buses operating in the heart of London and that was more than the streets could take care of. English transportation experts say that 5,000 more buses would be required to take care of the traffic if street cars were entirely done away with.

St. Louis has both street car and bus service. A recent survey showed that throughout the day 1,976 buses carried a total of 36,233 passengers, or eighteen a vehicle per trip, whereas during the same period 9,645 street cars carried 308,779 passengers, or 32 a vehicle per trip. During the rush hours street cars carried an average of 55 per cent more passengers per vehicle than the double-deck buses.

Possibly I have seemed to dwell at length on the New York situation and I hope that you will not feel that I think, as the average New Yorker, that it is the only place in the world worth talking about. The reason that I have discussed it so fully is that I realize there is a misunderstanding of the situation outside of New York. Furthermore, it is an excellent example of a city which does need common-carrier transportation, and which has not permitted its companies to earn a fair return. If other cities want to know how to wreck their transportation systems and inconvenience their people I would suggest they make a careful study of New York's past transportation history.

The situation is not without hope, however. The crisis is at hand. New York, like every other big city, must have good transportation, and it is going to get it. The only way that it can get it is by paying a fair rate for it. New York is going to pay this price on street cars, buses and all other kinds of vehicles. Merely because some politician wants the fare to remain at a certain figure is no sign that it is going to remain there. The fundamental laws of economics make this impossible in New York as well as elsewhere. Rides must pay a profit or there will be no rides.

Eternal Vigilance by Maintenance Men Needed to Meet Modern Conditions*

They Have a Large Part to Play Under Competitive Conditions—Service Failures Can Be Reduced to a Minimum Only by Scientific Study and Proper Teamwork

By R. W. Bailey
Superintendent of Power and Equipment
Kansas City Railways

THERE was a time in the electric railway industry, even with the 5-cent fare, when the low labor and material costs gave ample margin between income and operating costs. Consequently the man in charge of maintenance often did not measure up to present-day requirements. Present conditions are developing more equipment engineers and fewer master mechanics. Within the last few years more engineering research has been applied in this department of street railways than was ever conceived in preceding years. We have reached a point where advantage must be taken of every opportunity for reducing operating expenses without interfering with continuity of service.

At one time common-carrier local transportation agencies enjoyed the position of furnishing a service almost universally a necessity. This service has ceased to be a necessity to an increasing portion of the public, although it is still a utility to them. Due to the rapidly increasing use of the private automobile, it is becoming more important daily that operators consider the likes and dislikes of car riders and provide an attractive, quiet and comfortable means of transportation. But that is not all. Cars must be moved regularly, safely and with maximum speed commensurate with safety. This means the elimination of equipment failures to cars in service. The public has become accustomed to fast individual transportation and the electric railway must do all in its power to compete with this type of transportation.

To maintain and operate our equipment at the lowest possible cost and at the same time provide satisfactory, salable transportation involves not only the replacement of defective units but, since very few of us are fortunate enough to operate modern equipment, it is necessary to add improvements and time-saving devices necessary to meet modern demands on our present equipment. The requirements for success under present conditions are managerial ability, intelligence and well-balanced engineering, including an accurate record of the performance of equipment. Last, but of greatest importance, is the need for eternal vigilance.

Our maintenance practices in Kansas City have been built up from this viewpoint. Previous to September, 1923, general overhauls were on the basis of 60,000 miles. This basis was found to be unsatisfactory. A great many road failures and pull-ins resulted, in spite of all we could do to prevent them. We found, after a careful investigation, that our motors were failing at less than 40,000 miles and that our wheel changes averaged 40,000 miles. Other important units were being changed at intervals less than our overhaul period.

Overload Period Increased

In an attempt to synchronize our inspection and overhaul periods with the life of the various units on the cars, we bring our cars into the shop for truck overhaul every 40,000 miles. At that time we make a careful inspection, change wheels and correct many of the defects which would otherwise become the source of road failures and expensive carhouse changes in equipment. Our regular overhaul period has been increased from 60,000 to 80,000 car-miles. At that time the regular 40,000-mile truck overhaul is again carried out.

The following table gives a comparison of "Class A" pull-ins; that is, pull-ins resulting from mechanical failures:

	For Year	Average per Month
1924	9,203	767
1925	6,361	530
1926, five months	2,129	426

Cars are inspected at the carhouses every 600 miles. At this time controllers are gone over and the brakes are adjusted. At 1,200-mile intervals there is a general inspection. This covers all bearings, lubrication, motors, controllers, wheels, brakes, etc., and at this time all minor replacements are made. Any major repairs or changes which have to be made at this time are expensive and every effort is made to prevent them by thorough work during shop overhauls.

In connection with the inspection of cars we have worked out a system of "General Orders" covering proper maintenance methods which must be observed. These orders incorporate what is accepted as good practice and tend to educate the workman and to eliminate any tendency on his part toward makeshift repairs. It is our intention to have the same job done exactly the same way each time.

We have in service approximately 2,800 motors, the greater portion of which may be termed "of old type or design," and due to this fact, together with the age of the equipment, it is necessary that we take every precaution to prevent failures. We have had very satisfactory results from the practice of swedging all armature coil leads into the commutator ears instead of soldering them. The swedging has almost entirely eliminated open circuits, which, with the former practice of soldering joints, were a common trouble.

In all motors taking sleeve type armature bearings wear between bearings and bearing housing is compensated for by copper-plating the outside of the bearing. It is possible to obtain a tight fit in an oversize housing in this way provided less than 0.035 in. of additional metal is required. The cost

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of copper-plating these bearings is much less than that of using an oversize bearing and boring the housing.

During 1923 we did considerable experimenting on armature bearing lubrication, particularly in reference to automatic oiling. It was found that 57 motors were being changed due to low bearings, and that upon investigation the bearings gave evidence of having been hot at some time previous to the actual failure. It was evident that we were getting bearing failures due to improper lubrication. These failures in a great number of cases resulted in a rewind job. During the early part of 1924 oilers were installed on all armature bearings of 57 and 67 motors. The result was better than we had expected. The performance of these motors, as far as bearings are concerned, is on a par with the other motors which we have in operation. In this connection it might be well to say that a further study was made of automatic lubrication as applied to axle bearings and that during 1925 oilers were installed on axle bearings on all 57 and 67 motors.

Motor Bolt Problems

One problem which has confronted the mechanical department of the Kansas City Railways has been the selection of the proper motor bolts for use particularly on the heavier types of motors on our older equipment. During the cold winter months we have had innumerable derailments, pull-ins and delays to service as a result of motor and gear case bolts breaking or the nut working off. We have used everything from a standard machine bolt to a high tensile strength alloy steel, heat-treated bolt. The performance of the different type bolts was carefully watched and finally our selection narrowed itself to the use of heat-treated axle steel bolts. After exhaustive tests and experiments we found that the majority of our bolt breakage was due to distortion in the structure at the bolt head where the head had been upset in its manufacture. This condition can be helped by annealing the bolt to relieve any strains set up during manufacture. It is, however, impossible to change the structure. Heat-treating also seems to be beneficial, but the results lack uniformity. In the manufacture of some bolts the bolt head is upset with a large fillet under the head which is afterward machined away. This leaves a good structure at the head. The best, though almost prohibitive as to price, is the straight-machined, heat-treated bolt. It is very good practice to leave a small fillet under the bolt head as a means of stopping small cracks or "cold shuts" on upset head bolts.

Our present specifications call for a heat-treated alloy steel bolt of very high tensile strength and which costs us approximately 25 per cent more than the average alloy steel bolt. The practice of annealing second-hand bolts and putting them back in service has been stopped, as the savings made by this practice do not justify the risk we take in putting them in service.

While we have not verified our selection of motor bolts by performance in normal service over a period of time sufficient to prove conclusively that the problem is solved, our tests give us reason to believe that this type of failure will be much less in the future than it has been in the past.

In an attempt to improve axle bearing conditions on the property a great deal of experimental work has been done with die cast bearings. We are at the present time using die cast axle bearings for all replacements on General Electric 57 and 67 motors. The material used is as follows: Zinc, 80 per cent; copper, 4 per cent; tin, 6 per cent; aluminum, 10 per cent. The approximate cost of this material is 22 cents per pound, as compared with 25 to 30 cents for bronze.

Many advantages are obtained from their use in place of bronze bearings. Chief among these is a large saving in cost, which makes it practicable to replace bearings within much closer limits than usually are considered feasible with the much more expensive bronze bearings. Thus it is possible to keep motors fitted closely to the axles. This reduces considerably the wear and tear on equipment as well as the noise resulting from worn bearings.

The cost of a new die cast axle bearing is $4, against $8 for the bronze. But in the case of the die cast bearing, when it is necessary to scrap for wear, the cost is limited to the labor of casting a new bearing. The old material is melted down and a new bearing of any desired size can be made up on short notice. There is a substantial saving due to the elimination of machining labor.

In making die cast bearings cast iron molds are made and cores are used. A description of the apparatus and process was published in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 15, 1925, page 229.

While the bearing is being cast it is subjected to air pressure, which improves the density and wearing quality of the material. In the finished bearing windows, key-ways, oil grooves, etc., are cast so that the bearings are ready for use without machining or other finishing. For worn axles several sizes of center cores are used. Bearings are made to under-size bores in standard steps of $\frac{1}{16}$ in. The checks which we have made to determine wear on die cast bearings show less wear than on brass bearings. Breakage at the flange has been eliminated by casting a fillet back of the flange and shortening the height of the flange on die cast bearings.

Another method adopted to maintain gear centers is to match both die cast and bronze axle bearing to the axle; for instance, each time a pair of wheels is changed bearings are returned to the shop. The new pair of wheels going into service is installed together with the bearings which have been fitted to them.

Track Maintenance Most Important

There is no part of the car where poor maintenance is so noticeable as in the trucks. The rattle and clamor of loose, worn or ill-fitted truck parts acclaim in loud tones their lack of attention. Even the properly maintained truck of modern design is far from quiet, and it is only through eternal vigilance and frequent inspection that the older designs can be operated with any degree of quietness. When we consider the weight of the older designs of trucks and the unsprung weight which is being continually hammered over special work, crossovers and high rail joints and which is all too frequently being bounced along on a pair of flat wheels at the rate of two or three hundred jolts per minute we wonder that we can keep them in service 40,000 miles.

The most important part of truck upkeep is the tramming of truck frames at regular intervals. Due to collisions, split switches, excessive wear, etc., the truck frame is frequently cramped out of line. How many times have you seen a derailed car being put back on the rails by means of a log chain and a wreck car or truck hooked on to one corner of the truck frame. This is a fruitful source of sprung truck frames and, although sometimes necessary, results in untold grief for the truck maintenance man.

We believe in giving the truck a chance by starting with a square truck frame. We have found that it is possible to obtain much more rigid and sturdy construction by riveting and in some instances welding instead of bolting the frames. The application of case-hardened wear plates as a means of reducing localized wear and of soft iron wear plates as a means of absorbing wear where it can be compensated for easily and frequently are invaluable helps in maintaining tight, smoothly operating trucks.

Springs which are poorly matched or which have attained different degrees of set are a source of trouble. The majority of derailments on single-truck cars, especially of the safety type, are due to uneven spring tensions.

We have found it necessary to work over practically all our brake rigging. In this program a standard brake lever and pull-rod layout was made for each type of equipment with the idea of eliminating all off-set brake levers and pull-rods. At one time practically every pull-rod and lever replacement had to be bent on the job, since no standard was observed.

"Material Supervisor" Appointed

Shortage of materials must be avoided if good maintenance is desired. If material is not available when needed, worn or defective parts are permitted to go into the car, which results in failures in service. Careful supervision and constant study of the supply and demand are necessary to insure against shortage. Nothing is more disheartening to the foreman responsible for a certain class of maintenance than a material shortage. It forces him to allow poor work to leave the shop or carhouse. We have created the position of "material supervisor," whose duty it is to see that the proper supply of material is fed into the "mill." He is responsible not only for material used in routine maintenance but is also in close touch with any special work which affects the material supply.

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In connection with material we have found that it is usually cheaper to buy replacement parts instead of making them in our shop. The average street railway shop cannot compete with an industrial institution which operates on a production basis, and even if the cost is slightly higher, it pays to purchase most parts from the original manufacturer. When we begin to manufacture parts on a large scale, the actual maintenance supervision, which is our primary job, usually suffers. By buying from the manufacturer we take advantage of the engineering necessary to perfect the part. Frequently an apparently insignificant change may become later the source of a great deal of trouble.

Improvements in maintenance methods, changes in design of equipment and the installation of labor-saving devices are all secondary to the importance of good management. In management I include every member of the organization whose primary responsibility is supervision or planning of the work. It has been said that the foreman is the keystone in the arch of industry. He is the link between the management and the men, and because of this relation he is well worth every effort the management can extend to help him improve himself, so that he may do justice to the important part he plays in industry.

The workman represents a part of every company's working capital. Stop and consider the interest you pay on this investment. If your payroll amounts to $40,000 a month, then your workmen represent an $8,000,000 investment. The return which you get on this investment varies directly with your ability to select the proper men, then to create in them an interest in their work, loyalty to their employer and the desire to co-operate in the production of better quality of work. Create in them the desire to do more than draw their pay envelopes. If your men are content, loyal and ambitious the $8,000,000 investment becomes a real asset.

I do not believe in condemning a man too severely for an error in judgment. The man whose judgment "batting average" is more than 60 per cent is advancing and is a valuable man. He needs help in the way of encouragement and constructive criticism. He must be not only "with you" but "a part of you." As a part of our maintenance practice in Kansas City we have adopted the slogan "Eternally Vigilant."

Progress Being Made in Track Construction*

Interesting Experiments in Denver Look to the Development of Satisfactory Flexible Track—Advantages and Disadvantages of Rigid Track Analyzed—Proper Rail Sections for Use in Paving

By Nelson R. Love
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SINCE the construction of the first horse car lines fundamental changes in track construction have been slow. In general the tracks have comparatively long lives, which in itself retards changes. Experiments are costly and the fruition of them very slow. The weight of rail used has been gradually increased. For many years special sections have been utilized primarily for greater convenience in maintaining a flangeway in paving.

Welding joints has developed rapidly in recent years, and the process is found to be almost an ideal application, as the forces due to temperature expansion and contraction are more or less continuously absorbed by the surrounding earth or paving, and the track is well constrained against "buckling." The use of steel ties and of concrete paving is rapidly becoming general and, as a result of this alone, electric railway track practice is rapidly departing from steam railroad practice and highly specialized designs are being developed.

Of all of the problems encountered in building electric railway track, that of constructing a satisfactory track through paved areas is the most baffling and reveals the greatest variety of methods. Probably no method of building track in paving has been devised which is entirely satisfactory from every viewpoint.

The evils of electrolytic corrosion of the rail have been mitigated by bonding or welding joints, installation of copper negative return wires and the decentralization of substation capacity through the adoption of automatic substations in comparatively small units.

It can no longer be said that the life of the joint is the life of the track. The various methods of welding joints now available effectually eliminate joints, and at moderate expense.

Much progress has been accomplished in the improvement of special trackwork, particularly by the adoption of alloy steels for this purpose.

The mechanics of an electric railway track in operation are obscure, as direct observation is inherently impossible. Corrugation develops in the rails, and no one has offered an entirely satisfactory explanation or remedy for this phenomenon. The public is more and more demanding quiet operation of the cars. The rapidly increasing use of automobiles has brought a demand for more and more paving, both to eliminate dust and to make it easier for the automobilist. Economy requires that whatever type of construction be used its first cost should be low and also its life should be long.

Much of the maintenance in city track is associated with the paving. Further than this every track repair also requires a pavement repair, so that electric railway engineers are making intensive efforts to improve the wearing qualities of paved track. Two schools have developed, one of these standing for the construction of massive rigid track, which will remain intact through its strength, the other standing for the construction of a comparatively lightweight resilient track, upon the ground that the very flexibility of the track protects it from injury.

An analysis of the conditions existing in a track while a car is passing over it would indicate that no matter how strong the track may be the forces developed will exceed this strength, even to the extent of causing permanent distortion of the metal in the surface of the rail, whereas if the track be flexible the forces are minimized, so that if construction can be made to provide for movement of the rail without any destructive action taking place the flexible track should outwear the rigid track.

Dynamics of Track Analyzed

Every moving body tends to move in a straight line, and if the force of gravitation be exactly equalized by spring tension it will do so. A street car must travel over slight inequalities in roadbed and rails, and is also subject to slight irregularities in the wheels. On account of the comparatively great weight combined with little room, the springs must be stiff. Added to this, a large percentage of the weight, wheels, axles, motors, truck frames, is nearly if not quite unsprung. When a car is traveling at high speed a considerable force is required to make it travel in other than a straight line.

Let us assume a wheel with an unsprung weight of 2,000 lb., and diameter of 30 in., traveling at a speed of 20 m.p.h. or 29 ft. per second. Assume further that an irregularity of 0.05 in. is encountered. If no distortion takes place, the wheel must be raised through a distance of 0.05 in. in 0.0035 second. The velocity in a vertical direction will reach 1.2 ft. per second, or approximately 0.82 m.p.h., and the acceleration will be 1.2 ft. per second divided by 0.0035 second, or 343 ft. p.s.p.s. This is approximately ten times gravity, and the force between the wheel and the obstruction will be 20,000 lb., or 10 tons; this with an unsprung weight on the wheel of 2,000 lb.

An obstruction of this magnitude is not uncommon in electric railway track, and even if the track were rigid enough to stand such forces, the metal would not. It is plain that if the rail could be depressed the 0.05 in. by a load of, say, 5,000 lb., then the impact would be not more than 5,000 lb., and probably a little less. This is only one-fourth of the impact on rigid track and requires only a very small resiliency for the reduction.

The above, while not exact, gives an idea of the magnitude of the impact

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forces which may be developed in highly rigid track, and also the small amount of flexibility necessary to relieve these stresses. On account of the tendency of the moving car to proceed in a straight line, the flexible track is also a quieter, smoother riding track than the rigid track. The present tendency toward light-weight cars emphasizes the desirability of resilient track, as the lighter car requires a more flexible track to secure the same riding qualities as the heavy car.

In the foregoing illustration it will be noted that in the case of a resilient track, the track itself must be accelerated during the passage of the car over a bump, and due to its mass offers a resistance to this acceleration. In other words, the track may be resilient under static loads but apparently rigid, due to the mass of the rail, pavement and foundation, under moving loads. This dynamic rigidity is dependent not only on the mass per foot of the track structure but also upon the stiffness or section modulus. It is apparent that if a given deflection under a wheel extends for 5 ft. in front and in back of the wheel, the impact will be twice as much as if it extends only 2½ ft. front and back.

The mass of one running foot of track structure, paving, base and rail, 8 ft. 8½ in. wide and 18 in. deep, is approximately 2,500 lb., of which less than 100 lb. comprises rails. It is apparent that the dynamic rigidity of a track can be very materially reduced by separating the rail structure from the paving structure, at least in so far as vertical motion is concerned.

Thus, the impact stresses developed by a car in motion on a track are roughly proportional to the weight and speed of the car and the "dynamic rigidity" of the track; the latter in turn depends upon the rigidity of supports, the section modulus of the track and the weight of the track structure. Impact stresses may be materially reduced by lightening the car, increasing the flexibility of the track and separating paving from rail. Given common spring conditions the riding characteristic of the track is worse with light cars, but better with flexible track.

So far the practical side has not been touched upon. As an illustration of the truth of the above conclusions, think for a moment of open steam road track. Operation over such track, at speeds far in excess of the electric car speeds, is quieter and smoother than electric railway track. The ties and ballast are both highly resilient, and the amount of deflection is enormous when compared to electric railway track. The rail sections in use have much lower section moduli than do the rails used by many electric railways, and the mass of the track structure is only a fraction of that of the electric railway. In spite of the immensely greater wheel loads and higher speeds, the flowage of metal at open joints is less than on an electric railway with fairly tight joints. To watch a heavy train pass at a high speed over a crossing would make one wonder that it lasts until the train is over it, it moves so much; yet constrain the steel so that it cannot move and it will break.

In actual practice, a rigid track construction presents several important advantages. Only steel and concrete are used. The construction is comparatively simple and easy and the materials required are few in variety. After the steel rail is worn out the steel ties and concrete foundation are available for use with new rail and paving surface, so that a large proportion of the first cost is permanent and suffers no depreciation. As there is no motion between rail and paving, no motion need be provided for.

On the other hand, corrugation seems to be peculiar to the more rigid types of tracks, and when it develops there seems to be no track structure strong enough to withstand the resulting vibration. The pavement separates from the rail, water gets in and frost action does the rest. Wear and tear on rolling stock is greater. If the corrugations are ground out, the rail is worn out at a far greater rate than by wheelage alone. Rigid track is invariably noisy track, and probably the noise and the corrugations both result from the same cause.

As a result of the monolithic type of construction repairs are usually difficult, as destruction of the entire paving surface is necessary. The quantities of material used are large and the rail is heavy, resulting in high cost. By very reason of its rigidity, the line and surface must be exact in order to secure reasonably smooth riding and prevent the generation of destructive stresses.

Difficult to Join Paving on Flexible Track

The initial stumbling block in the construction of flexible track is to secure a joint between rail and paving which will permit of movement of the rail relative to the paving, without any destructive action on the latter, but a joint which nevertheless will be watertight, to prevent the entrance of moisture and subsequent destructive action from frost. The invention within the past few years of an asphaltic rail filler, which occupies the space between rail and paving, may prove to be one means of overcoming this difficulty, but the preparation has not yet been in use for a sufficient length of time to determine whether or not any destructive action takes place in flexible track construction. Unless such a joint can be made, the construction of flexible track cannot be successful, at least in cities where freezing temperatures occur at certain seasons.

Another trouble lies in the difficulty of securing uniform resiliency. Unless special provision be made the ties supporting the rail will provide spots of greater rigidity, which are uniformly spaced. This circumstance will tend to produce poor riding qualities in the track and may lead to excessive corrugation, particularly at resonant speeds. Perishable materials are sometimes utilized in the construction of flexible track, in the effort to secure flexibility, and the life of the track is shortened to that of the perishable material.

Flexible track, if the difficulties mentioned can be satisfactorily overcome, presents several decided advantages. The tendency to corrugation is decidedly decreased, and the rail is therefore longer lived. The track and paving structures are both considerably lighter than rigid construction, smaller quantities of material are required, so that such a type of track construction is considerably less expensive than a corresponding rigid construction.

For a number of years the standard for paved track construction in Denver has been what might be termed a semi-flexible type. This construction uses 65-lb. A.S.C.E. rail on 6-in. x 8-in. treated wood ties. The whole structure rests on from 6 in. to 9 in. pit run gravel ballast. The character of the climate and soil is such that further sub-surface drainage is unnecessary. Solid concrete paving to a depth of 9 in. is placed between the rails and to a distance of 15 in. outside of each rail. Within the last two years it has been found possible, by means of an electric vibrating apparatus, to improve the bond between the concrete and rail very materially. Results obtained with this type of track have been very satisfactory. About five years ago the wheels were changed from cast iron to steel wheels. At the same time the practice of maintaining proper coning of wheels was instituted. Coincident with this change, corrugation developed at a number of places where it had not existed before. Much of this corrugated rail has been ground and since that time corrugations have not reappeared except in a few isolated cases. Some of the older track shows a separation between the concrete paving and the steel rail. This has not developed at any location where the vibratory tamping was employed. The chief objections to this type of track are that it is somewhat noisy and in addition its life is limited by the life of the wood ties used in the construction.

Flexible Track with Steel Ties

Within the past year further experiments have been conducted with the aim of securing a flexible track approaching as closely as possible the requirements for an ideal flexible track as previously set up, using steel ties, concrete and asphalt exclusively. In this construction the steel ties have been allowed to function only in a horizontal direction in order to maintain gage and proper tilting of the rail. Vertical load is sustained entirely upon ordinary paving asphalt mixed and solidly tamped underneath the rail and ties by means of electric tampers. This track has been in service for approximately one year. The rail does not come in contact with the concrete paving at any point whatever in the construction. The space between the rail is paved with concrete and the rail is kept separated from this paving by means of a special rail filler. The paving outside of the rail is the asphaltic street paving laid against the rail. A stretch was also tried with the rail filler between the rail and the street paving. The joint between the street paving and the rail is not yet satisfactory, as there is excessive deterioration of the street paving at some points. Further experimentation in this respect will soon be under way.

The steel ties were bent so that the rails were canted to a slope of 1 to 25. No sign of corrugation has developed in any of this track. This rail has worn

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very smoothly. The track is decidedly quiet in operation and very smooth riding. The cost of this construction was approximately the same as for the standard type of track previously described—wood ties on ballast with 9-in. depth of concrete paving. The surface appearance of this type of track in the street is much more pleasing, primarily on account of the fact that the rails themselves constitute the only joints in the paving. The asphalt is continuous between the tracks from curb to rail, and the concrete is continuous in the track so that only four lines of separation appear in the paving. If the principles of the process prove satisfactory this type of construction can probably be installed at a lower cost than any other type now in use.

At this point it seems proper to mention a further result of this paving. No expansion joints were placed in the concrete, a continuous stretch approximately 1,200 ft. long. No large cracks whatever have developed and only a few hair cracks. In the older type of paving it was found that installation of expansion joints served no useful purpose, inasmuch as the concrete paving cracked without regard to the presence or absence of expansion joints. This was probably due to the fact that with welded joints the linear dimension of the steel rail could not change with the change of temperature. With cold weather the concrete contracted with a force greater than its tensile strength. The ties, and bond between the concrete and the rail, effectively held the concrete stationary at frequent intervals, so that frequent cracks would result. These cracks are easily treated by the use of primer paint followed by hot asphalt which effectively seals the cracks, but, nevertheless, results in unsightly appearance.

Design of Rail Warrants Study

The rail used by electric railways has varied from the very lightest sections to some of the heaviest sections, with a strong tendency in the past few years, particularly among the advocates of rigid type of construction, to the heavier rails. The heavy rails are particularly well adapted to electric railway construction on account of the ease with which stone block toothing can be laid against the rail. It is, however, subject to the same disadvantages as the rigid track on account of a dynamic rigidity as previously explained, being introduced through the mass of the adjacent paving and of the rail itself, which must be accelerated when any motion in the rail takes place.

Special sections of rail have been developed for use by the electric railways better to accommodate paving and to provide flangeways. The special sections are particularly characterized by being extremely heavy and, further, having a high section modulus compared to the weight of the rail. In other words, the rail is very stiff, having excessive height of web and narrow flange. The extremely light rail is much less costly but has a limited life due primarily to corrosion of the flange and web. On account of the extreme lack of rigidity of the very light rails it becomes necessary to maintain the ties or other supporting structure in good condition at all times or the rail is ruined on account of surface bending and breaking. The railway type of sections of comparatively light weight—65 lb. to 80 lb.—offer a rail which is sufficiently great in cross-section to withstand corrosion for a longer period of time than it takes the head to wear out. It is sufficiently flexible to permit of material reduction of impact. It is not as costly as the heavier sections.

In recent years the subject of canting of rail has been given considerable attention and there are some electric railway engineers who believe that this is the only thing necessary to prevent the formation of corrugation. This practice has in fact been found to be very effective in reducing corrugation. The reason back of this seems to be that if a properly coned wheel rolls on a vertical rail the area of contact between the wheel and the rail is extremely small as the contact takes place on a portion of the rail where the curvature is large. This results in high pressure per unit area, and the surface of the rail is easily subjected to a stress higher than its elastic limit with the result that cold rolling immediately takes place. If the rail be canted or tilted by means of canted tie plates, or if the rail section itself provides for the tilting on the upper surface of the rail, then the contact between the wheel and the rail takes place on a part of the rail of a much larger radius of curvature. As a result of this the effective area of contact becomes much larger with a small distortion of the rail surface so that the elastic limit of the steel is not reached.

Clambake Planned for New Englanders

PLANS for its annual outing on Thursday, July 22, have been announced by the New England Street Railway Club. This year it will be a sail on Casco Bay with an old-time clambake on Long Island.

The steam *Aucoscisco* has been chartered for the trip. It will leave Customs House Wharf, Portland, Me., at 10 a.m. A second trip will be made, leaving Portland at 12:30 p.m., arriving at Long Island in time for the clambake at 1 p.m.

Beginning at 11 a.m. there will be the usual program of sports for both men and women, followed by a baseball game between railway men and manufacturers. After the clambake there will be dancing.

Returning to Portland, the boat will leave Long Island at 4 p.m., reaching Customs House Wharf at 5:30, after a sail around the bay. The day's program will end with a light supper at the Falmouth Hotel.

Free transportation by bus from Boston will be provided, leaving North Station Wednesday, July 21, at 6 p.m. and arriving at Portland about 10:30 p.m. Returning the bus will leave the Falmouth Hotel 6:30 p.m., July 22. Those preferring can take the boat of the Eastern Steamship Line leaving Boston at 6 p.m. Wednesday and Portland 8:30 p.m. Thursday or the Boston & Maine train leaving North Station at 9 a.m. on Thursday and returning from Portland at 7:10 p.m. Thursday.

All schedules are on Eastern daylight saving time.

Those desiring reservations for the trip or accommodations at the Falmouth Hotel should write George E. Haggas, Cumberland County Power & Light Company, Portland, Me.

American Association News

Way and Structures

HARD centers and switch tongues were the subjects of discussion at a meeting of the special way and structures committee No. 2 held on June 11 at the office of W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore. Members present were C. A. Alden, R. B. Fisher, H. F. Heyl, G. A. Peabody, W. W. Wysor and E. M. T. Ryder, chairman. Messrs. Bragg and Davis of the United Railways & Electric Company attended as guests.

Discussion on hard centers was opened with the submission to the committee of several plans to show a comparison of the lengths of centers which are now being manufactured by large trackwork companies with those proposed by the committee. Several motions were then passed covering suggested changes in the plans which were made to produce an agreement with manufacturing practices.

At the last meeting of the committee assignments were made to the members for the preparation of sketches showing proposed devices for tongue switches. These sketches were submitted at this meeting for the purpose of criticism and discussion. A sketch of a new type of holding device will probably be prepared and presented at the next meeting of the committee.

In the afternoon Mr. Wysor and Mr. Davis took the committee on a tour of inspection through the Carroll Park Yards and the General Shops of the United Railway & Electric Company on Washington Boulevard.

Engineering Symbols

THE special committee on engineering symbols held its third and final meeting at association headquarters, New York City, on July 1. The meeting was attended by H. W. Codding, chairman; J. D. Kent, C. W. Squier and G. C. Hecker.

Each of the members had completed his portion of the work of preparing the symbols, and the business of this meeting consisted of reviewing the finished portions of the report and preparing the sheets of symbols for submission to the association. The tentative report previously sent out to the members of the committee for comment and criticism was revised. This report includes 33 plates of symbols which have been agreed upon by the committee for submission as standards of the association.

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The News of the Industry

Conference in Chicago

Mayor Seeks to Have Traction Officials Meet on July 22 to Discuss Terms of Proposed Franchise

Failure of officials of the Chicago elevated and surface lines to appear before the local transportation committee of the City Council after repeated invitations has evoked action from Mayor William E. Dever. Until now the Mayor has appeared only in the background, but he recently invited officials of both companies and bankers representing surface lines security holders to appear in his office on July 10 to discuss the proposed traction ordinance. Several of the company executives were absent from the city on that day, however, and the conference with the Mayor was postponed to July 22.

A proposal to bring about a referendum that would strip the Illinois Commerce Commission of its regulatory powers over all public utilities in Chicago, including traction lines, was introduced at the same time by Alderman J. M. Arvey. In order to put the question on the ballot at the next mayoralty election, the Alderman said, it will be necessary that a petition be signed by 25 per cent of the city's voters. The resolution calls for the appointment by the Mayor of a committee to prepare and circulate such a petition.

Another solution for the traction problem was presented to the Council in the form of a resolution calling for the appointment of a citizens' committee to iron out the differences between city and company officials. As conditions stand, there appears to be little prospect of an early agreement being reached.

A resolution introduced last month by Alderman Oscar F. Nelson and adopted by the City Council, which, if enacted as the result of appeal to the State Commerce Commission, would have compelled the surface lines to expend from its depreciation and renewal fund some $5,000,000 for new cars and track extension, was withdrawn on July 13, when Corporation Counsel Busch told the Aldermen that the city did not have the right to enforce such expenditures. The fund is an integral part of the companies' properties that has been specifically appropriated for the renewal of parts, he said. Another opinion by Mr. Busch held that the State Commerce Commission is without authority to direct the surface lines to invest its damage claims reserve fund to obtain higher rates of interest than at present. A resolution to this effect had also been introduced by Alderman Nelson.

Alderman Nelson immediately announced that he would call upon the City Council to set aside $100,000 from the city traction fund to conduct a city-wide survey for the purpose of ascertaining what will be necessary for the municipality to operate large fleets of motor buses to take the place of surface cars when the company's franchise expires next February.

Conciliation Board Begins Wage Hearing at Winnipeg

The board of conciliation appointed to investigate the dispute between the Winnipeg Electric Company, Winnipeg, Man., and the one big union unit of its street railway employees commenced its inquiry on July 13. Justice Lamont of Regina, Sask., is the chairman of the board; J. B. Coyne, K.C. is the company's representative on the board, and F. J. Dixon is the representative for the men. The dispute arose over the refusal of the company to recognize the one big union, which is an avowed communisitic organization. The company is also resisting a demand for an increase in pay of 6 cents an hour which the one big union is making. The hearing will likely be a protracted one and the decision of the board is not expected for some time.

Legal Difficulties Delay Pittsburgh Subway

Although actual construction of the subway is not in prospect in Pittsburgh, Pa., study of the subject will proceed. Part of this study will consist of making surveys and drawings, for which Council recently approved the addition of seventeen new employees. Members of the transit department held a secret conference with the Council previously on the much discussed subway to relieve traffic congestion and to aid rapid transit. After the meeting it developed that there was little likelihood of a start being made on a subway before 1928. It was reported that the spokesman for the transit department discouraged starting on the underground street artery until legal provision was made to assess the expense of such an improvement against owners of all property benefited.

Traffic Survey at Cincinnati

In conformance with the request contained in a resolution adopted by the City Council the Rapid Transit Commission at Cincinnati, Ohio, has voted to use $50,000 in bonds to defray the expense of a traffic survey to be made as a preliminary step in negotiating a lease of the transit system. In its formal action the commission adopted a resolution asking the City Council to allow the commission to issue $50,000 for transit purposes. The bonds are available as the remaining portion of a $150,000 allowance provided in the state law creating the Transit Commission.

Interborough Sues Strikers

Seeks $239,000 Damages for Injuries to Its Business—Steady Improvement in Service

There were three outstanding developments during the past week in the partial strike which is in progress on the subway lines of the Interborough Rapid Transit Company, New York. First, the strikers failed to get out any considerable number of the transportation men on the Manhattan elevated division, or in the power houses, or any material addition to the number now striking on the subway division. Second, there was a continual improvement during the week in service given on the subway division, as evidenced by the increasing number of trains run and passengers carried. Third, suit was brought by the Interborough Rapid Transit Company on July 13 in the Supreme Court of the State of New York against 62 ex-employees, named in the summons and complaint, for $239,000 damages already sustained and plea for injunction before other damages and loss are inflicted.

The complaint points out that the company operates approximately 130 miles of elevated railroad and 244 miles of subway with 9,000 trains daily which carry 3,500,000 passengers; that it has about 14,000 employees who, under an association known as the Brotherhood of Rapid Transit Company Employees, treat with the company on the question of wages and working conditions; that through this brotherhood a contract covering these matters was entered into between the brotherhood and the company on June 30; that all employees of the company have agreed to be members of this brotherhood and not of any other employee organization, but despite this fact the defendants are unlawfully persuading or attempting to persuade large numbers of employees of the plaintiff to refuse to continue in its employ at the wages agreed upon and to break their contract of employment, are holding meetings, using threatening language, circulating false reports about the company and making unreasonable demands upon it for increased wages, all of which is an unlawful combination and conspiracy to injure the company's business.

The injuries so far inflicted are said to be upward of $239,000, for which the company asks damages, as well as an injunction to prevent further damage. It asks particularly that the defendants be restrained from persuading present employees to absent themselves from their duties, from making demands on the company for increased wages, from circulating letters or other communications among the employees of the company urging them to join any union other than the brotherhood, from doing

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any acts knowingly and wilfully to get the employees or any of them to break their contracts with the company, from picketing or loitering on or in the neighborhood of the company's cars, stations, structures or other premises for the purpose of persuading the company's employees to desist from the performance of their duties, from injuring any of the property of the company, etc. With the summons and complaint, the Interborough Rapid Transit Company submitted a copy of the constitution and by-laws of the brotherhood, correspondence between some of the strikers and the company and other exhibits.

The legal basis for a suit of this kind is discussed editorially in this issue of this paper.

On Thursday, July 15, service on the subway division was more than 60 per cent normal even in rush hours. At no time during the strike has there been any material decrease of trains operated on the elevated division.

New South Shore Equipment in Service

Brief Review of Progress Made on the Program for Rehabilitating Road Operated Through Steel District of Indiana—More Than $3,000,000 Spent So Far for Reconstruction

COMPLETION of the first unit in the rehabilitation program of the Chicago, South Shore & South Bend Railroad was announced on July 13 when the new steel passenger equipment was placed in service between Michigan City and South Bend, Ind., the eastern terminus of the road. Extension of the use of the new equipment over the entire line from South Bend to Chicago will be made later in the month.

Use of the new motor passenger cars was begun on the eve of the first anniversary of the acquisition of the railroad by the Midland Utilities Company and the operation of the line by Samuel Insull and associates. The railroad was formerly operated by the Chicago, Lake Shore & South Bend and the property was purchased by the Chicago, South Shore & South Bend Railroad at public auction on June 29, 1925.

Actual operation of the railroad as a subsidiary of the Midland Utilities Company began on July 15, 1925. Since that time an extensive program of rehabilitation has been carried on and a total of $3,618,250 has been invested in improvements. Of this amount $2,761,250 has been spent by the railroad, including $1,330,000 for new equipment, $1,428,250 for changing of the entire electrical overhead, new rail, new ties, improvement of passenger stations, freight houses and other expenses. An "ideal" section of double track right-of-way, 1 mile in length, has just been completed near Miller, Ind. Three-wire catenary trolley construction replaces the old center-pole trolley suspension. In addition $857,000 has been invested by the Northern Indiana Public Service Company for eight new electric substations and high-tension lines, from which the railroad will be supplied with power under the new direct-current operation. Five of the substations will have a capacity of 1,500 kw. and the remainder 750 kw. Four of them will be equipped with mercury arc rectifiers, a type said never before to have been used by an electric railway in the United States.

The motor passenger cars which were tested in the yards at Michigan City and placed in service last week on the east end of the railroad are part of an order of 25 new cars which are being built by the Pullman Car & Manufacturing Corporation. More than half of these cars have been received and the others will be delivered within the next few days. Three of the four new electric freight locomotives have been delivered and these also were placed in service on July 13, hauling freight trains between South Bend and Michigan City. Two dining cars and two parlor-observation cars are likewise being built by the Pullman Company, but these will not be delivered until later in the summer.

The new cars have deep-cushioned mohair velvet seats, dome ceiling lights, three electric fans in each car, deeper car springs and separate smoking compartments for each car. Several of the cars will have the regular Pullman car type smoking rooms, with an aisle around the side. This is an unusual type of car for use on an electrically operated railroad.

The next few weeks trains will stop in Michigan City and trailers will be transferred from the old section to the new, with the beginning of operation of the steel cars. This is necessary because the new equipment is operated with direct current and the old cars with alternating current.

The growing popularity of the Sand Dunes country at the foot of Lake Michigan and the increasing traffic to points in this territory have made it necessary for the company to add several new trains and new stops to the summer schedule. Special low rates are now in force from Chicago and other stations.

Fare Case in Omaha Not to Be Reopened

The State Railway Commission has refused to reopen the fare case of the Omaha & Council Bluffs Street Railway, Omaha, Neb. The proceedings covered the rates fixed for Omaha only. They were placed at 10 cents cash with six tickets for 40 cents. City Commissioner Butler, leader of the opposition to an increase, asked for a rehearing on the ground that the company, when the rate case was pending, contended that the bridge connecting the two cities and owned by it was no part of the system and that its cost, revenues and profits should not be considered in determining a proper rate of fare, but that the company revised its stand when it protested to Congress against a bill to permit a free bridge across the river at Omaha. When advised by the commission that if the revenues of the bridge are to be considered with respect to rates now when it is making money, whatever deficit might arise in the future from its operation would then have to be borne by the car riders, Mr. Butler was content to let the matter drop.

Cincinnati Wages to Be Arbitrated

By a vote of 758 to 345, members of the Amalgamated Association turned down the proposal for a graduated increase in the pay of motormen and conductors, as well as other employees, as submitted by the Cincinnati Street Railway, Cincinnati, Ohio. The question now goes to arbitration. The employees sought an increase of 12 cents an hour, but the proposal of the railway offered them a contract for two years with an increase of 1 cent an hour every six months for a period of two years. The motormen and conductors are now getting 53 cents an hour and the operators of the buses run by the company 57 cents an hour. The proposition of the company for an increase of 4 cents an hour covering a two-year period also applied to the bus drivers. The arbitration of the problem will be conducted by three men, one from each of the respective factions, and a third chosen by the two representatives.

Strike in Indianapolis on Wane

Members of the citizens' committee, seeking to aid in the settlement of the Indianapolis strike, met on the afternoon of July 15 with officials of the Indianapolis Street Railway. The conference lasted almost the entire afternoon, but it failed to bring about any definite results. The committee said it was interested only in restoring service and in seeing that fair play was received all around.

Members of the committee were informed by officials of the company that service had been restored. It was pointed out that the company was now fewer than 25 men short of the 40 per cent who quit work more than a week ago. In reference to the method of settling disputes between company and men, officials of the company cited the committee a contract with the men, approved both by Judge Anderson, when he was on the federal bench there, and by Judge Baltzell, present federal judge, in which it is specified that disputes be taken up first with the superintendent of the company. If no satisfactory settlement can be made, then the matter is referred to the president of the company, and in event of failure of settlement the men have recourse to the Indiana Public Service Commission. Officials of the company pointed out that in the present instance the men listened to the advice of organizers and "kicked over the traces," leaving the company entirely unprotected. Officials of the company signified they would not discharge men hired recently and take back strikers.

Officials of the company report that during the peak load hours morning and evening little difficulty is being experienced in handling the crowds. Most merchants report business good and the downtown shoppers show no lack of buying power. As for the general public, it appears to be indifferent.

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Relief from Paving Asked—Passengers Off in Seattle

Demand that the Seattle Municipal Railway be relieved of paving or planking between car tracks and that the cost be assessed against the abutting property was voiced at a recent meeting of the utilities committee of the City Council by D. W. Henderson, superintendent of railways.

A petition from a West Seattle Improvement Club for repaving with planks between car tracks on California Avenue caused Councilman Ralph D. Nichols to declare that the "time has arrived when these communities which are asking the municipal system to spend its money in improving the streets in their districts should be given to understand that they must support the street cars."

Mr. Henderson declared that privately owned traction lines all over the country are being relieved of the burden of paying for paving.

According to William Pitt Trimble, chairman of the rapid transit committee of the City Planning Commission, average daily passenger traffic over the municipal traction lines has decreased steadily during the first six months of 1926 over the figure for the corresponding period of last year.

The Trimble committee submitted figures to show that 47,094,051 passengers were carried on the municipal lines in the first six months of 1924; 46,113,640 in the corresponding period of 1925, and 45,050,004 in the first six months of 1926, a loss averaging about 1,000,000 passengers during each succeeding six-month period.

P.R.T. Band Wins Cup at Festival

The Co-operative Welfare Band of the Philadelphia Rapid Transit Company, Philadelphia, Pa., won first place in the band competition held on June 24, in connection with the musical festival at the Municipal Stadium. The 110-piece band was declared the winner in the senior band event in competition with thirteen other bands. In the drum and trumpet corps event the company also won first place in a field of six. The first prizes awarded to the Philadelphia Rapid Transit Company are two silver loving cups, the formal presentation of which will be made at the company's picnic on Aug. 31.

Curbed Parkway for St. Louis Railway Cars

The Board of Public Service of St. Louis, Mo., on June 25 approved the plan for a curbed parkway for street cars in the center of Olive Street when that thoroughfare is widened between Twelfth Boulevard and Channing Avenue. The board acted on the recommendation of Director of Streets and Sewers Brooks, who submitted an extensive statement outlining the advantages of the plan for segregation of street car and other vehicular traffic on the street, which is the city's chief east and west highway.

Under the plan approved by the board when Olive Street is widened from 60 ft. to 100 ft. there will be a 23-ft. neutral zone in the center for street cars, with two 26½-ft. roadways for other vehicles and 12-ft. sidewalks for pedestrians. He said it would speed up street car traffic and reduce considerably the danger of accidents.

Safety islands will be installed for street car riders and stops will be made only every three blocks from Grand Boulevard to the down-town district. The Olive Street cars, which now average 9 m.p.h., can increase their speed safely to 15 m.p.h.

Conference on Segregation Issue Called at Albany

Chairman William A. Prendergast of the Public Service Commission has called a conference for July 20 at the office of the commission in Albany in the matter of the petition of the United Traction Company for increased fare in Albany, Troy, Rensselaer, Cohoes and other communities. The conference will be for the purpose of hearing arguments on the applications of the interested communities that for the purpose of the present rate proceedings the property of the company be segregated.

Wage Arbitration in East St. Louis Closed

Testimony was closed on July 9 before the board of arbitration named to decide whether the motormen and conductors of the East St. Louis & Suburban Railway, East St. Louis, Ill., are entitled to increased wages. The men desire an increase of 10 cents an hour approximately from the present scale. The arbitration board is composed of C. E. Smith and B. F. Thomas, St. Louis engineers, representing the company; W. L. Perry and J. R. McMurdo, representing the men, and Frank M. Slater, St. Louis attorney, as chairman. Decision in the case has been reserved.

Amortization Versus Improvements in Buffalo

Commissioner Frank C. Perkins of the department of public affairs in the Buffalo, N. Y., City Council has asked the city law department for an opinion on the legality of a sinking fund of $2,940,990 set aside by the International Railway in 1925 for amortization of intangible capital, especially in view of the fact that Bernard J. Yungbluth, president of the railway, says the company is without funds to make improvements to its tracks as ordered by the Public Service Commission. Commissioner Perkins in his appeal to the city law department recommended that the Public Service Commission direct the company to keep its property in safe operating condition. The International Railway is questioning the authority of the Public Service Commission, which recently ordered it to make repairs to its tracks. Mitten Management, Inc., which operates the Buffalo traction system, is taking the matter before the courts.

Knights Templar Parade Handled Well in Springfield

Many compliments have been received by the management of the Springfield Street Railway, Springfield, Mass., on the successful manner in which it handled the crowds gathered there June 24 for the Knights Templar parade, in which some 10,000 persons were in line. This was the biggest undertaking of its kind ever tackled by the company of that city.

Two distinct problems were involved in handling the crowds. One was to keep the regular traffic moving throughout the entire system with the exception of portions of Main and Dwight Streets and certain side streets, where traffic was suspended for two hours and fifteen minutes. The operations involved the transport of thousands into the business district to witness the spectacle. The other problem was to provide prompt and efficient service at the point where the marchers broke ranks to board special cars for the Eastern States Exposition grounds in West Springfield. There were 70 of these specials, and by a plan carefully worked out in advance 40 of these cars left the carhouse at 11:20 o'clock, or 40 minutes ahead of the time the parade was due to start, and the rest at 12:15, just after the procession had got under way.

Many cars not chartered were run as extras for the accommodation of those who did not go over in the main body and also for returning crowds. General traffic on the system was handled by turning cars back over their regular lines from points near the line of march, leaving the parade route clear for the occasion. The police gave efficient co-operation.

Toledo Ordinance Issue to Be Rushed

Speed in the preparation of an ordinance embodying changes in the Milner franchise governing the operations of the Community Traction Company, Toledo, Ohio, is being demanded by Mayor Fred J. Mery. The document may be ready to submit to City Council at its meeting on July 26. The Mayor has assurance from Law Director Frank M. Dotson that he will devote his entire time in the interval to work on the franchise ordinance. If an early agreement is reached there is a possibility that the matter may be submitted to voters at the regular November elections.

Henry L. Doherty, representing the holding company owning most of the Community Traction Company securities, has informed the Mayor that he will favor a plan worked out along the suggestions of Prof. H. E. Riggs, who made the transit survey last summer.

A recent questionnaire of the Chamber of Commerce shows that many business leaders are anxious to arrive at an early solution of the transit problem. This indicates that the modifications of the present plan to obtain better railway and bus service co-ordinated under one management will probably have plenty of support from the business interests.

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Rapid Transit and North Shore Trainmen Denied Wage Increase

The demands of approximately 4,500 trainmen of the Chicago Rapid Transit Company for a wage increase of 5 cents an hour and other concessions were rejected on July 12 at a conference between union leaders and officials of the company. Instead, a counter-proposal of a decrease of 5 cents an hour and no overtime until after a ten-hour day was brought forward by the company.

If the company should grant the increases asked—and it is without funds to do so—$700,000 would be added to its annual payroll, B. J. Fallon, vice-president, told the workers' committee. The employees are seeking restoration of the 1922 peak scale, which was reduced by 10 cents in 1923. Since that date they have regained 5 cents an hour. At the present time motormen are receiving 77 cents an hour, conductors 72 cents and guards 70 cents. The wage agreement expired on June 1.

The company's reply will be submitted to the union officials at once. Arbitration will probably follow. Both sides say there is no immediate prospect of a recurrence of the five-day strike in August, 1922.

Trainmen of the Chicago Surface Lines, who are endeavoring to obtain similar wage increases, are expected to be strongly influenced by the outcome of the negotiations between the elevated men and their employers.

In referring to the short life of the present franchises, Guy O. Richardson, vice-president of the Surface Lines, announced on July 13 to representatives of the 5,000 shopmen employed by the company that their demands for an average increase of $1 a day after the union contracts expire next month could not be granted.

Trainmen of the Chicago, North Shore & Milwaukee Railroad have also demanded that their wages be increased from 76 cents to 82 cents an hour. The company, on the other hand, proposes a reduction to 73 cents an hour and the shortening of the present nine-hour working day to eight hours.

Discussion of New York State Fare Continued

The hearing on the petition of the New York State Railways to charge a 10-cent cash fare or three tickets for 25 cents on its Oneida-Kenwood line has been closed before the Public Service Commission. According to evidence submitted by the company there have been operating deficits for the past three years ranging from $8,065 in 1923 to $28,836 in 1925.

Based on the proposed increase in cash and ticket fare, the company's witness figured an increase in revenue of $13,359 in 1926, due to the increased fare, if allowed. This estimate is based on a 2 per cent decrease in the riding and 20 per cent of the riders paying a cash fare and 80 per cent buying tickets.

The hearing before the commission on the petition of the New York State Railways to charge a 10-cent fare with three tickets for 25 cents in the city of Rome was postponed until July 27 to give the city an opportunity to examine the exhibits and the evidence submitted.

The company claimed operating deficits of $10,632 in 1920, $23,967 in 1921, $13,431 in 1922, $4,235 in 1923, $10,498 in 1924 and $6,914 in 1925 under the present 7-cent fare.

Based on the revenue passengers carried in 1925 and the proposed increase, if granted, the company estimated an increased revenue of $19,069 in 1926.

Wage Increase Asked by Cincinnati Men

An increase in pay of 12 cents an hour is requested by members of the Amalgamated Association, who are endeavoring to negotiate a new contract with the Cincinnati Street Railway, Cincinnati, Ohio. The present wage agreement, made two years ago, expired on June 30. Motormen and conductors now are paid 53 cents an hour. In view of the fact that no new agreement has been reached, it is likely that the question will go to arbitration. The new demands call for 60 cents an hour for the first three months, 63 cents for the next nine months and 65 cents thereafter. Shopmen, greasers, power houses and carhouse employees also are asking for increases.

Analysis of Causes of Delays in Milwaukee

Congestion of streets is the outstanding and predominating cause of interruptions and delays in electric railway service, according to a compilation made by the Railroad Commission of Wisconsin.

Of the total of 8,886 causes of delay in one month in Milwaukee, 5,370 are attributed to interference with the movement of cars occasioned by street congestion.

A table listing the causes of delay follows:

Causes	Number	Per Cent of Total
1. Street congestion	5370	80.5
2. Operating conditions	840	9.5
3. Rolling stock	638	7.2
4. Electric distribution	456	5.1
5. Accidents	307	3.5
6. Weather conditions	267	3.0
7. Steam railroad crossings	221	2.5
8. City equipment	195	2.2
9. Bridges	159	1.8
10. Trainmen	133	1.5
11. Way and structures	88	1.0
Cause not given	212	2.4

The items included in the above column of "causes" are in general as follows:

1. Street congestion—This consists of delays due to street traffic, both vehicular and pedestrian, interfering with the movement of the cars; cars held by other cars ahead; regulation of traffic by officers or light signals; and accidents not involving street cars.
2. Operating conditions—This consists of time required to load passengers; heavy loading; waiting for passengers transferring from other cars or those not ready to board; failure of passengers to step away from the loading door after paying fare; slowness of passengers in paying fare; lapse of time after passengers are loaded before conductor signals motorman to proceed; lapse of time after receipt of signal before car starts.
3. Rolling stock—Car trouble and car changes.
4. Electric distribution—Power off; low voltage; wire down; phones and signals in bad order.
5. Accidents—Those accidents involving street cars, such as derailments.
6. Weather conditions — Rain; snow; sleet; fog; bad rail; snow sweepers.
7. Steam railroad crossings — Delays caused by trains or crossing gates held down for trains.
8. City equipment—Fires; fire apparatus; patrol wagon; ambulance.
9. Bridges—Opening at such times as to delay cars.
10. Trainmen—Due to use of students, pulling out late; late relieving; calls of nature; tending stoves; getting sand; late from previous trip.
11. Way and structures — Trackwork; switch trouble; utility cars; temporary track.

News Notes

900 Turns a Day Saved.—The Board of Public Utilities has sanctioned the rerouting of a number of lines of the Los Angeles Railway that will materially affect the entire system. Approximately 900 car turns a day will be eliminated from the congested district. In addition, considerable mileage is saved.

Receiver of Company Honored.—Col. Albert T. Perkins, general manager for Receiver Rolla Wells of the United Railways, St. Louis, Mo., has been named chairman of the committee on military and naval affairs of the Greater St. Louis Exposition to be given by the St. Louis Chamber of Commerce in Forest Park next September. With the co-operation of the War Department assured by Secretary of War Dwight Davis, Colonel Perkins and his committee have made tentative plans to present the greatest military tournament every arranged in conjunction with a non-military affair.

Fewer Stops to Expedite Travel.—The City Council of Macon, Ga., recently approved an agreement entered into by a committee of Council and the Macon Railway & Light Company to eliminate a number of railway stops on the system. This was done with a view to speeding up traffic and reducing dangers from automobile accidents. The move is in line with the police committee's efforts to improve traffic conditions throughout the city generally.

Through Service Between Washington and Annapolis.—The Washington, Baltimore & Annapolis Electric Railroad, with headquarters in Baltimore, Md., has started a through service between Washington and Annapolis, eliminating the necessity of changing cars. Trains leave West Street station, Annapolis, at 6.50 and 7.20 a.m. daily, except Sundays, and leave Twelfth Street and New York Avenue, Washington, at 4 and 5 p.m. daily, except Saturdays and Sundays.

Parades Banned.—In accordance with an order of City Manager Sherrill of Cincinnati, Ohio, street parades are banned in the congested districts of Cincinnati except for those of a strictly civic nature. The order will eliminate all organization parades, whether religious, political or fraternal. In the opinion of the Police Department this regulation has become necessary because of the tremendous congestion and the interference with business that accompany such parades.

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Recent Bus Developments

Legislative Study of Bus Question in Massachusetts

Massachusetts has settled the status of its bus business for the present. In other words, things will probably go on as they are for another year. The law covering common carriers, however, as it stands and as it operates today is not wholly satisfactory. The faults in it are to be studied and recommendations made to the next Legislature.

All the individuals and corporations undertaking to provide coach services in the state have had hearings before the various public tribunals and have obtained their licenses, permits and certificates and they are now operating under a law which has been tested in court and upheld in several court decisions, and they are following rules and regulations carefully prepared and adopted by the Department of Public Utilities. By this long process they have qualified as legalized carriers.

There are today 116 such individuals and corporations owning bus certificates in Massachusetts, and they operate over about 250 definitely established routes, for which they hold licenses from the city and town authorities.

The process for all of them was to secure a license from the city or town authorities, a permit from the highway division of the State Department of Public Works to use the streets, and finally a certificate of public convenience and necessity from the Department of Public Utilities, to whose officially promulgated rules and regulations they must conform in the matter of equipment and service.

In issuing certificates of public convenience and necessity to these 116 firms and individuals the Department of Public Utilities has sought to protect existing transportation lines against needless and ruinous competition. Routes have been approved and business rights have been defined in each individual license with due regard for the effect upon the other transportation service in the community, in so far as the public tribunals have been free to act. There are a few cases where the Department of Public Utilities probably would not issue any certificates on the basis of the present merits of the situation, but the concerns were operating a year before the new law went into effect and that gave them *prima facie* evidence of public convenience and necessity and the required certificate could not be denied. In cases where motor coach certificates have been issued to the railroads and to electric railways the Department of Public Utilities has sought to co-ordinate the service, so that bus service meets the train schedules, and it has ordered the maintenance of through fares, making bus tickets valid on trains.

In cases where electric railway and the bus lines were operating on somewhat the same schedule in the same territory, the bus perhaps starting just a little before the trolley and sniping the passengers, the Department of Public Utilities has ordered a spread in the schedules so that the half-hour service of one of the agencies would supplement the half-hour service of the other. In one instance where a corporation was operating on an early license issued to an individual, as was the case between Orient Heights and Revere Beach, the department required the filing of a new petition.

Highway Commissioner's Ruling Hits Columbia Jitneys

Samuel McGowan, chief highway commissioner of South Carolina, has issued a memorandum to the superintendent of motor transportation to the effect that new applicants for class "C" licenses, to which belong the 10-cent jitneys, file with the highway department a liability bond in the sum of $250 and that all certificates revoked by failure to file bond on June 17 will remain revoked for the rest of this year. It is stated that only fourteen of the 143 jitneys now operating in Columbia and its suburbs abided by the requirement to file bond on June 17, so approximately 130 are outlawed.

This order, it is believed, will serve to simplify greatly the transportation problem in Columbia. Heretofore the 10-cent jitneys have been operating over the city, offering a sharp competition to both the bus lines and the railway system. They were for the most part under no bond and passengers rode in them at their own risk, yet because they carried passengers at the same rate as street cars and buses and carried them direct to their doors jitneys have been heavily patronized. The buses now operate on practically all of the principal streets and issue transfers to the three street car lines which are still operating, all other street car lines having been discontinued because of falling revenue.

It is said that the jitney union has engaged the services of an attorney to oppose the order of the highway commissioner on the ground that the commissioner has no authority to bond cars operating within the city limits of Columbia.

The buses operated by the Carolina Transit Company are bonded to the extent of $11,000 each, according to state highway department officials.

The manager of the Carolina Transit Corporation, Chester Hawkins, is quoted as having said that unless something were done to prevent the 10-cent jitneys from picking up passengers he would have to abandon operations. Action of this kind on the part of the bus company would leave Columbia, the capital of the state, without transportation facilities. The street cars were allowed to discontinue operations on all but three lines when they reported steady losses because of the failure of the people to ride the trolleys.

Buses Proposed for Lincoln

The Lincoln Traction Company, Lincoln, Neb. has the backing of the City Council in an application made to the State Railway Commission for authority to abandon certain suburban trackage and substitute bus service. The buses will operate from the business center to the state penitentiary and state hospital for the insane to the south and southwest at the same fare, 10 cents cash and four tickets for 30 cents, with transfers, as charged on the street car. This is the beginning of a development of bus service co-ordinated with railway service for the city.

At the hearing C. N. Chubb, one of the officers of the United Light & Power Company, which owns the traction company, told the commission that his company's experience had convinced him that railways in cities of less than 100,000 population were doomed unless a profitable method of combined bus and car service were worked out and unless the companies were relieved of paying for paving between the rails and adjacent to them, together with occupation taxes. Decision was reserved.

Application Before Commission for Bus Rights in Hornell

A hearing was held before the Public Service Commission on June 24 on the application of Raymond E. Page to operate bus lines in the city of Hornell and to the village of Canisteo, Steuben County. Service would also be offered to the village of North Hornell. At the present time transportation service in this territory is furnished by the Hornell Traction Company. Proof presented at the hearing showed that the trolley lines would be discontinued July 15, when the property of the traction company is to be sold under mortgage foreclosure. It appears that the company has defaulted in payment of its bonds and further operation of the railroad has become unprofitable. Consent to the operation of the new bus lines has been granted by the Common Council at Hornell.

Mr. Page, the bus applicant, was formerly receiver of the Hornell Traction Company. He has been identified with that property for some time.

Temporary Order Against Bus Permits in Omaha

The City Council of Omaha, Neb., has been temporarily restrained from issuing permits to bus lines to carry passengers within the city limits in competition with the Omaha & Council Bluffs Street Railway. The plaintiff in this case was the Guarantee Trust Company, New York City, representing the bondholders. That company raised the question of an exclusive franchise as the principal bar. The State Supreme Court recently freed the hands of the Council, tied by previous injunctions obtained by the railway on the ground that the permits the Council proposed to issue were legally franchises and that a vote of the people was necessary. The Supreme Court held that the grants did not partake of the irrevocable nature of franchises.

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Financial and Corporate

Separation of Alton Properties Effected

Four new companies have been formed by the North American Company to take over and operate various parts of the properties of the Alton, Granite & St. Louis Traction Company and the Alton Gas & Electric Company, recently purchased at foreclosure sale by representatives of the North American Company for $1,965,000. The North American Company owned all of the common stock and about 90 per cent of the bonds of the two companies prior to the sale, which was ordered by the federal court at Danville. The new companies, formed so that the various properties could be split up into unified and compact businesses, are the St. Louis & Alton Railway, which will operate the interurban lines between St. Louis, Mo., and Alton, Ill.; the Alton Railway, which takes over the city lines in Alton, Ill.; the Alton Gas Company and the Alton Light & Power Company. George K. Miltenberger has been named president of each company.

The arrangement of having the interurban and city electric railways, gas system and electric light and power services together under one management, with all of them hampered in financial and other operations by the laws designed to govern any one of them, proved awkward, uneconomical and inconvenient. This opinion was expressed by Louis H. Egan, president of the Union Electric Light & Power Company of St. Louis, representative of the North American Company in that district.

The bonds of the Alton, Granite & St. Louis Traction Company had paid no interest from 1920 and on Aug. 6 of that year a petition for a receiver was filed with the United States District Court. On Aug. 11, 1920, receivers were appointed. The Alton Gas & Electric Company went into receivership on Dec. 31, 1925.

Baltimore Easements Must Be Valued

The Maryland Court of Appeals recently handed down an opinion in the valuation case of the United Railways & Electric Company, Baltimore, Md., under which the Maryland Public Service Commission will have to hold a new hearing in the case for the purpose of placing a value on the easements. The case was taken to the Court of Appeals by Clarence W. Miles, formerly people's counsel, who sought to have stricken out the $7,000,000 allowed by the commission for easements and upheld by the lower courts. The total valuation on the property as fixed by the commission was $77,000,000, including the $7,000,000 for easements.

The Court of Appeals neither affirmed nor reversed the decision of the commission or the lower court, but the action pleased the officials of the United. The highest court of the state took the stand that the company should be allowed a valuation for easements, but this should not be allowed as easements but as interest in real estate.

In a statement issued by the United following the action of the court it was stated that the company naturally was gratified that the opinion upheld its contention that easements were property, like any other property, and the company was entitled to include them in its valuation. The company also stated it contemplated no increase in fare, "preferring to work things out on the present fare as long as possible."

The commission does not expect to conduct the rehearing until the fall.

$1,060,000 South Shore Equipment Trust Issue Offered

Equipment trust gold certificates, Series A, of the Chicago, South Shore & South Bend Railroad, South Bend, Ind., to the amount of $1,060,000 are being offered for subscription by Halsey, Stuart & Company, New York. They are dated July 1, 1926, and are due serially over a period of ten years. They are in the denomination of $1,000 except those due July 1, 1931, and 1936, which are in the denomination of $1,000, $500 and $100. So significant is the offering, regarded from the standpoint of those interested in obligations of this kind, that the maturities and prices quoted by the bankers have been reproduced in the accompanying table.

The certificates will be issued by the trustee and will represent about 80 per cent of the actual cost of new equipment, consisting of ten three-compartment baggage, smoker and passenger motor cars, fifteen two-compartment smoker and passenger motor cars, four 80-ton electric locomotives, two dining cars and two parlor observation cars.

In the opinion of counsel, upon the delivery of the equipment to the railroad full title to the equipment will be vested in the trustee for the benefit of the certificate holder. The lease will be assigned to the trustee and will provide for rentals to pay the certificates and dividend warrants as they come due. Under the terms of the lease the railroad will covenant to maintain and keep the equipment in good order and repair, to replace any of said equipment that may be worn out, lost or destroyed, and to insure the equipment against loss or damage by fire to an amount of not less than the balance of the certificates unpaid and outstanding.

The Chicago, South Shore & South Bend Railroad owns and operates the high-speed electric railroad, 69 miles in length, extending from South Bend, Ind., westward to the Indiana-Illinois state line. The outstanding common stock is owned or controlled by the Midland Utilities Company.

Sales of W., B & A. Bonds Attract Attention

Bonds of the Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., 5 per cent issue of 1941, were dealt in heavily again on July 13 on the Baltimore Exchange, one block of $50,000 changing hands. Total transactions amounted to $105,000, all at 64½ to 64¾.

This quotation has ruled for several days, despite the fact that sales during the last few days have amounted to more than $250,000, face value. Practically all the bonds offered have been bought by one house.

The liquidation is said to have been for account of interests compelled to dispose of their holdings. Despite the large amounts of the issue coming on the market the liquidation has failed to break the price under 64½. This has caused more or less comment and has resulted in a revival of the stories of a closer affiliation of local utility interests with the affairs of the company.

Short Hudson Valley Line Abandoned

The Hudson Valley Railway, Glens Falls, N. Y., has abandoned its Geysers, Belt and Kaydeross lines as well as the Mechanicsville-Ballston line, 13.67 miles long. Permission for the abandonment was given by the Public Service Commission. The evidence showed that the revenue from these lines had been steadily decreasing since 1922, and that the operation had resulted in a deficit since 1923. In connection with this abandonment trouble arose with the United Transportation Company (the Albany-Pittsfield Bus Company), which received a certificate under which it operated from Troy to Mechanicsville and Saratoga. After the abandonment by the Hudson Valley this company started operating from the city line of Mechanicsville to Saratoga Springs. The railway obtained an injunction restraining the United Transportation Company from operating in Mechanicsville in competition with it. The matter has been argued before Supreme Court Justice Christopher J. Heffernan, who has reserved decision. Another incident in this case occurred on July 6, when the Public Service Commission

MATURITIES AND PRICES OF CHICAGO, SOUTH SHORE & SOUTH BEND RAILROAD

(Accumulated dividend to be added in each case)

Amount	Annual Dividend	Maturity	Price	Yield	Amount	Annual Dividend	Maturity	Price	Yield
$106,000	4½%	July 1, 1927	99.76	4½%	$106,000	5½%	July 1, 1932	100.00	5½%
106,000	4½%	July 1, 1928	99.06	5%	106,000	5½%	July 1, 1933	98.58	5⅝%
106,000	5%	July 1, 1929	99.66	5⅛%	106,000	5½%	July 1, 1934	98.42	5⅝%
106,000	5%	July 1, 1930	99.11	5¼%	106,000	5½%	July 1, 1935	98.26	5⅝%
106,000	5%	July 1, 1931	98.37	5⅜%	106,000	5½%	July 1, 1936	98.12	5⅝%

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held that granting certificates for the operation of bus lines by Peter Palmer between Mechanicsville and Saratoga Springs and by Anthony Verno, Anthony and Michael Zappone between Mechanicsville and Saratoga Springs, by way of Ballston, did not appear to be a public necessity in view of the service which is now being afforded by established service.

Balance in Porto Rico $103,432

The net income of the Porto Rico Railways, which controls the Porto Rico Railway, Light & Power Company, San Juan, P. R., for the year ended Dec. 31, 1926, amounted to $371,710, after providing for depreciation. Income derived from other sources, $12,250, made the total net income $383,961. This fact was contained in the report of the directors at the nineteenth annual meeting of the shareholders. After many appropriations had been made, including interest on mortgage bonds, office site reserve and income tax, there remained a profit of $173,432, out of which has been paid $70,000 dividend on the preferred stock for the year. The balance of $103,432 has been added to surplus account, which was carried forward at $794,926.

The accompanying statement shows the consolidated account of profit and loss for the year ended Dec. 31, 1925, with some statistical data for 1925 and the three preceding years.

CONSOLIDATED STATEMENT OF PROFIT AND LOSS OF THE PORTO RICO RAILWAYS, LTD.

(For year ended Dec. 31, 1925)

Net profit from operation for year after providing for depreciation		$371,710
Add: Net income from other sources		12,250
		$383,961
Less: Interest on bonds—		
First mortgage bonds	$113,045	
Refunding mortgage bonds	64,483	
	$177,529	
Office site reserve	25,000	
Income tax reserve	8,000	
		210,529
		$173,432
Deduct: Dividend on preferred stock		70,000
		$103,432
Add: Balance at credit Dec. 31, 1924		691,494
Combined surplus carried forward		$794,926

STATISTICAL STATEMENT OF THE PORTO RICO RAILWAYS, LTD.

	1925	1924	1923	1922
Expenses per cent of earnings	64.83	60.54	67.27	61.15
Passengers carried	2,611,748	3,935,713	5,103,186	6,069,237
Passenger car-miles	891,708	1,092,260	1,164,838	1,183,693
Passenger earnings per car-mile	14.47	17.96	21.92	26.68

Interstate Company Gets Attleboro Branch Railroad

The Interstate Street Railway has bought the franchise and property of the Attleboro Branch Railroad, Attleboro, Mass., and the transaction has been approved by the Massachusetts Department of Public Utilities. The financing that is involved has the department's approval in the following order:

Ordered, that the commissioners of the Department of Public Utilities hereby approve as reasonable and proper and for a lawful purpose the issue by the Interstate Street Railway, in conformity with all the requirements of law relating thereto, of bonds to an amount not exceeding the par value of $150,000, said bonds to be dated April 1, 1926, and to be payable April 1, 1951, to be known as 6 per cent sinking fund gold bonds and to bear interest at the rate of 6 per cent per annum, and to be equally secured by a first mortgage upon all of the company's franchise and property, such bonds or the proceeds thereof to be used solely for the payment and cancellation of $50,000 car trust notes of the company now outstanding and $100,000 in payment for the property and franchises of the Attleboro Branch Railroad and for no other purpose.

The Interstate company, the purchasing company, operates an electric railway in Plainville, Seekonk, North Attleboro and Attleboro.

Rumors and More Rumors of Impending Deals

Charles S. Hand, writing in the New York *American*, says the Brooklyn-Manhattan Transit Corporation in the last year or so has purchased 100,000 of the Interborough's 350,000 shares of stock and that Thomas L. Chadbourne, dominant figure in the B.-M. T., is credited with holding 60,000 shares, while the remaining 40,000 are in the name of Gerhard M. Dahl, chairman of the B.-M. T., and his lieutenants. He says that William F. Kenny, business associate of the Bradys and intimate friend of Governor Smith, is reported to have control of the Third Avenue Railway. According to Mr. Hand, a new traction merger is in prospect welding subway and important surface lines into a unified system. Similar stories, not quite so definite, have appeared in other papers, notably one in the Brooklyn *Standard Union*.

In commenting on the latest rumor, J. L. Quackenbush, for the Interborough, said:

I do not know whether Gerhard M. Dahl and Thomas L. Chadbourne and their associates have purchased 100,000 shares of Interborough Rapid Transit stock.

The last time I looked at the stock list of the Interborough the names of Dahl and Chadbourne did not appear, but of course their holdings could be obscured under the names of brokers.

The company is keeping the fare question out of this strike. We have not asked for an increased fare since a year ago last March, when we presented a memorial to the Legislature. The fare question may be taken up in connection with the $22,000,000 platform extension program.

Seeks to Abandon Six-Mile Line.—The Northern Ohio Power & Light Company, Akron, Ohio, is seeking abandonment of its East Greenville line, operating out of Massillon. This line covers a distance of approximately 6 miles.

Steam Line Negotiating for Electric Railway.—Representatives of the Missouri Pacific are negotiating for the purchase of the Murphysboro & Southern Illinois Electric Railway, which operates between Murphysboro and Carbondale, Ill.

Short Abandonment Rights Sought.—The Utah Light & Traction Company, Salt Lake City, Utah, applied for permission to abandon a part of its Third East Street line. The company also desired to remove the tracks. It is urged that economy in operation of the traction system requires this change.

Line No Longer Necessary.—The Buffalo & Erie Railway petitioned the Public Service Commission on July 9 for authority to abandon that portion of its line in Lackawanna, N. Y., on Ridge Road between South Park Avenue and Abbott Road. The company alleges that this part of its line has been operated at great loss and is no longer necessary for successful operation of the road or for the convenience of the public.

Permission to Sell Is Sought.—Authority to abandon and sell as salvage the property of the Lebanon-Thortown Traction Company, Lebanon, Ind., was requested in a petition filed July 6 by the company before the Public Service Commission of Indiana. It set out that the line, 10 miles in length, is losing money, that it owes large sums for electric current and other bills it is unable to pay and that it cannot keep the road in repair. Permission is requested to sell the road at the best salvage prices obtainable.

Increase in Net Income.—The net income of the United Railways & Electric Company, Baltimore, Md., was $104,861 during May, 1926, an increase of $26,636 over the corresponding month of last year. The total revenue was $1,464,456, or an increase of $30,734 over May, 1925. Revenue passengers, exclusive of transfer passengers, numbered 19,778,990, an increase of 346,345 over the number carried in May, 1925.

Earnings of Connecticut Roads Decline.—Earnings of electric railways in Connecticut in 1925 were $14,726,915, showing a decrease from the $15,586,454 reported a year ago. The net tax to be paid is $435,838. The business of the Connecticut Company forms the major part of these figures, the gross earnings for the year being $13,794,645 and the amount of tax $408,155. Earnings of other companies and the tax assessed against each follow: Bristol & Plainville Electric, $189,514, tax, $5,574; Danbury & Bethel, $132,983, tax, $3,821; Groton & Stonington, $138,623, tax, $4,158; Hartford & Springfield, $155,222, tax, $4,551; New Haven & Shore Line, $106,686, tax, $3,200; Thompson Line of "New Haven" road $5,817, tax, $174; New York & Stamford, $147,270, tax, $1,684.

Line Formerly Under Lease Is Sold.—Sale of the street car tracks on College Avenue north of 46th Street to Broad Ripple and east on 63d Street to Broad Ripple Park, formerly owned by the Indiana Union Traction Company, to the Indianapolis Street Railway, Indianapolis, Ind., is announced. The price, $85,477, has been approved in the Madison Circuit Court. This stretch of track has been under lease to the Indianapolis Street Railway since the spring of 1924, when city service to Broad Ripple was instituted. The extension of service was made at that time, when, under an order of the Public Service Commission, a 7-cent fare was established to Broad Ripple with the understanding that the Indianapolis Street Railway would take the line over.

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Personal Items

M. T. Montgomery Joins J. G. Brill

Twenty-eight years of operating experience in the electric railway industry may be credited to M. T. Montgomery, who has just become affiliated with the J. G. Brill Company, Philadelphia, Pa. His career to date has been a most interesting one. Beginning as a motorman in his home town, Pittsburgh, he has been intimately associated with actual operating practice in this country, in Mexico and in Cuba. Of course, with the advancing years came responsibilities on an ever-ascending scale, new problems, widened horizons. Among the positions held were those of traffic manager, division superintendent, freight agent, manager of railways. Now, with this background of transportation and mechanical experience, he steps into another phase of the industry.

Mr. Montgomery will handle sales in the southeastern territory, including Virginia, North Carolina, South Carolina, Georgia and Florida, for the Brill company. He will be actively concerned only with the electric railway sales of that concern. The wide experience gained during his years as an operating man will doubtless prove invaluable in the work which he now undertakes. Mr. Montgomery will make his headquarters at the Brill plant in Philadelphia.

A. W. Robertson Heads Philadelphia Company

Successor Named to A. W. Thompson with Utilities at Pittsburgh—Thirteen Years an Officer of Companies There

Ex-Judge James H. Reed, senior vice-president of the Philadelphia Company, announced on July 14 the election of A. W. Robertson as president of the Philadelphia Company and affiliated corporations, effective Sept. 1. He will succeed A. W. Thompson, appointed to the United Gas Improvement Company.

Mr. Robertson is well qualified, both by training and experience, to head the utility companies serving Pittsburgh and vicinity. A resident of Pittsburgh for twenty years, he has been in close touch with the development of the greater Pittsburgh district. His experience as an executive of the Philadelphia Company dates back to 1913. As vice-president in charge of public relations he has been in touch with nearly all operations and in direct charge of the general service department, which maintains all relations with domestic customers of the company, the adjustment or claims department, the advertising department, and relations with the public service commission.

Andrew Wells Robertson was born in Panama, N. Y., in 1880. He attended Allegheny College at Meadville, Pa., was graduated in 1906 and entered the law school of the University of Pittsburgh in that year. He was graduated with the degree of LL.B. in 1910 and was admitted to the bar. After several years of general law practice he became attorney for the Pittsburgh Railways and the Duquesne Light Company. This was in 1913. In 1918 he was made general attorney for the Philadelphia Company and affiliated corporations, and in 1923 was elected vice-president in charge of public relations, retaining also his position as general attorney.

Mr. Robertson is a member of the Pittsburgh Chamber of Commerce, Pennsylvania State Chamber of Commerce and the following clubs: Civic Club of Allegheny County, South Hills Country Club, University Club, Duquesne Club, Phi Delta Theta Fraternity.

In referring to the resignation of Mr. Thompson and the election of Mr. Robertson, John J. O'Brien, president of the Standard Gas & Electric Company, said:

A. W. Robertson

It is a matter of keen regret to lose Mr. Thompson as president of the Philadelphia Company. Mr. Thompson holds a high place in the affections and regard of the people of Pittsburgh, as well as the executives and employees of the Philadelphia Company, and we wish him great success in his new work. We are glad that there is within the organization a man so capable as is Mr. Robertson, whom we can promote to the presidency with the full knowledge that he possesses all the qualifications necessary to fill this important position satisfactorily. Mr. Robertson is thoroughly familiar with the institutions and ideals which have made Pittsburgh the great industrial and cultural center that it is. His experience as vice-president in charge of public relations has brought him in close contact with the public, and I feel that he is an excellent choice for the presidency of the Philadelphia Company. He and his associates can depend on the complete co-operation of our entire organization.

Charles D. Hardin, Seymour, Ind., general agent of the railway department of the Interstate Public Service Company, Indianapolis, Ind., will assume charge of the traffic department of the company as acting traffic manager. In this capacity he succeeds to the duties previously performed by the late Bert Weedon.

C. J. Norstrand Promoted

Long Island Electric Lines Under Supervision of Experienced Transportation Exponent

The new general manager of the Jamaica Central Railways, Inc., which has taken over the lines and operation of the Long Island Electric Railway, New York, N. Y., is C. J. Norstrand. His principal experience in the transportation field was gained from his connections with steam roads, where he filled various positions as accountant, statistician, auditor, claim agent and comptroller. Electric railroading also contributed to his fund of knowledge during the time he served as comptroller for the three Long Island Electric railway lines, which were under Gen. Lincoln C. Andrews as receiver. He held this position for two years, ending March, 1926.

Mr. Norstrand's activities, however, have not been confined to the transportation field. He has devoted his energies to banking concerns, army corps and shipping ventures and has more than once cast his lot with Uncle Sam. Such was his colorful career when in 1908 he entered the service of the Union Pacific at Omaha, Neb., in the traffic department. After advancing through various positions with this company he resigned in January, 1913, to become assistant statistician and later chief statistician and general accountant with the El Paso & Southwestern Railway, El Paso, Tex. In November, 1915, he became affiliated with the Chicago Great Western Railroad as valuation accountant. During the next few years he served in the United States Marine Corps. However, some force must have been directing his footsteps back into the transportation business, for in 1920 he went back to the steam railroad field, lining up first with the Erie Railroad and later with the Pittsburgh, Shawmut & Northern Railroad. Early in 1924 he assumed the duties of comptroller of the Long Island Electric lines under General Andrews.

Since taking over the operation of the Long Island Electric, now known as the Jamaica Central, he has made traffic surveys and is regulating the present service to meet the increasing demand. He has found that much of the equipment now operated is too heavy and large for most economical service and his plans for future equipment are based upon the modern conception of efficient operation with small units at short headways. As the funds of the new organization would not permit buying new cars. he has leased some and bought ten others, which he hopes will tide the line over until the railway is in position to provide new cars.

His staff of officers includes men taken from General Andrews' organization in connection with the three lines under him as receiver. William Ross is superintendent of maintenance and was formerly engineer of maintenance of way for the lines under General Andrews. Harry Weissmann is superintendent of transportation and was formerly a dispatcher for the Long Island lines. Thomas J. Lawson is auditor, William A. Methone is claim agent and served in this capacity for

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twenty years with the New York & Long Island Traction Company. The officers of the corporation are H. Pushae Williams, president; Park A. Rowley, treasurer, and C. J. Norstrand, secretary.

Mr. Norstrand was born in 1883. He was educated in private schools and the Gymnase and the University of Christiania, Norway, and was graduated in 1903 with the degree of B. A. In 1904 he entered the service of the Bergen Credit Bank in its foreign department and later spent two months in banking houses in London, Paris and Amsterdam. Early in 1904 he took a position with a shipping concern and a short time later he enlisted in the U. S. Marine Corps and was honorably discharged in 1908 with rank of sergeant.

Messrs. Chilton and Sargis Advanced in Syracuse

Appointment of W. H. Chilton, division superintendent, and M. J. Sargis, supervisor of schedules, as assistant superintendents of transportation of the New York State Railways, Syracuse lines, has been announced by E. K. Miles, superintendent, effective at once. The appointments are part of a reorganization of the operating departments made necessary by the death of John E. Duffy, veteran general superintendent.

Mr. Sargis began his service with the company as a clerk in 1906 and Mr. Chilton as a conductor in 1905. Under the new plan Mr. Sargis will continue in charge of schedules and Mr. Chilton will supervise the employment and other divisions, with Mr. Miles in general charge of all operations of the Syracuse lines.

C. H. Robinson Leaves Bloomington

Charles H. Robinson, master mechanic of the Bloomington & Normal railway lines of the Illinois Power & Light Corporation, has resigned, effective July 15, to engage in personal enterprises in the Pacific Northwest. Mr. Robinson entered the shops of the company in 1898 and was gradually advanced to chief electrician and master mechanic. He had charge of maintenance of the Park Street power house and at the time of the consolidation of the Bloomington Electric Light Company and the Bloomington & Normal Railway, he was advanced to supervise all its electrical units.

Personnel Changes in Sandusky

Three changes in personnel have been announced by the Lake Shore Electric Railway, Sandusky, Ohio.

O. H. LaZelle, Salem, freight agent of the Youngstown & Ohio Railway, succeeds J. F. Starkey, who resigned as traffic manager of the Lake Shore Electric Railway. W. A. McNeal, Dayton, superintendent of overhead lines on the Cincinnati & Dayton Traction Company, succeeds George H. Moore, Jr., Fremont, as superintendent of the overhead lines. Albert Brownworth, superintendent of carhouse and shops at Sandusky, succeeds Frederick Heckler, Fremont, as superintendent of motive power and of cars at Fremont.

Mr. Starkey has been in the service of the Lake Shore Electric for fifteen years, and until three years ago served as general passenger agent. At that time freight over the electric line became an important feature and he was promoted to the position of traffic manager.

F. N. Robinson Leaves New York Commission

Frank N. Robinson, assistant secretary of the Transit Commission, New York, N. Y., has tendered his resignation, effective August 1. He will accept a position as publicity director of the National Council of Boy Scouts of America. Few newspaper men in New York are better known than is "Robbie." Few newspaper men were or are better informed than he on transit. His term of service in the employ of the news-gathering agencies in New York City and on New York City newspapers covered a period which totals more than fifteen years.

Regulation came into being in 1907 in New York, and no sooner had it been ushered in than Robinson, then in the employ of the City News Association, was assigned to cover the workings of the new body. Effectively to do this he made his headquarters with "Jim" Walker, then assistant secretary but now secretary of the commission. All during the days of the negotiation of the so-called dual subway contracts, which gave New York its present system of rapid transit lines, Robinson was one of the chief avenues through which the newspaper reading public of New York was kept informed about what was going on.

Not only that but the idea of commission regulation was new. New York had subways before the dual contracts were negotiated, but it had little or no regulation, so New York, and the rest of the country for that matter, were concerned with the precedents that were being made. Robinson wrote about transit and the doings of the commission, wrote about them understandingly and interestingly. For eight years he did this. Then in 1916, when Mr. Walker was made secretary of the commission, "Robbie" was made assistant secretary, a public relations as well as a newspaper post and one that included among its duties the preparation of the proceedings of the commission for publication. There he has been ever since, surviving each successive political change. He has resigned now only because his new work is national in scope and affords a wider field for his activities than does the work with the commission.

So "Robbie's" service with the commission as an employee covers a period of ten years, while his career on newspapers covers a period of about sixteen years. Other than his work for the City News Service, "Robbie" served the New York *Mail* on City Hall and transit matters. "Robbie's" counsel and help on transit matters and political trends will be missed by a myriad of newspaper men and by his immediate associates, to whom he had endeared himself over a long period of years.

Obituary

G. L. Fowler

George L. Fowler, consulting mechanical engineer, editor and writer on literary and scientific subjects and a member of the American Society of Mechanical Engineers and the American Electric Railway Association, died on July 2. He was one of the early editors of the ELECTRIC RAILWAY JOURNAL, then known as the STREET RAILWAY JOURNAL, but for the past 30 years he had been a consulting engineer, specializing in handling railway mechanical problems.

Most of this work had been for steam railroads. It included research in the field of locomotive design, construction and operation, investigations regarding the qualities of steels used in steel tires and solid steel wheels, the stresses in car wheels, the lateral stresses imposed on track by loaded cars and locomotives while in service, etc. His work along these lines had many practical and tangible results.

Mr. Fowler gave considerable attention also for various clients to electric railway problems. Here the fields of his research work included studies in rolling resistances, the gyroscopic action of the motors on electric locomotives, and rail corrugation. On the latter subject he conducted a series of tests for the ELECTRIC RAILWAY JOURNAL about twenty years ago, the results being published later in this paper. Mr. Fowler was for many years contributing editor to the *Railway Age*, and was the compiler and editor of the 1906 and 1909 locomotive dictionaries issued by the publishers of that periodical.

He was born at Cherry Valley, N. Y., in 1855 and was graduated from Amherst College.

Andrew Nance

Andrew Nance, at one time manager of the Belfast Street Tramways, died on June 22. During his managership, from 1881 to 1905, at which latter date the Belfast tramways were acquired by the Belfast municipality, the operation of the system was marked with much success. Mr. Nance was continued in the managerial position by the City Council, and the electrification of the tramways was carried out under his supervision.

On his retirement from the post of general manager of the Belfast tramways in 1916 Mr. Nance was appointed consulting engineer to the City Council. By his death the United Kingdom has lost one of the most forceful and enterprising personalities in the tramway field.

Valentine Hechler, 87 years old, a pioneer in the building of the first electric railway of Richmond and one of the first in the country, and also in the building of the Richmond-Seven Pines interurban electric railway, is dead. For a long time he had not been active in business, but he preserved many of his contacts of former years. He was born in Richmond on March 10, 1839.

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Charles A. Coffin

Founder of General Electric Company Dies at His Long Island Home—Had Been a Potent Factor in Electrical Manufacturing Industry for Forty Years

CHARLES ALBERT COFFIN, president of the General Electric Company from its organization until 1913 and chairman of its board from then until his retirement in May, 1922, died on Wednesday night, July 14, after an illness of a week, at his home at Locust Valley, Long Island, N. Y. He was 81 years old.

Encouraged Scientific Study and Invention

It is probably no exaggeration to say that during his long connection with the General Electric Company Mr. Coffin did more to create and stabilize the electrical industry than any other man or group of men. His encouragement of invention along useful lines, his financial talents, his tireless energy and his courage in introducing new apparatus made his work supreme in the field to which he devoted his life. His energy and executive talent were part and parcel of the whole electrical advance and found an opening in the development of the steam turbo-generator, hydro-electric machinery, propulsion of ships, street railway transportation and the electrification of steam railroads and finally in the progress of radio communication.

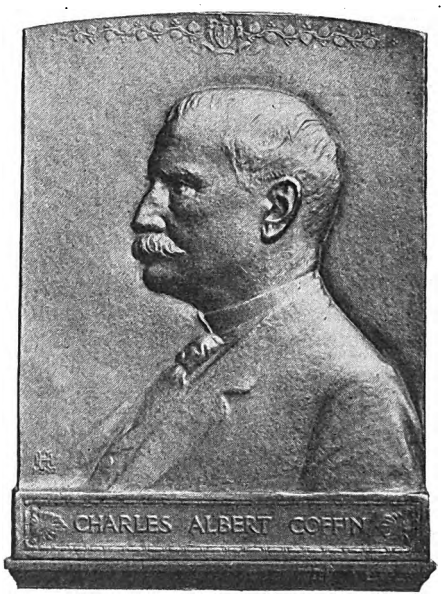
The development of the electric light and power industry was influenced to no small extent by his remarkable foresight and leadership. Without any special scientific or technical training, but with an intuition almost uncanny, his recognition of men of great scientific attainment and of purely scientific research and the part they play in industrial development is singularly illustrated by the research laboratory at Schenectady, the establishment of which was made possible by him. On one of the few occasion at which he was induced to speak for publication Mr. Coffin said that he had early recognized that research laboratories, manned by great scientists, could not be restricted to commercial purposes. It had been the laboratories' job to discover all that could be discovered about electricity, and the company had had to "apply those discoveries to human need, to broadcast the knowledge, to translate the discovered truths into concrete service."

He was among the first to recognize the desirability of bringing the use of electrical energy to every household and every workshop, and a large part of his career had been devoted to the development and financing of electric transportation companies and local electric light and power companies and to the establishment of the vast power systems of the present time.

A Many-Sided Man

He was a many-sided man. He had the highest possible conception of the duties of citizenship. He had the keenest appreciation of the arts, of literature and of nature. As one of his associates said of him, "Mr. Coffin's characteristics were so catholic in character that his right hand hardly knows what his left hand does."

In May, 1924, he was made an honorary member of the Franklin Institute of Philadelphia. On this occasion Samuel Insull, president of the Commonwealth Edison Company of Chicago, introduced Mr. Coffin as a man whose "vision, courage and constructive ability" had signally contributed "to the upbuilding of the great electrical and other industries," but who was "modest beyond ordinary conception, desirous



of giving credit at all times to others and claiming none whatever for himself, with a lovableness of character which endears him to his friends."

Foundation Named for Him

After his retirement from active work for the General Electric Company the directors, calling him "the founder and creator of the General Electric Company, of which he has been the inspiration and leader for 30 years," established the Charles A. Coffin Foundation "as an expression of appreciation of Mr. Coffin's great work not only for the General Electric Company, but also for the entire electrical industry, and with the desire to make the appreciation enduring and constructive, as Mr. Coffin's life and work have been." The Charles A. Coffin Foundation is a fund of $400,000, the income from which, amounting approximately to $20,000 a year, is used for "encouraging and rewarding service in the electrical field by the award of prizes to the company's employees and by giving recognition to lighting, power and railway companies for improvement in service to the public, fellowships to graduate students and funds for research work at technical schools and colleges."

It will be recalled that under the conditions of the foundation it is provided that an annual award of the Charles A. Coffin gold medal will be made to that electric railway company in the United States which during the year has made the greatest contribution toward increasing the advantages of electric transportation for the convenience and well-being of the public and for the benefit of the industry. It is also specified that the company receiving the medal shall receive $1,000 for its employees' benefit or other fund. A similar award is made within the electric light and power industry.

During the war Mr. Coffin, despite his years, organized in 1915 the War Relief Clearing House for France and her allies, an organization later consolidated with the American Red Cross, and he remained active in the work of the latter body throughout the conflict. For his services France made him an officer of the Legion of Honor and Belgium and Serbia also decorated him. Honorary degrees were conferred upon him in his later years by Union, Bowdoin and Yale Universities. But these and other honors were unsought by Mr. Coffin and lightly worn. His distinguishing characteristic was extreme modesty, avoidance of ostentation and dislike of any personal publicity. His desire was to sink his own individuality in that of the General Electric Company.

Had Many Business Connections

Mr. Coffin was born in December, 1844, in Somerset County, Me. He was a shoe manufacturer in Massachusetts prior to 1881, when, with others, he purchased the Thomson-Houston Electric Company, then established at New Britain, Conn. He was active in the management of this pioneer electrical manufacturing company and soon began to extend the scope of its operations. He purchased control of the Excelsior Electric Company, the Schuyler Electric Company, the Van Depoele Electric Railway Company, the Brush Electric Company and the Bentley-Knight Electric Company, and finally he organized the Thomson-Houston International Electric Company to act as agent of the home company in foreign lands. In 1892, realizing the benefits that would follow a consolidation of the Thomson-Houston Electric Company and the Edison General Electric Company, the two leading factors in the trade, he succeeded in blending these two concerns into the General Electric Company, of which he became president, retaining this office until 1913, when he surrendered it to become chairman of the board of directors. As chairman he served until May, 1922. He was thus 77 years of age when he retired from exercising or sharing executive control of the company which he did perhaps more than any other man to bring to its pre-eminence in electrical manufacturing.

Despite his age, Mr. Coffin kept up many business associations. He was a director of the General Electric Company, the Electrical Securities Corporation, the International General Electric Company, Inc., Light & Power Securities Company, the Underhill Development Corporation, the Union Carbide & Carbon Corporation, and the United Electric Securities Company.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

The Week in American Industry Analyzed

Chart No. 135 of the National Industrial Conference Board shows the changes in hours in the normal or prevailing work week in American industry as a whole and the situation in the major groups of industries in 1923. It discloses that the proportion of wage earners working on a schedule of more than 54 hours a week has decreased almost continuously since 1909, which is the first year in which statistics of this kind were gathered by the United States Census Bureau. The proportion of wage earners working on schedule of 48 hours or less per week increased slowly from 1909 to 1914 and very rapidly during the war. Since 1921 a week of less than 48 hours has become more prevalent. In 1923 nearly 80 per cent of the wage earners in the manufacturing industries were employed on a schedule of 54 hours a week or less.

The chart pictures the great gain of leisure for industrial workers which improved management and increased productive efficiency in industry have made possible. It shows also the tendency of industrial organization since the war to adjust its working schedule to a more stable basis, following the wide changes during the war period.

Lower Prices on Tires

Tire manufacturers have announced reductions in prices of from 10 to 25 per cent on casings of bus size and from 12 to 18 per cent on tubes. The cut is regarded by observers as due to a desire to overcome sales resistance, for the companies are not yet profiting by the lower price of crude rubber. Beneficial results of the cut have already been noted by Akron tire companies. Increased sales and production are reported by most factories, with prospects that the volume of business during the next two or three months will be the largest in the history of the industry.

Tire prices are now back to levels of late 1924 and early 1925. In fact they are almost as low as they have ever been, despite the fact that crude rubber costs about twice what it did in 1920 and 1921. Improvements in tire construction have also resulted in a greatly increased tire life.

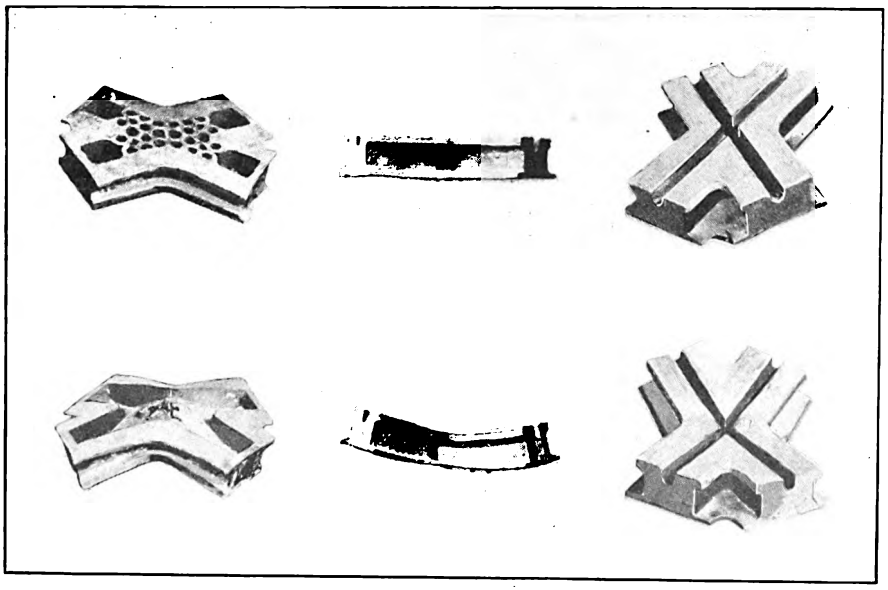
Manufacturers report a constant increase in the demand for balloon tires for buses. Not only are new buses being equipped with balloon tires but bus operators are, to some extent, substituting the balloon equipment for high-pressure casings.

Tubular Construction of Castings Overcomes Crossing Difficulties

In the early days of manganese steel castings the manufacturers of railway crossings were confronted with two serious problems, the initial pounding down of the points and adjoining receiving surfaces and the frequent cracks occurring at the bottom of the flangeway intersections. The pounding down took place within the first 60 days of service and amounted from ¼ to ⅜ in. After this initial compression the steel became fixed and was subject only to abrasions. The original pounding, however, resulted in rough riding, increased maintenance cost and a decreased life of the structure. The metal was forced into the flangeways, causing the latter to become unduly narrow. To meet these objections several special process crossings were brought out, among these being the Amsco process, wherein extra metal is cast upon the receiving surfaces and mechanically compressed at the foundry so that the metal becomes fixed on the true surface of the member.

The Amsco process attacked the second problem, namely, that of overcoming unsoundness in the metal due to excessive thickness at the intersection, by developing a tubular construction formed by introducing a series of cored holes on the underside of the crossing. In this way a solid thickness of 1⅜ in. of metal is provided under the tread and 1 in. under the flangeway, while the remaining depth under the flangeways and the treads consist of a series of ribs approximately ⅜ in. in thickness.

An inspection of more than 100 Amsco crossings, after they had been in service from six months to 1½ years, disclosed that no receiving surface was depressed more than ⅛ in. and in the majority of cases the depression was less than 1/16 in., according to the American Manganese Company, which holds the patents on these crossings. It is also claimed that the tubular construction permits of a high degree of resiliency and at the same time allows the section insuring uniform treatment of the metal. In other words, a more thorough heat treatment of the thinner metal section at the difficult intersection point is made possible. Attention is called to the fact that this is solid construction throughout and must be compared on this basis with various types of built-up crossings. Several other types of solid crossings that have met the fundamental difficulty described heretofore in various other manners are also on the market. Amsco crossings have been used extensively in steam railroad work, but are also claimed by their makers to be suitable for electric railway use.



At the Top Are Shown Views of the Amsco Tubular Crossing, While the Three Lower Views Show the Old Type Standard Construction

The views at the left show the bottoms of the two types of crossings, the tubular reinforcing of the Amsco crossing preventing the breaking down indicated on the right. The illustrations in the middle and at the right show the manner in which the two crossings react to the initial pounding down by car wheels.

Unusually Complete Catalog of Rail Sections

More than 125 full size drawings, dimensioned in inches and in the metric system and showing standard rail sections and rail accessories, are included in the new rail catalog issued by the Carnegie Steel Company, Pittsburgh, Pa. On each section information is given on the properties of the section, such as area, weight per yard, moment of inertia, section modulus, for both head and base; ratio of the moment of inertia to the area, ratio of the section modulus of the head to the area and gross tons per mile of single track. In addition to the drawings of rail sections and angle bars a number of tables are included in the front giving valuable information.

The pages are 8½ in. x 11 in. and are arranged in a loose-leaf binder with flexible leather cover. Altogether the catalog is very nicely arranged and will prove a valuable reference book.

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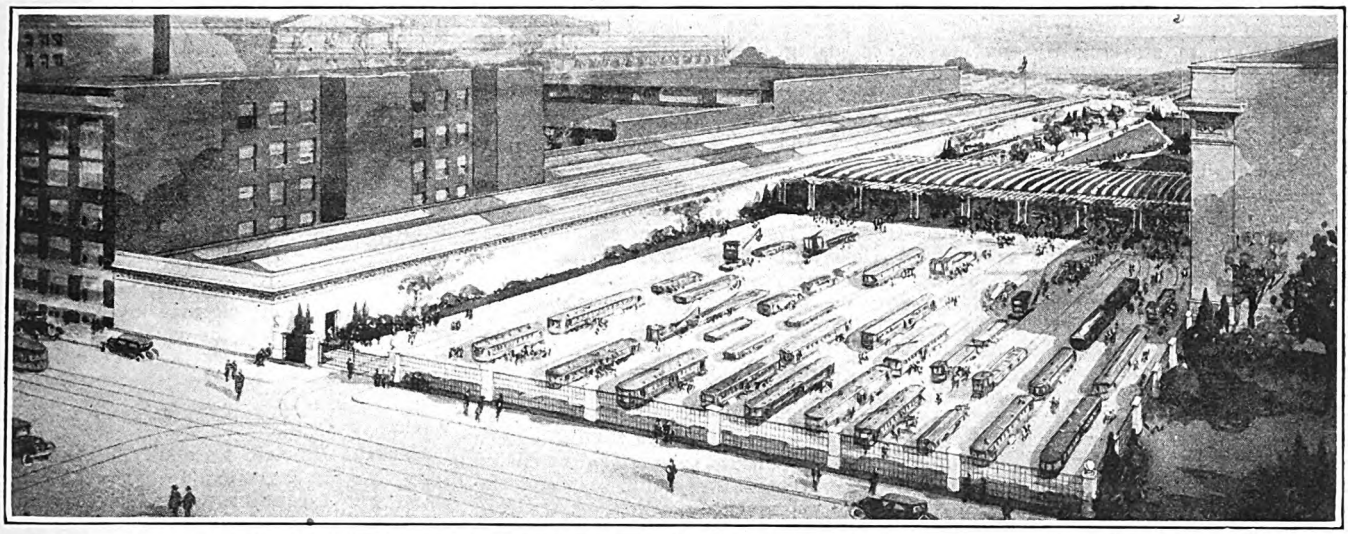
Where Is Your Car in This Exhibit?



Additional units to the Municipal Auditorium at Cleveland, Ohio, which will be the home of the electric railway convention to be held in Cleveland Oct. 4 to 8, inclusive, as the artist conceived them, are shown in the accompanying illustration.

Adjoining the auditorium will be the electric car exhibit. Already space for about twenty cars has been requested, but this is not half as much as needed. Freight rates are low to this central point, and the Cleveland Railway will handle these exhibit cars, including unloading, placing, washing and reloading after the convention, at a nominal charge, probably not exceeding $25 a car.

To the left is the 600-ft. building to be erected. This building is to be 200 ft. wide for about half its length and 100 ft. wide for the balance. It will be constructed of steel and stucco, with a solid wood floor. Connecting it with the present auditorium to the right is the wide canopy as illustrated. The entire exhibit will be compactly arranged.

Large Motor-Generator Locomotives for Great Northern

Construction work is being rapidly pushed by the American Locomotive and General Electric Companies on two large motor-generator type electric locomotives for the Great Northern Railway similar in general to those being secured by the New York, New Haven & Hartford Railroad. The two locomotives weigh 250 tons each, with 200 tons on the driving wheels. They are to be used in connection with the extension of the railway electrification from Skykomish to Wenatchee, a distance of 80 miles. In connection with this extension of electrification a 7¾-mile tunnel is being constructed through the Cascade Mountains, which will lower the present summit 500 ft. The new line will substitute 9 miles of practically straight track for 18 miles of very curved and heavy grade line.

Length inside knuckles	73 ft. 6 in.
Length inside cab	61 ft. 0 in.
Height inside cab	13 ft. 11 in.
Height over trolley locked down	15 ft. 3 in.
Total wheelbase	60 ft. 0 in.
Rigid wheelbase	15 ft. 10 in.
Total weight	509,800 lb.
Weight on drivers	409,800 lb.
Weight per driving axle	68,300 lb.
Weight per guiding axle	50,000 lb.
Diameter of driving wheels	54 in.
Diameter of guiding wheels	36 in.

The tractive power of the locomotives is exerted by two three-axle trucks, each equipped with three 750/1,500-volt direct-current motors. Power will be received through a pantograph trolley from the 11,000-volt, single-phase, 25-cycle line, transformed to 2,300 volts and then converted through a 2,500-kw., three-unit synchronous motor-generator set to direct current.

Each motor is connected to the axle through twin cushion type gears. Two motors are permanently connected in series. The three-unit set consists of a centrally located motor with a 1,250-kw. direct-current generator at each end. By means of guiding axles at each end of the unit provisions are made for operating at speeds up to 40 m.p.h., with a maximum emergency speed of 50 m.p.h. Type PCL control is provided with arrangements for multiple-unit operation of the two locomotives.

Regeneration will be obtained by controlling the excitation of the traction motor fields. The use of regeneration permits the use of the motors as a brake, the power generated in this way being fed back into the transmission system. A high-speed circuit breaker is used to protect both the locomotives and the supply lines from short circuits. The two pantograph collectors will have a range of from 16½ to 26 ft., one being used as a spare.

The maximum tractive effort of the locomotive, based on 30 per cent coefficient of adhesion, is 122,940 lb. The principal weights and dimensions are given in the accompanying table.

Bookings of G.E. for Quarter Up 10 per Cent

Orders received by the General Electric Company for the first six months of 1926 totaled $165,405,720, representing an increase of 10 per cent over the $150,315,228 booked in the corresponding six months of 1925. For the three months ended June 30 this year orders totaled $78,972,062, compared with $66,468,992 for the second quarter of 1925, an increase of 19 per cent. In the first six months of this year there were 152 working days, including Saturdays, showing General Electric orders received thus far this year have been at a rate of better than $1,000,000 a day.

Hereafter the company will report earnings quarterly to its stockholders. For a long time the officers have been developing plans for reporting earnings more frequently than has been the practice. To carry out the plan of sending quarterly statements with the dividends, it will be necessary to change the dividend date from the 15th to about the 25th of the month. Accordingly the next quarterly dividend will be payable on or about Oct. 25, 1926, and will be accompanied by a statement of orders received and earnings for the first nine months of this year.

Giant Converter Just Installed by N. Y. Rapid Transit

Installation has been made of the largest automatically controlled synchronous converter for railway service at the Avenue T substation of the New York Rapid Transit Corporation, New York, N. Y. The machine is a 4,000-kw., 575-volt, direct-current, shunt-wound converter and is supplied from a 3-phase, 4,200-kva., 11,000-volt, 25-cycle power transformer. The high-tension connections of the transformers are connected in star for starting and in delta for full secondary voltage when the running breaker is closed.

An interesting feature of the equipment is the method of operation by means of supervisory control. To start up the machine the operator at the adjacent New Utrecht station operates a small telephone key, which initiates the operation of the automatic supervisory relay equipment, resulting in the closing of a relay at the substation to start the machine. The machine then automatically starts and

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connects itself to the alternating-current and direct-current systems without an attendant.

In addition to starting up the machine, supervisory control will regulate other operations, such as shutting down the machine, operating thirteen feeder breakers, closing or opening the high-tension breakers and closing or opening any of the six track breakers. The dispatcher has at all times an indication of the position of all the breakers listed above, of the position of the main current breaker, and even of the opening of the substation door. By a unique method of remote metering the total current furnished by the unit may be read continuously. By a selective method the current in any one of the individual feeder circuits may also be read by the dispatcher.

A control line of five wires is used between the dispatcher's office and the station. Four of these wires are used for supervisory control, while the fifth is used for the continuous meter reading of the load. The station is equipped with Westinghouse switching equipment, converter and transformer.

Wood Preserving Treatment Very Effective in New Orleans

As an example of the efficacy of preservative treatment for railway ties, the June issue of *Wood Preserving News* carries an account of a number of ties which were recently removed after fourteen years of service in New Orleans. When it was decided recently to widen North Rampart Street for a distance of approximately ½ mile in order to break the bottleneck which had been impeding traffic in the central portion of the city, it was found advisable to place the street car tracks on the parkway in the center of the new connecting street. The line had been laid approximately fourteen years before, using hewn Southern pine cross-ties creosoted under pressure and laid in the concrete roadbed. The published account declares that the treated ties were found to be in perfect condition and were stacked in the storage yard of the railway company to be used in future installations where long life and freedom from decay are essential.

Describing the track installation which was made in the parkway, *Wood Preserving News* goes on to state:

"The new track is laid with strong Southern pine cross-ties treated with 6-lb. creosote per cubic foot by the empty-cell process and imbedded in concrete. The poles on this highway are Southern yellow pine treated by the empty-cell process with a final retention of 8-lb. creosote per cubic foot and the cross-arms are Southern pine similarly treated."

Track and Line

Interurban Traction Company, Helena, Ark., has started to repair its line through the business district. After completion of the work the city will begin resurfacing and repairing other parts of the street under a separate contract.

Wheeling Public Service Company, Wheeling, W. Va., plans to replace old rails and ties. Old paving blocks will be relaid after the tracks have been repaired.

Washington-Virginia Railway, Washington, D. C., has been instructed by the Public Utilities Commission of the District of Columbia to replace all broken portions of the track substructure, repair all rail joints and restore its track to proper line and grade on Twelfth Street and on C Street. This work is to be started not later than July 15, 1926, and be fully completed by Sept. 15, 1926.

Trade Notes

Walker Gilmer, who has been associated with L. H. Gilmer Company for twenty years, has resigned his connection as chief of engineering, though remaining as a director of the company. He contemplates locating in Detroit, Mich., where he will do consulting and sales engineering and development work.

General Electric Company, Schenectady, N. Y., has announced that F. E. Case, who for many years has been in charge of the railway equipment engineering department of the General Electric Company, has had added to his responsibilities the supervision of the railway motor and railway locomotive engineering departments.

Timken-Detroit Axle Company, Detroit, Mich., has announced that George E. Watts, formerly with Duff Manufacturing Company, Pittsburgh, has joined it as a railway representative with his headquarters in Atlanta. Mr. Watts will call on the officials of the electric and steam railways in the South and endeavor to co-operate with them in the work of extending their lines by motor coaches and motor trucks.

Woonsocket Manufacturing Company, Providence, R. I., manufacturer of all types of bus bodies, announces the appointment of John D. Baukat to be vice-president and sales manager of the company, with offices at 2607 Grand Central Terminal Building, New York City.

New Advertising Literature

Sullivan Machinery Company, Chicago, Ill., has issued Bulletin No. 76-G and 83-B. The first describes portable single and double drum electric hoists, while the latter is a second edition illustrating single and two-stage straight-line air compressors for belt drive.

Engberg's Electric & Mechanical Works, St. Joseph, Mich., has issued bulletin No. 302-B, which is to supplement catalog 302 covering Engberg's vertical engines and giving comprehensive horsepower tables. New bulletin 601 has also been issued. This fully describes and illustrates Engberg direct and alternating current generators and their application to internal combustion engines. Bulletin 801 covers alternating-current, direct-connected generating sets.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued the second of a series of hanger cards on motor maintenance data. The first card of this series was on the subject of axle and armature bearings and was issued about a month ago. The most recent card describes the winding insulation and the banding and core insulations.

ELECTRIC RAILWAY MATERIAL PRICES—July 13, 1926

Metals—New York

Copper, electrolytic, cents per lb.	14.225
Lead, cents per lb.	8.20
Nickel, cents per lb.	35.00
Zinc, cents per lb.	7.90
Tin, Straits, cents per lb.	63.25
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	54 50
General service	30.50

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$4.425
Somerset mine run, Boston	1 95
Pittsburgh mine run, Pittsburgh	1.75
Franklin, Ill., screenings, Chicago	1.825
Central, Ill., screenings, Chicago	1 50
Kansas screenings, Kansas City	2.425

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.30
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.20
Steel bars, cents per lb.	2.05
Ties, white oak, Chicago, 6 in. x 8 in. x 8 ft.	$1.35

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (28 gage), cents per lb.	3.125
Sheet iron, galvanized (28 gage), cents per lb.	4.25
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	3.10

Waste—New York

Waste, wool, cents per lb.	12–18
Waste, cotton (100 lb. bale), cents per lb.:	
White	13–17.50
Colored	10–14

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	11.80
White lead in oil (100 lb. keg), cents per lb.	15.25
Turpentine (bbl. lots), per gal.	$0.88
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	4–6

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire, cents per lb.	16.00
Rubber-covered wire, No. 14, per 1,000 ft.	$6.25
Weatherproof wire base, cents per lb.	18.00

Paving Materials

Paving stone, granite, 5 in. New York—Grade 1, per thousand	$147
Wood block paving 3½, 16 lb. treatment, N. Y., per sq. yd.	$2.70
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3x8½x4 N.Y., per 1,000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu. yd.	1.85
Cement, Chicago consumers' net prices, without bags	2.10
Gravel, ¾-in., cu. yd., f.o.b. N. Y.	1.75
Sand, cu. yd., f.o.b. N. Y.	1.00

Old Metals—New York and Chicago

Heavy copper, cents per lb.	11.75
Light copper, cents per lb.	9 75
Heavy brass, cents per lb.	7 375
Zinc, old scrap, cents per lb.	4 125
Lead, cents per lb. (heavy)	6 75
Steel car axles, Chicago, net ton	$17.75
Cast iron car wheels, Chicago, gross ton	16 75
Rails (short), Chicago, gross ton	17.25
Rails (relaying), Chicago, gross ton	26.00
Machine turnings, Chicago, gross ton	8.25

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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CHARLES GORDON, *Editor*

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Strike on Interborough Subway Collapses

TO THOSE fully acquainted with the facts of the strike of the motormen and switchmen of the Interborough Rapid Transit Company, New York, the collapse of that ill-advised suspension of work was inevitable. And it came on Thursday night. As this is being written the depleted forces of the strikers are bidding again individually for permission to be put back to work. This is the condition set by the company for re-employment. The bravado of the last few days on the part of the men fooled no one. Each succeeding day there came from the company a statement showing the increase in the extent of the service—a statement that the public saw reinforced by a similar one from the Transit Commission. Then a few days ago came the last straw. The company announced that its extensions into Brooklyn, on which no attempt had previously been made to furnish service during the strike, would resume. That presaged the end.

It was inevitable that there should be a lot of complaining on the part of the men. The leaders of the strikers could hardly appear publicly to accept the onus of their own acts. And so, as is usually the case, they began to bellyache. They said the general press reports of the strike were misleading, that the presentation of their side was distorted and that they were lied about. They said there had been a lot of trickery on the part of the company. This, of course, is the doctrine of despair. It is true that in its early aspects the strike appeared to be serious enough, but the strike, and particularly the strikers, got columns more of space daily than either one or the other deserved. If the men were given short shrift in the editorials it was only because that was what they deserved. As for trickery, the charge lies more against the union than it does against the company. Is it trickery on the part of a company to sue employees who have actually ignored the terms of a contractual relationship?

Great credit is due to the Interborough officials. They had to withstand many violent verbal onslaughts which linked the strike with what was conjured up to be a deep laid drive for an increase in fare. To this scant attention was paid. The officials never let themselves be diverted from the work of replacing men who went out. They did a smart thing in shutting down the lines to Brooklyn, the patronage of which could easily be diverted to the lines of other companies, and concentrating on the restoration of service on the lines in Manhattan and the Bronx. There was considerable comment adverse to the company's suit against the employees. One of the main criticisms was that the company, knowing it had the men licked, stood to lose public favor by threatening to sequester the property of its men. This criticism, of course, turns on a fine point. Some of the strictures against this move are, perhaps, not without merit, considered solely from the standpoint of public relations, but a public utility is under compulsion to give a service that is continuous and a suit against its employees is certainly justified if that is the only way in which the obligation of the men to the company and the public can be brought home to them. It would have been altruistic on the part of the company not to have made this move, but altruism is not, *per se*, desirable. After all is said and done, it is unfortunate that it was within the power of this band of recalcitrants, small by comparison with the total number of employees, to cause the company the loss it did, to try to confuse the issue with politics, and to put the public to no small degree of inconvenience. The controversy was not sought by the Interborough. That company, confronted as it was with the issue of capitulation to this band of recalcitrants or of replacing them, refused to accept the domination sought to be imposed—a refusal that was not only in its best interests but in the last analysis was in the best interests of the riding public of New York.

Cleveland Will Produce a Real Car Exhibit

NEVER in the history of electric railway conventions have conditions for exhibiting appeared more auspicious than this year. Never has a convention been held in a more central location with respect to the industry than this in Cleveland. And never has such a situation been gripped by a more able body than the local convention committee centering around the executives of the Cleveland Railway. Nearly 110,000 sq.ft. of space is assigned. This will be housed in excellent quarters requiring an extension to the new building of 180 ft. The planning of the show is well under way. The exhibit committee met last week and made the final assignment of space, which will be in five distinctive locations.

Not enough is it, apparently, that the space sold inside the building is well above that of any other year, but the local convention committee wants this particular exhibit to reflect the awakening of the industry from the coma in which it has been for several years. Cars are wanted for the open-air tracks to make a real exhibit. If present and prospective plans develop the people of Cleveland, if not many of the delegates, will receive a real surprise when they witness the spectacle of modern cars which will hold a central position in the 1926 convention. Neatly planted between the two buildings will be fourteen tracks, each capable of holding at least five full-sized cars. The illustration of the convention layout reproduced elsewhere is

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not an idle view but the definite aim of the men producing the exhibit.

Now, if ever, is the time to break precedent and send the physical representation of every latest conception of modern rail transportation. So far the prospective exhibitions are about equally divided between manufacturers and operators. Exhibits on the part of operators are especially commendable. They have nothing to sell except transportation to their local communities. The operators realize, however, that it is essential to show to electric railway men and the public generally that they are alive to their opportunities and have radically improved their facilities. Here is a chance to deal a deathblow to popular fallacy that the railways are decadent.

The exhibit will be open to the public at least one day and evening; in fact, the open-air exhibit will be in view of thousands of Clevelanders each day. Besides this it is planned to have a parade on certain of the city streets that will attract wide interest throughout the nation.

Nor will buses lose ground, as manufacturers of this class of equipment are planning a visual representation of their share in the production of modern transportation throughout the year. There will always be a spirit of rivalry between these dissimilar types of vehicles, just as between various manufacturers of similar equipment. It is more evident than ever before that proponents of each type of vehicle share one common viewpoint, that of providing better transportation. It remains with the operators, working in conjunction with the manufacturers, to place common carrier transportation among those industries that occupy the front ranks today.

It can be done—and the prediction is that Cleveland will prove so.

South Shore Road Rehabilitation and Financing Attract Attention

COMPLETION of the first unit in the rehabilitation program of the Chicago, South Shore & South Bend Railroad and of the public offering of $1,060,000 of equipment trust certificates secured by rolling stock of that company were announced almost simultaneously. Either of these events would have been sufficient to attract attention in electric railway circles, but the two of them coming almost together certainly emphasize the work that has been done on the road and testify to the appreciation by the bankers of the strong position in which the company has been placed.

So far as the conditions are concerned that surround the terms under which the bonds are secured there is nothing particularly new about them, but the basis upon which it has been possible for the company to do its financing is significant. The equipment trust certificates run for ten years. They are priced to return the investor from 4½ to 5¾ per cent. In total amount they represent about 80 per cent of the cost of the new equipment. To electric railway men the issue is significant in that it may be said to represent terms under which money can be borrowed when bankers are assured, as they were in this case, that the rehabilitation of a road is thorough and that the line will be developed intensively.

It may seem trite to say so, but it would appear that this is another case of virtue being its own reward. The Insulls, by whom the road is now owned, have back of them the record made with the Chicago, North Shore & Milwaukee Railroad and their other properties, but they have no corner on the market for the intelligent application of selling methods. Others have done almost equally as well as they have done.

In the news of the events now recorded there are lessons for others not only in the speed of completion of the rehabilitation of this road but in the terms of the financing and the type of equipment that is being placed in service. Where others failed the Insulls saw an opportunity to re-establish this road operating through the so-called steel section of northern Indiana and they set about it with a vim and on a scale that some at first were inclined to regard as stupendous. An undertaking of this kind, however, was not new to them. It was not the first time they had spent large sums of money on projects others regarded as hopeless. They had learned from experience that, other things being equal, you get out of a thing only what you put into it. And they put into the Chicago, South Shore & South Bend Railroad not only money but enthusiasm intelligently directed.

How to Care for the Paving Charge

INJUSTICE of the paving charge borne by most street railways is generally admitted. The difficulty in getting rid of it is to find some other place to put the burden. In most municipalities the taxes are now very high, and any increase in assessments is reflected almost immediately in larger appropriations for schools, paving which the city has to do, or in other ways which the city has to spend its money. No matter how just theoretically it would be to relieve the electric railway company from its paving obligations, no great amount of enthusiasm can be expected from the citizens on such a plan if it means that the paving cost, now borne by the railways, is placed in the city budget.

Such relief may come in special cases, as where an old franchise expired and a new one is negotiated. But a much more popular method in most cases would be to devise some means by which the paving expense, when lifted from the railway company, would be placed on the shoulders of some one other than the citizens of the municipalities in which the railway operates.

If the city is not to assume this expense, the only other available place to put the burden is on the state, and fortunately a logical argument can be given that the state should defray this expense. This was developed in an address delivered at the League of Boroughs Convention at Stroudsburg, Pa., on June 23, 1926, by A. W. Robertson, president of the Philadelphia Company of Pittsburgh, and for many years its general attorney. He pointed out that last year in Pennsylvania the state collected $4,657,752 from the gasoline tax alone, and that the auto license fees in the state were six times as much, a grand total of $26,447,943.77. These fees and taxes were paid in very large part by citizens of municipalities who were also street car riders, yet practically all of it is being spent to improve highways that are wholly outside the limits of the municipalities.

The speaker did not mean to imply that the highways outside of the cities are not used to a considerable

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extent by city dwellers. It is reasonable to believe, however, that a very much larger proportion of the revenue of the state from these sources comes from dwellers in cities than is represented by their proportionate use of the state highways. At any rate, the electric car rider, *per se*, gets no use at all from this large revenue and would be very much better off if the sums now spent on paving by the electric railway which he patronizes should be expended on new cars, better track or more service.

In other words, it is Mr. Robertson's idea that the dwellers in cities, individually and collectively, would be very much better off if the paving burden were taken from the electric railways and placed on the state, its cost being defrayed out of the general highway appropriation, as it should be.

The plan certainly seems logical, and it is the hope that its reasonableness will appeal to the general public.

The Mayor's Chickens May Come Home to Roost

IN THE feverish heat of an election struggle last year Mayor F. X. Schwab of Buffalo, New York, had the temerity to commit himself to a platform of bus operation on the basis of a 5-cent fare. Perhaps he was sincere in his belief that such a Twentieth Century miracle could be negotiated. At any rate, the plea was successful and he found himself in the course of time duly re-elected. For a time all was quiet. Then, certain newspapers began unfeelingly to remind the Mayor of his campaign promises. Here was the International Railway operating buses on a 10-cent fare and seeking permission to make numerous additions to the service. Where was the relief promised by the Mayor?

Alas! His Honor was in a quandary. He began to develop a temperament. He periodically fulminated against the International Railway and its flat refusal to consider a reduction in fares. He threatened repeatedly to declare a transportation emergency within the city's boundary. Then he departed for Europe.

Heralding his return to this country, not long ago, came the announcement that the city would endeavor to put the local transit company in its place by establishing a rival bus operation at a lower fare. But mysteriously the 5-cent fare had departed. The Mayor by a stroke of genius conceived the idea of delegating the operation of the city's vehicles to the police department. A unique method, surely, for cutting down the overhead.

Now, one may ride in buses of the city of Buffalo at an 8-cent fare, the same rate as the cash fare charged on the street cars, but with no transfer privileges. Furthermore, timid souls may be reassured by observing the minions of the law attired in full regalia and operating the buses so impressively.

But oddly enough the International Railway seems not overly worried by this punitive action. Some clue to this indifference may perhaps be gathered from the circumstance that the total revenues from the first day's operation of the city's first bus line took in receipts of but $35—not enough to pay for the gasoline consumed by the five buses. Fortunate, indeed, that the "operators" need not be paid from the receipts.

No apparent hesitancy has been felt by the Mayor and his followers on the City Council in throwing good money after that already sunk in the venture. In the meantime, the International Railway appears to be biding its time while extensive operating plans are being laid and more buses ordered that the city will ultimately have on its hands.

No Battle Was Ever Won by a Defensive Position

PEGASUS, the winged horse of ancient lore, has found a new pasture. He now crops daintily at the greenery which is found within the environs of Philadelphia. Twice daily he wafts himself lightly over to the nation's capital. But when he goes there is upon his neck a steady rein and there is astride his back a group of mere humans, willing now to intrust themselves to the gallant old steed who has long since left behind him the friskiness of coltblood. The present-day manifestation of this mythical beast, while lacking the temperamental uncertainties of his immortal forebear, still possesses all of the grace and beauty which the gods are said to have bestowed upon their favored steed.

Doubtless it was something of a shock to those professional mourners who have been for years descanting upon the hopeless lethargy that has fallen upon the electric railway industry when one of its representatives came forward with a revolutionary concept for public transportation. Today it is more than a concept —it is an established fact. Every day passengers are being carried between Washington and Philadelphia in the luxurious planes of the Philadelphia Rapid Transit Company. And this transportation is being rendered at a price which is within the pocketbook of the average American business man.

It quite behooves one to pause for a moment and speculate upon the possibilities which are opened up by this move. The primary object in establishing the service was not to make money, although with the degree of popularity which is being attained that seems bound to follow. First and foremost the undertaking serves to keep the railway before the eyes of the people as one of the most progressive factors in community life.

The bugaboo which haunts so many electric railways today is ultra-conservatism. The effectiveness of any new idea lies in striking while the iron is hot. To wait until some other company has given the test of years to a suggested plan is to lose 90 per cent of its value to the one who perhaps conceived it but hesitated to carry it out. Any business, particularly one which must bid for public patronage, must necessarily be in the vanguard of progress if it is to succeed today. While it is perfectly true that the establishment of a commercial air service would not be feasible for the majority of railways, the adoption of some other idea which may have been lying dormant for months might be the means of achieving noteworthy results. The good will of any community is one of the most priceless possessions of its utilities.

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Private Operation of Utilities Best for America

W. H. Sawyer, after study of Australian systems, is convinced that under conditions existing in this country public operation is less satisfactory. He talks to "Journal" representative of investigation made by him of the Victoria electricity supply system

BACK from Australia after a five-month survey of the publicly owned electricity supply system of the Victorian government, W. H. Sawyer, president of the East St. Louis & Suburban Railway and associated companies, speaking to a representative of ELECTRIC RAILWAY JOURNAL, said that he is strengthened in his conviction that private operation of public utilities is to be preferred under conditions that exist in the United States. During his stay, Mr. Sawyer, assisted by H. W. Eales, chief electrical engineer of the Union Electric Light & Power Company of St. Louis, prepared and presented a report on the status and affairs of the State Electricity Commission of Victoria and the scope and working of the state electricity commission acts.

In order to further the work, Mr. Sawyer was appointed a Royal Commission by the Earl of Stradbroke, Governor of the State of Victoria. The investigation covered the system of the State Electricity Commission for power generation and distribution, with particular regard to the general layout, the quality and efficiency of the plant, equipment and accessories and the methods employed; the works and projects now in progress and under consideration for extending the state's generating capacity; the sources of revenue from electricity supply and prospects of growth; a study of operating expenses and the reasonableness of the tariffs and charges; the agreement for the ultimate acquisition of the Melbourne Electricity Supply Company's undertaking; the economic value of and methods of working the brown coal deposits at Yallourn; the internal organization of the commission, and the system of distribution of electric power.

MR. SAWYER A PRODIGIOUS WORKER

The above outlines very briefly the job faced by Mr. Sawyer—a sizable proposition. In 2½ months he had not only completed a report, but had secured the acceptance of the major recommendations. Chief among these were the need for more practical information and experience in the work.

"Fundamentally," said Mr. Sawyer, "the undertaking is, as a whole, economically sound and by virtue of the importance of electrical energy to the state, it must go forward. The estimates given me by the commission showed that it will become directly financially profitable during 1927. With these estimates I differed. I agreed closely with the estimates as to the revenue to be expected within the next few years, but I believe that the operating expenses will be greater than have been assumed.

W. H. Sawyer

"In my opinion, the commission has proceeded in the past with information of an incomplete nature from its staff. The estimates now being made profit, to a certain extent, from past experience, but in general are even now too optimistic and are not based on the thorough analysis necessary in such undertakings. The net loss from the electricity supply system for the fiscal year ended June 30, 1925, was £241,000, and for the year just ended was approximately £200,000. For neither of these years was depreciation taken into account. With this included, as the commission proposes to do, beginning with July 1, 1926, I expect to see a net loss for the fiscal year ending June 30, 1928, but by the fiscal year ending June 30, 1930, there should be a net profit on the present combined undertaking and on practically every present separate undertaking.

"It seems to me scarcely to be necessary to refer to the immense amount of brown coal deposits in the State of Victoria, with which the generating station at Yallourn is supplied. The coal, while containing 50 to 65 per cent moisture, can be burned. There is a supply of it that is practically inexhaustible. It is so near the surface it can be mined by the open-cut method.

"While I criticised the estimates, the design, and the operation as to portions of the undertaking, it should be appreciated that many new and complicated problems were presented. Although the staff is composed of technically skilled men, generally speaking, it has lacked the practical experience to cope, to the desired degree, with the problems which confronted it. There is admittedly a scarcity of engineers in Australia who are familiar with large power-house design and operation and the other problems confronting the staff, including the complex problems of how to win and burn most successfully brown coal with 65 per cent moisture."

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One of the outstanding recommendations in Mr. Sawyer's report was that the Victorian government permit more complete and frank publicity of the affairs of its public utilities, particularly as to finances. This he considered one of the past errors of the commission.

"One of the most difficult situations with which I had to cope," he said, "was the general disinclination to give frankly a statement of the situation. It was difficult to find out just what the situation was, and to get accurate and unbiased estimates. There usually was a desire to make the situation appear better than it was.

"Public office is looked on by Australians as a public duty. There are many high-class men giving their time to the state. Men who have been successful in business are willing to give of their time and energy to upbuilding the institutions of the country, even going to the extent of giving up other activities to do what is needed. This has resulted in a class of government it is difficult to match anywhere."

Mr. Sawyer's report on the power situation was received with enthusiasm by all parties. Before publishing his recommendations in final form, he had conferred with persons involved and had received assurance that the changes would be put in effect. In fact, many of the recommendations were adopted before the report was finished. The chairman of the Electricity Commission, Sir J. Monash, asked by a local newspaper man if any reply would be made to the report, said: "Why should we reply, when we have received so satisfactory a report."

Newspaper comment, of course, varied with the political complexion of the individual paper. But all of it was favorable to the report.

"My convictions are greatly strengthened," said Mr. Sawyer, "that privately operated public utilities with government regulation as in the United States are much to be preferred. This is despite the many conditions in the state and municipal governments in Australia that are an improvement over those of the states and cities in this country.

"Graft, as we understand it here, is virtually unknown. While the chief offices are elective, and their incumbents are changed from time to time as in the United States, the working staffs endure, so that there is a continuity in the government that is lacking here. On the contrary, one of the handicaps of successful governmental operation of public utilities in Australia is that the system does not furnish the proper incentive to the persons in charge. Further, there is no appeal from the government methods if they do not furnish the proper service, while in this country when a public utility fails to supply the desired service its patrons can appeal to the regulatory commissions and compel the furnishing of adequate service."

On his trip Mr. Sawyer inspected a number of tramway and railway systems, both in Australia and New Zealand. He was impressed by the multi-side door cars, which were used to a considerable extent. These cars, he said, are somewhat similar to our old-style open cars, except that the sides may be closed in case of inclement weather. Loading and unloading are accomplished very quickly.

Moreover, the accident record is quite low, lower than one would expect with the running board along the side of the car and passengers boarding or alighting while the cars are in motion. Payments for damages are less than 1 per cent of the gross in some cases.

"Nature has been kind to Australia," Mr. Sawyer replied when asked regarding the characteristics of the country. "I was there during the fall, and found the climate very agreeable. The winters are mild and the summers, at least along the coast, somewhat cooler than ours. The vegetation is not unlike that of California, but it seemed to me the flowers are even brighter.

"The people of Australia seemed to me to be of the highest type. While they are typically British, they appeared even more cordial and sympathetic. Officially and unofficially every possible courtesy was shown me. At times, I felt overwhelmed by the wealth of hospitality and courtesy extended me everywhere. I also appreciated greatly the frankly helpful attitude of the many public utility officials, and of the manufacturers and manufacturers' agents. All of them not only furnished me with all data required but were of assistance in every way possible. Without this aid it would have been entirely impossible to complete my work in so short a time."

Typical Newspaper Comment on Mr. Sawyer's Report

Melbourne *Herald*, May 21

THERE will be a general feeling of relief in the community following upon the report of Mr. W. H. Sawyer on the State electricity scheme. The pronouncement by an acknowledged expert, after due investigation, that the scheme is "fundamentally sound" should allay all the fears generated in the minds of the public over a period of years by ill-informed critics, whose continued carping onslaughts were undermining public confidence. Mr. Sawyer's report, while pointing to certain necessary reforms, is a vindication of those who have been carrying it out in the face of heavy odds. . . .

The Government is to be congratulated for its wisdom in securing the services of an investigating expert at a time in the development of the scheme when such a course was necessary in the public interest.

Melbourne *Age*, May 23

MR. W. H. SAWYER, the American electrical expert, has completed the task with which he was entrusted by the Government of the State. He has investigated the various phases of the Electricity Commission's numerous activities, and the report he has presented deserves to be most carefully studied. The intelligent citizen is certain to be impressed with the common-sense spirit in which the investigation has been conducted, and with the practical observations and recommendations submitted. . . .

It has been a matter of extreme difficulty to get either Ministers or Commissioners to understand the precise nature of the public demand. Yet Mr. Sawyer seems to have understood instinctively. At his first attempt he has furnished much of the information the citizens of Victoria have wanted very urgently.

Melbourne *Age*, June 1

EACH political representative in this State should study the Sawyer report with meticulous care. It is a document concerning which he is destined to hear much in days just ahead. Neither members of Government nor of Parliament should allow themselves to be deceived by the seeming calm that has set in since the expert has made public his opinions on our State electricity scheme. . . . The Yallourn scheme may be a great success at some remote future date; that has never been in dispute. All that has been asked is—are we not moving too fast? The expert's answer is an emphatic affirmative. Several lines of economy and curtailment have been indicated. It is the Government's move. Members of the Cabinet should hesitate before they decide to try and hedge. They should not be misled by the public's apparent quietness. The public is eagerly waiting for the Government's action on the Sawyer report.

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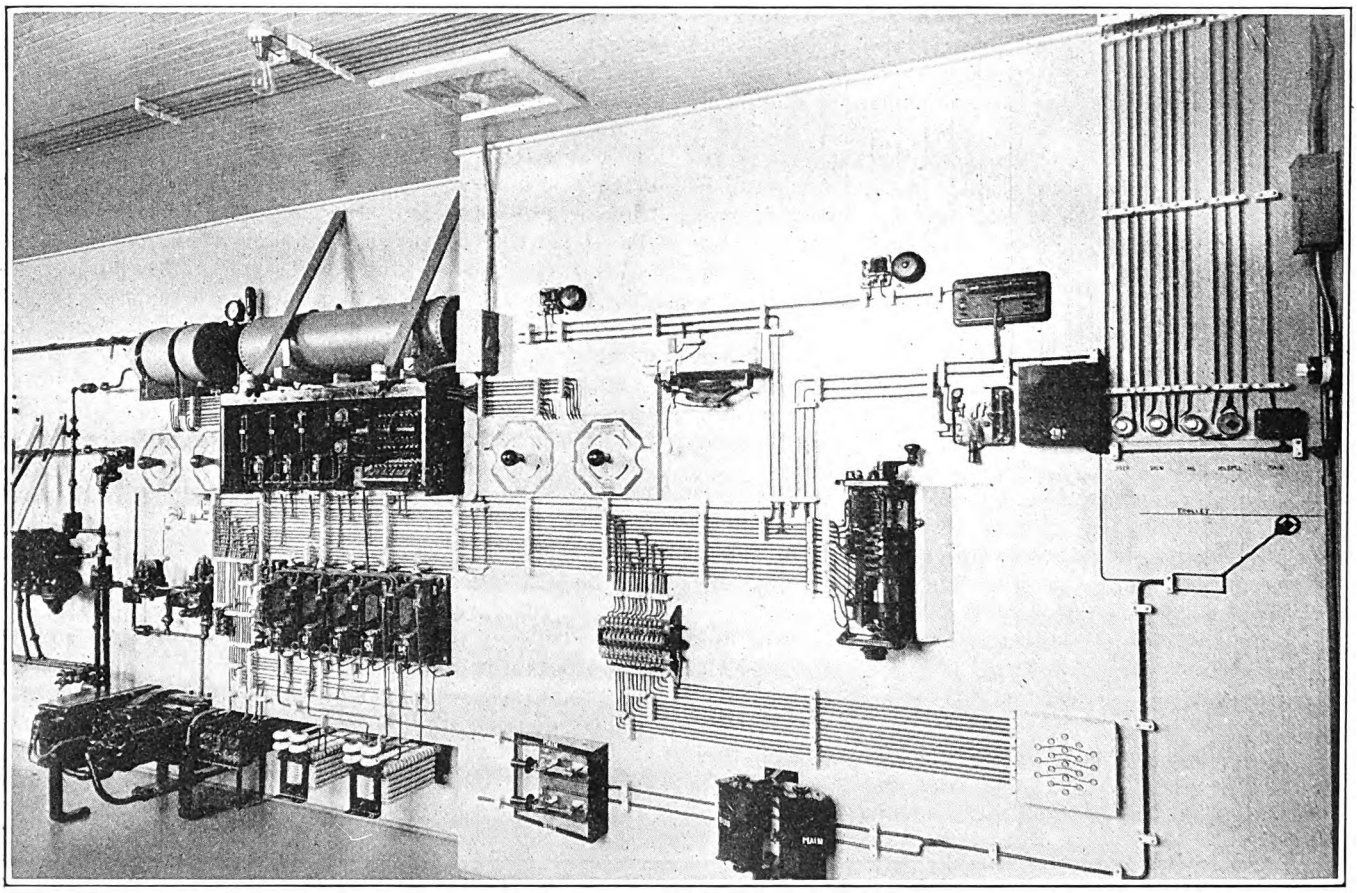
Los Angeles Railway Provides New Instruction Room

Car Equipment Effectively Displayed for Instruction of Men in Both Mechanical and Operating Departments

THE mechanical department of the Los Angeles Railway, under the direction of Chief Engineer P. B. Harris, has completed and made ready for use an unusually well equipped instruction room. The entire car equipment is presented to the men in such a way that they can acquire a good working knowledge of the various parts. All of the important pieces of car equipment are included in the layout as well as circuits and switches for car signals, lights, etc. It is displayed in such a manner that it easily may be seen by the men.



All of the Important Elements of Electrical and Pneumatic Apparatus Are Effectively Displayed in This New Instruction Room of the Los Angeles Railway

The equipment of the multiple-unit or HL control type of car is installed on the north wall of the room set apart as the instruction room. This equipment is used on the "H," "K," "F" and "L" types of car, of which there are 327 in use on the Los Angeles Railway lines.

Both the wiring and the relation between various operating parts may be easily traced and demonstrated. Pilot lights are placed over each switch. Lamps inserted in the motor circuit show both series and parallel positions, and can be operated with the motor cut-out switch in a manner that is very much the same as when in actual service.

Main and interpole field coils are easily distinguished by different colors, and the complete motor wiring can be traced during demonstration to the men.

The signal bell system for both single unit and train operation is demonstrated and the wiring traced.

A complete car lighting system including sign lights is installed on the ceiling. This system is operated by a set of switches placed in the same manner as on a car. All wiring is open.

The air equipment is complete and all operations can be demonstrated and explained. The department intends to install the K control equipment as well as the HL.

An 18-ft. desk is placed about 5 ft. from the equipment for the use of the class in making notes and diagrams and for spreading out their blueprints or charts for study.

Selected men in the mechanical department will be given a complete course of instruction on this equipment. This course will consist of a series of short lessons extending over several months. Men will be required to make notes and diagrams and pass an examination after the course is finished. Only those mechanics who can pass a satisfactory examination will be given an opportunity to work on multiple-unit equipment. Many requests have been made from men outside the mechanical department, including a large number of trainmen, for the privilege of attending classes, so arrangements are being made to extend this privilege to as many as possible.

Those who are working directly with the equipment, either in inspection, maintenance, trouble shooting or operation, will be given first consideration for instruction.

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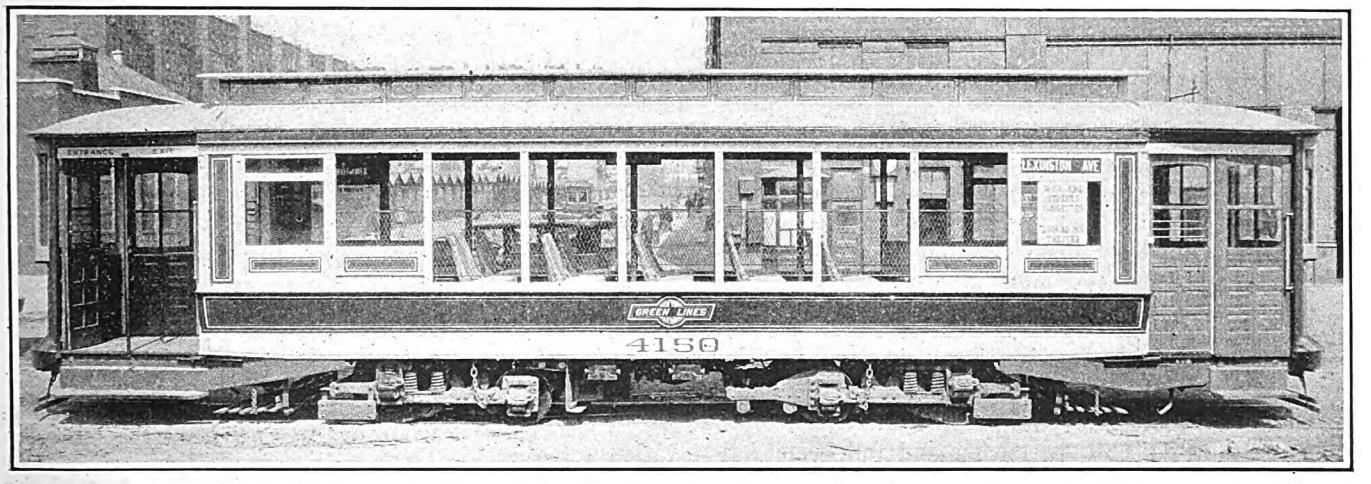


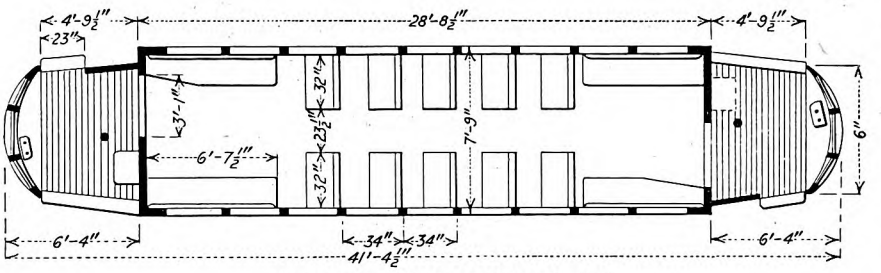
In This Convertible Car the End Side Panels Are Stationary, but the Others When in Place Are Held by Bolts and Nuts

New York Railways Experiments with Convertible Car

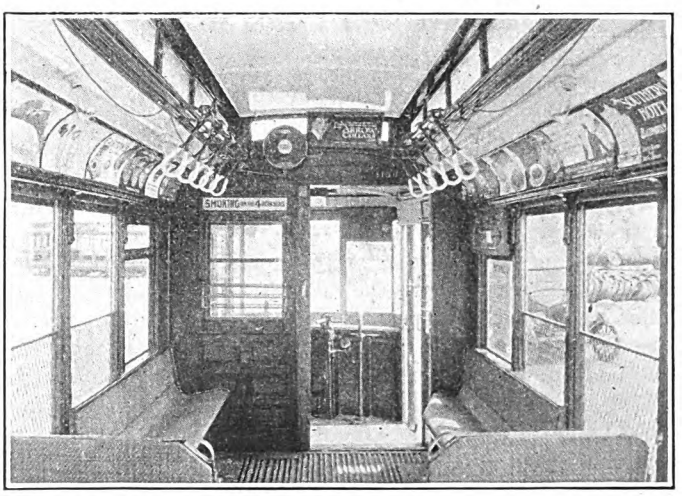
Novel Design Developed in Shop from Open Car to Avoid Use of Duplicate Bodies—Features Are the Method of Attaching the Side Panels to the Side Posts and the Use of Easily Detachable Platforms

UNDER the conditions of short-haul riding, which makes up a considerable proportion of the business on the lines of the New York Railways, open cars are considered to be attractive to passengers in summer. This, together with the difficulty of carrying out any extensive physical improvements under the receivership which existed for some time, accounts for the presence of 180 cross-bench open cars on the New York Railways property. After the receivership was lifted, in 1925, the obvious limitations of this type car, combined with the high storage cost of duplicate equipment in New York City, led to consideration of possible improvement.

The solution for this situation seemed to the management to be a car having, as far as possible, the desirable features of the open car, so as to attract the short-haul rider, yet capable of being changed with the approach of winter to a closed car of the standard type. This naturally meant a convertible car, with removable side panels, and this is the type of car which has been developed by the company for experimental purposes from a



Floor Plan of Reconstructed Car



The Interior View at the Left Shows the Arrangement of Seats, that at the Right the Method of Tapering One Longitudinal Seat at Each End to Provide a One-Piece Door with 37-In. Opening

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former open-bench car. It differs, however, from other well-known cars of this type in several particulars, notably in the method of attaching the adjustable side panels to the side posts.

As shown by the illustrations, the adjustable panels extend from the letterboard down only to about opposite the top of the seat cushion, leaving a permanent lower panel about 18½ in. high, measured from the floor line. This permanent lower panel was adopted partly on the idea that it would be more comfortable for women passengers and partly to permit the use of a truss for the side sill. The adjustable panels are of wood and have two sash. The lower large sash is permanently fixed in the panel and the upper narrow sash is capable of being dropped. This plan permits additional ventilation for mild days in the spring and fall besides that afforded by the louvres in the monitor deck.

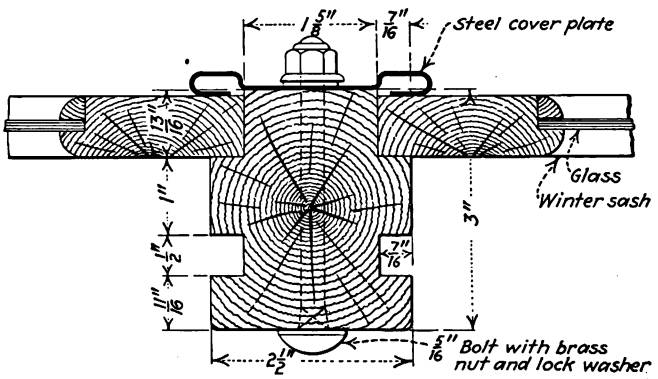
The adjustable panels described are seven in number on each side of the car, leaving two post spacings at each end on each side. This end spacing is permanently closed. The spacing next to this end panel has a lower solid permanent panel and a shorter adjustable panel with sash. The purpose of the lower permanent panel is to protect and conceal from the outside the backs of the longitudinal seats, of which there is one on each side at each end of the car.

When the panels are out the space between the side posts is fitted with a wire frame 24 in. high. This height was chosen as being just sufficient to prevent a child standing on the seat from leaning out beyond the side of the car.

The method selected for attaching the adjustable panels to the side of the car was chosen because it promised to provide a tight fit which would keep out draft in winter and permitted the use of attachments which would not rattle in summer. Briefly the panels are held in place by a steel plate, No. 16 gage, attached to the side posts by bolts. The vertical sides of these plates are bent over in U form, so as to provide continuous tension against the sides of the panel. The bolts which hold these steel plates to the side posts are fitted with brass nuts and lock washers as they are exposed to the weather.

The construction of the platforms is an interesting feature of the car. The framework upon which the convertible car was reconstructed, as stated, is that of the old open car. This meant when the car was changed to a closed car that platforms of ample length for entrance and exit had to be added at each end of the body. These platforms, which are 6 ft. 4 in. in length, are independent of the framework of the car and are arranged so that they can be detached in case of injury and another platform substituted. They are supported on each side by a ⅜-in. plate knee, attached to the side sill by five bolts. The platforms are fitted with Kass safety tread, both on the floor and on the steps. The latter are of the non-folding type.

Following the practice of both the New York Railways Corporation and the Third Avenue Railway on lines where there is a great deal of short riding, there are no platform doors, but there is a bulkhead between the body of the car and each platform. This bulkhead has a single sliding door, with 37 in. wide opening, the door being on the brake side of the car at each end. As the door opening is nearly half the width of the car, the left-hand rear longitudinal seat and the right-hand



Section Through Side Post Showing Steel Cover Plate for Holding Side Panels in Winter and Wire Screens in Summer

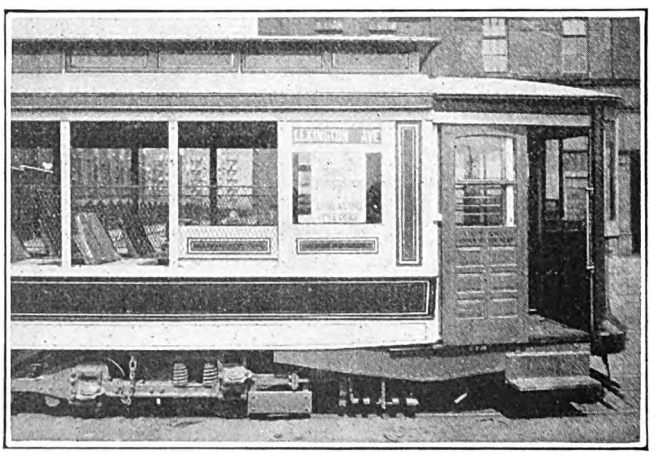
front longitudinal seat are tapered in width toward the door to give aisle space.

Besides these four longitudinal seats, there are ten cross seats, giving a total seating capacity of 40 passengers. There is also one drop seat for use on the front platform. The backs of the cross seats have hand grips, and at each end of the car, over the longitudinal seats, there are five Rico retrieving handles for standing passengers.

The register is of the Sterling-Meeker make, but is operated pneumatically by an electric solenoid actuated by the conductor's foot. Line voltage through a resistance is used for this solenoid. All lighting and heater wiring is in conduit, terminating in a cable box. The rest of the equipment includes K-27 controllers, two Westinghouse 310 motors, Westinghouse circuit breaker and air brakes, air sander, Peacock hand brakes, Columbia brake rigging and Hunter signs.

The outside finish of the car is in green, with cream striping and cream above the water table. The weight of the completed car with winter sash in place is 33,500 lb. or 817 lb. per seated passenger. The weight of the former cross-bench open car from which this car was constructed was 29,670 lb. The new car is designed for two-man or one-man operation.

While this car is being tested in service, to determine the possibilities of the design, the company is planning to rebuild one of its closed cars along these same general lines. It then hopes to determine its future policy in regard to the type of car best suited to the requirements of its service.



The Platforms Are Supported on Knee Plates Bolted to the Side Sills. A Platform Can Be Removed by Taking Out Five Bolts on Each Side

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The Industry Needs a Modern Business Viewpoint*

Ample Opportunity Exists for Outstanding Success in the Electric Railway Business—Selling Sense Must Be Developed if Factors in the Way of Local Transportation Progress Are to Be Removed—Possibilities for Improvement of Equipment and Methods Have Not Been Exhausted

By Charles Gordon
Editor ELECTRIC RAILWAY JOURNAL

THERE is every reason to have faith in the possibilities of the local transportation business. I am convinced that this industry can be put upon a sound financial and operating basis. I look on the future with optimism. There has been no decrease in the desire of people to move about from point to point within their communities. In fact, there has been an enormous increase in this demand—so much so, that in even the smaller cities the outstanding problem of the day is to find space in which to move about. Surely under such conditions one must indeed be a pessimist to admit for a moment that the business of furnishing transportation for hire cannot be made of increasing service to the community and profitable to those who invest their money and energy in such an enterprise.

There is to my mind ample opportunity for outstanding success in the electric railway industry. Public transportation is a fundamental necessity to the development of modern communities. In most cities transportation development is notoriously behind the city's needs. That is because no industry will develop and expand until it has been put on a profitable basis.

I have no formula or panacea for eliminating all electric railway difficulties. There are, however, a number of considerations which suggest opportunities for improvement. Examination of these leads me to believe that we are just on the verge of an unprecedented period of local transportation development and prosperity but are held back today by our own state of mind and not by any fundamental defects in the industry itself.

I listened recently to a discussion on the need for courage, by men high in the industry's councils. Some of those present objected to any inference that electric railway men lack courage. In support of this contention was cited the fact that we have hung on in the face of most discouraging conditions and apparently insurmountable obstacles. But what else could we do? I would define that as perseverance and tenacity rather than courage. It takes courage to take the offensive. It takes courage to send good money after bad to build back an industry with nothing but faith in its possibilities as justification.

The industry needs imagination. It needs vision. It needs enthusiasm. It needs more self-analysis and more fundamental thinking. It needs to stop thinking poor. It needs to stop splitting pennies. It needs the nerve to demand rates of fare that will not only keep it out of receivership but will make it sufficiently profitable to attract new capital for extension and development.

Above all else we need a modern business viewpoint. We need to recognize not only that we are in a competitive business but that a selling sense is essential to the very existence of such a business.

THREE FACTORS THAT RETARD PROGRESS

There are today three general factors that stand in the way of local transportation progress. These are franchise restrictions, burdensome taxes and special charges like paving and street cleaning, combined with inadequate fares. Under franchise restrictions I have in mind primarily inadequate duration to permit proper financing and the inflexibility of many provisions that do not allow for changing conditions. I recently listened to a two-day discussion of these subjects at a sectional association meeting. Out of that meeting there came a thought which seems to warrant more than passing consideration. The general tenor of that discussion was a recital of what the electric railways should have. Organized effort was being made to convert public officials to a recognition of the needs of the transportation companies—not for adequate development and expansion, but for mere existence. At best these were mere expedients to give some measure of relief.

I tried to imagine myself for a moment in the position of one of those public officials. Assuming that he is an honest and conscientious public servant, harassed by the exigencies of modern public life, I tried to look on the electric railway situation and the electric railway executive as he would see them. And out of all this came the realization that in every contact with an electric railway man, he is asking for something. He rarely comes to offer something new. He rarely comes to sell anything. He rarely has anything that would afford a popular issue to put before the public.

On most properties the subjects of franchise conditions, tax and paving burdens and rates of fare are of primary importance from the standpoint of making electric railway operation profitable. But these measures for relief encounter public apathy or open opposition when they are presented as measures for the relief of the railway as such. It remains, therefore, to find a way of securing the improvement sought by presenting the situation from a new angle.

The procedure seems comparatively simple. Grand Rapids has made rapid progress in this direction, and other properties would profit from application of the

*Abstract of a paper presented before annual meeting of Midwest Electric Railway Association, Denver, Col., July 8-10, 1926.

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same idea. The public judges electric railways and electric railway service by the condition of the cars and the employees with whom it comes in contact. Through improvement of the car itself rapid progress can be made.

Take, for example, an electric railway property which has an unfavorable franchise, heavy tax burdens and an inadequate rate of fare—and there are many properties in that condition. Introduce, if you please, a comparatively small group of new modern equipment of the finest type obtainable. Give all the publicity possible to the fact that the people of your city are entitled to such cars and the improved character of service which would be made possible with them. In other words, sell the idea that your town is entitled to such cars. Give the people a taste of the kind of transportation that can be given through improvement of the car—and then tell them how to go about getting it. Give them just a sample of what franchise improvement and an adequate fare would make possible. You are then "selling" the idea of transportation improvement rather than asking for it.

Many Cars Excessively Large

On many comparatively small properties there grew up years ago an ambition to operate large cars, of types comparable to those used in very large cities. There are today many of these cars in service. They are heavy, awkward looking and very expensive to operate. Although there may be a very short period during the rush hours when they are filled, they operate most of the day with a large number of empty seats. The operating cost is practically double what it needs to be. In addition the track construction is either needlessly expensive or is inadequate to withstand the pounding of heavy cars. Due to the high operating costs, headways are infrequent and many profitable prospective short-haul riders walk to their destinations instead of riding.

There is a peculiar tendency on the part of electric railway men to object to any inference that a car which was built before the inception of many modern improvements has outlived its usefulness. This may in part be attributable to the fact that an operator who has sponsored a given design of car considers it more or less a reflection on his own judgment and ability to admit that its operation is no longer justified. Operators take a peculiar pride in the very age of their cars, particularly if those cars were built under their direction. How often have you heard or used the expression "There's a real job of car building. That car has seen twenty years of service and all she needs is a new floor, a little patching here and there and she'll be as good as the day she left the shop." Mechanically, that statement may be justified. But remember that we are not operating street cars to see how long we can make them run. We are in the business of selling rides in them. And if your twenty-year-old car won't attract enough passengers at a sufficient fare to keep your ledger balance in black ink it is time that you either find one that will or make up your minds that street cars have outlived their usefulness.

We have for several years been trying expedient after expedient in the vain hope that conditions will change or that the public will recognize our predicament and come to the rescue with measures for our relief. That is to my mind a poor business conception. If the transportation business is content to accept public charity, it may expect to live in the poorhouse. If you don't believe there is something else in this business of selling transportation besides merely providing a vehicle that won't break down in service, try to explain to yourself why you traded in that two-year-old automobile this spring for a brand new model. Maybe friend wife had something to do with it. Remember at the same time that wives and mothers doing their shopping formerly made up a goodly percentage of that off-peak riding which is so rapidly disappearing.

There has developed no fundamental limitation in the street car itself. It is the most efficient and economical vehicle for hauling large numbers of people between their homes and destinations. If it is crowded out of existence, it will be because of our own lack of imagination, vision and courage and not because of any limitations in the vehicle itself. We have not begun to exhaust the possibilities for improvement of the car. There is not, so far as I have been able to find, any good reason why a car ride cannot be made sufficiently attractive to win ample volume of riding at a fare high enough to make its operation profitable.

But unless the industry arises to the need of the present situation, there is some danger that the street car may be swept aside by an impatient American public which demands change, improvement and progress. There has already grown up in the public press a dangerous tendency to stampede to the conclusion that street cars are an obsolete form of transportation. There are being held in New York City a series of hearings to determine whether certain street railways in that metropolis should be purchased by the city for the purpose of acquiring their perpetual franchises in order that the lines may be scrapped as nuisances and obstructions to traffic. The owners of those lines are willing to sell out on that basis. Even at the price of admitting that their lines are a nuisance and an obstruction to traffic they are trying to unload.

What Not to Do in Transportation

It would take far more than a brief discussion such as this to analyze the New York transportation situation. To my mind, however, it offers the best examples of what not to do in local transportation to be found anywhere in this country. It requires little more than a glance at the equipment on some of the lines in that city to understand the wave of street car obsolescence discussion that has found its way into the press.

Nor is all the obsolete equipment which is giving this industry a "down-at-the-heels" reputation in the eyes of the public located in New York City. Country-wide surveys of the equipment situation have been made and published. There is no need of repeating them here. I commend them to your most earnest consideration. It is on the basis of the condition which these figures divulge, however, that I qualify my optimism regarding the future of street cars with the warning that they are in danger of being swept aside by an impatient public which knows little and cares less about the unprecedented combination of difficulties and unfair conditions which have been faced by our industry.

There is just another word to be added on this phase of the subject. A survey of car purchases for the first six months of this year indicates a total of 802 new cars. At this rate there would be a total of 1,600 cars purchased for the year, approximately the same number as during 1925, the lowest for several years.

A moment's consideration shows where this is lead-

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ing the industry. Assuming that all cars bought are for replacements and not for additional facilities, it would take at least 45 years to renew cars now in service. Of these, 25,000 are now more than twenty years old. Many are even much older. It requires no prophetic power to anticipate what will happen to the industry long before its cars are permitted to get into any such condition as is indicated by these figures.

There, gentlemen, is a most serious situation. The industry is today faced in the wrong direction so far as the condition of its cars is concerned. Street cars cannot run forever and any attempt to dodge the facts is suicidal.

There is not a single instance in this country today of a property which has even begun to exhaust the possibilities of improving street cars and street car service. How can we entertain for even a moment, therefore, the thought that the street car has outlived its usefulness? It has merely been the victim of our own lack of imagination and initiative.

I am not for a moment overlooking the fact that many railway executives have maintained a dogged determination to find a way out for their properties, in the face of the most severe and discouraging handicaps, obstacles and limitations ever faced by any industry. But now that we can look back on the past it becomes evident that we did not awaken to the changed conditions that were developing until they fairly engulfed us. We had been trained in the operation of a monopoly and we were nearly helpless when faced with the entirely different situation brought about by the sudden growth of competition.

The electric railway industry is far from obsolete. There is ahead a bright future of expansion and development on a profitable basis. The application of good selling principles to the improvement of the street car will do much to open the minds of the public and of bankers to the possibilities, that with imaginative enthusiasm and courage can be pushed forward to accomplishment.

The Human Element in the Industry*

Success Is Possible Only with the Co-operation of Men and Management—The Men Must Be Given Full Knowledge of the Aims and Purposes of the Company If Loyalty Is to Be Expected of Them—Results in Kansas City Show It Can Be Done

By F. G. Buffe
General Manager for the Receivers the Kansas City Railways

ESSENTIALLY the electric railway industry depends on the human element. Approximately 60 per cent of its total operating expense goes for wages direct. It draws upon the skill and labor of almost every profession and craft. Its sales force, made up of its trainmen, is recruited from almost every walk of life. These men are all engaged in preparing and selling a service to an exacting public, under trying conditions.

F. G. Buffe

The very nature of the occupation, especially for the transportation force, requires long, uneven and exacting hours. A trainman must work while other folks sleep; he works hardest when other folks play. He is subject to the delays, annoyances and hazards of our increasing traffic problem. He meets with a public who too frequently show their cranky side when dealing with him. Of necessity he must obey a multiplicity of operating rules and be subject to strict discipline.

The electric railway industry operates and will continue to operate on a very narrow margin, and the morale of its organization can easily write the results either in black or red ink.

There was a time in the development of the electric railway industry, as well as in all industry, when little attention was given to the human side of the equation. Even today we find men in executive positions who, trained under the old régime, approach the human problem in their industry with a mental reservation. Too often it was the case that capital demanded that labor make all the sacrifices in times of stress and always that dividends come first. It is today generally admitted that no industry should survive that cannot and does not pay a fair wage.

It is almost elemental that every plan for the improvement of the human equation, for better co-operation, for more intelligent service, must start with the payroll as a fundamental. It is an indictment that too often men have had to band themselves into an organization to secure fair wages and decent treatment, rather than into an organization for making the business that pays them a success.

There is no especial quarrel with unionism. It is to be regretted that the old order of things often made it the only refuge for labor. As today organized and directed, it is part of our economic structure. I do not believe that in the electric railway world the same family feeling nor the same co-operation can be secured with a union as where there has been substituted for it a close working harmony between officials and men, where the men look to their officials as leaders rather than to outsiders. Personally, I would rather sit down around a table to work out problems than across one.

But union or not, the human element is there. It is only more complicated. Another factor enters to be taken into account. It is still possible to arouse inter-

*Abstract of paper presented before annual meeting of Midwest Electric Railway Association, Denver, Col., July 8-10, 1926.

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est and enlist co-operation. Confidence can be secured. Improvement can be made.

The average intelligence of trainmen is high. They make hundreds of daily contacts. They are not in a rut. They look at life through a moving window. They will follow a forward looking management if given the opportunity. Because of the nature of the work and our peculiar relations with the public, it is essential that we get a co-operation of intelligence and spirit as well as of work. A large national concern has analyzed the average payroll and divided men into three groups. Out of every 100 employees there will be 10 per cent good, who are co-operating to the extent of their power; 10 per cent bad, who are radicals, loafers and disturbers, and 80 per cent neutral. If this large neutral class can be educated and developed into the good class, given an inspiration and an incentive that will place a personal touch in their daily work, make them alert for the best interests of their company, any effort and money spent in this direction is well placed. Capitalized at 7 per cent, the payroll of the Kansas City Railways represents an investment of $70,000,000, or twice the physical value of the plant.

Men are naturally loyal to an organization of which they are members. There is a sense of pride in a connection with a progressive concern. Such loyalty can be turned to good account, but not unless a man knows something of the concern for which he works. There has been much said about laying our cards on the table and letting the public know what we are doing, but we certainly should consider that our own employees are entitled to more detailed information than the general public. Changes of policy, monthly reports, interesting facts in connection with the management should be taken up in general meetings and explained by the general officers of the company. Such a program stops gossip, kills false rumors, dissolves suspicion, arouses interest and adds to initiative.

There must be some method of self-expression; some voice in the conditions of employment; an opportunity for the adjustment of so-called grievances. Men should have some protection against the mistakes of authority when authority makes mistakes. The old days of "sending a man walking down the track talking to himself" just because some gang foreman said so are gone in modern industry.

Americans Expect to Look Out for Themselves

So-called welfare work is often a misnomer. Every upstanding American citizen prefers to look after his own welfare. He doesn't desire to be patronized or paternalized. Decent work rooms, proper toilet facilities, showers and clean-up facilities, good light, fresh air—these are not welfare. They are rights. They are as much a part of the job as benches, lathes and tools.

The industry, however, does owe to those who compose it an obligation to look after their interests. These obligations include protection in case of sickness or accident; medical attention; opportunity for saving and investment; co-operative effort in every line; family protection in case of death. These obligations should be fulfilled, but not handed to an employee as a matter of course. An employee should pay his proportionate part for the benefits received, and the industry should meet him half way in these payments. All such co-operative activity should be entirely in the hands of the employees, conducted by men elected from their number. The officials should help and assist by advice and counsel, but the actual handling of such matters, being paid for by the men, should be handled by them.

Such co-operative activities should be voluntary. A man should no more be made to take an insurance policy than he should be made to take a dose of castor oil. The opportunity should be given him, the benefits accruing to himself and his family pointed out, but if in the last analysis he cares to make his own insurance arrangements on the outside he should be permitted to do so.

With the help of the officials of the company, and guided and directed by the councils of the men, educational work should constantly go on. This educational work should not be entirely confined to those things that directly affect the property, but should cover a broader field and give to every man who desires to take the time and expend the effort an opportunity for self-improvement.

Company publications, when newsy and not full of bunk and propaganda, are very desirable, especially on a large street railway property where the various divisions and departments are scattered and where there are so many and varied forms of activity. Such a publication should not be a medium for company preachments, but should be an interesting magazine full of news for employees and their families.

Selection of Men Vitally Important

No obligation exists until a man is hired and becomes part of the organization. It would seem, therefore, that too much care cannot be taken in selecting applicants for employment. It costs no more to employ and train a 100 per cent physically perfect man than it does one who is imperfect. Every effort should be made to induct into the organization young men, because every large corporation, as time goes on, must face the problem of taking care of old and physically incapable employees.

In addition to an exacting physical examination, the applicant's record, his references and everything pertaining to his former experience should be carefully checked up, the idea being, of course, to secure the very best from the standpoint of training, environment, past record and association.

There is still a wide field for development in the various psychological and mental tests now being applied, and large companies everywhere are using certain of these plans in an experimental way.

Every employee of a company should feel that as a member of its organization he is part of the clan and that so long as he does his part he will be helped and protected in all of his affairs. Free legal aid and advice should be furnished; he should be protected against the rapacity of money lenders and installment sharks; he should be helped in time of personal trouble, and should naturally turn for protection in every case to his officials.

Fun and the social side of life should not be neglected, and every reasonable opportunity should be made to develop a harmonious family feeling in connection with the work. It is a good thing for the families of employees to become better acquainted with each other and with their officials. On the surface this seems unimportant and perhaps frivolous, but it has a most important place in the development of the human element.

Many of the books and papers I have read on this and allied subjects deal more or less entirely with men and

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very little with management, meaning by management the supervisory forces from straw boss up. Surely management is a most important part of the human element. The business is essentially one of departments under department heads. Such being the case, it is essential to success that there be harmony, good feeling and team work between these departments. Personalities must be secondary to the primary purpose. Complete information, responsibility for results, and enough latitude so that these results can be obtained, will develop energy and initiative. Our interior departmental policies should be well defined. These policies should be a sort of North Star, the guiding principle by which every department head and every supervisory official can steer, and within the limits of these principles a good man should be given every opportunity to work out his salvation without nagging or petty interference.

"Yes men"—may the industry be delivered from them. And executives who won't permit their officials and assistants, high or low, to differ with them or to prove they are wrong, which frequently they are. There are organizations where they "yes" the old man to his face and damn him in secret. They let him blunder into mistakes because they have been taught to say "Yes, sir," and no more. They are saving their ideas and their energy for the man who some day will have brains and patience enough to listen to their suggestions.

Staff meetings are important and should not be confined entirely to the higher department officials, but should at times comprise the entire official staff. At these meetings company policies, especially affecting the personnel problem, should be thoroughly explained and discussed. It is often the case that foremen and other immediate contact points with the rank and file are out of step with major policies. Often lesser officials are not really considered part of management, but occupy a sort of an anomalous position. This can frequently be the source of trouble and misunderstanding, and every point of direct contact should be protected against misplaced and ignorant authority.

Some Concrete Cases Cited

To keep down any imputation that this discussion is impractical, I am going to cite some concrete cases. Philadelphia, Brooklyn and Pittsburgh are examples of properties where the co-operation and support of the employees have been secured to a remarkable degree.

Kansas City began its present employee policies in 1919, when it had the opportunity to build up an entirely new operating organization following a severe strike in the early part of that year. Such success as the receivers and their officials in Kansas City have had has been largely due to the splendid functioning of its organization. It was one of the earliest properties in the country to adopt throughout a representation plan which provided for employee representation in every department of the property. It has a brotherhood, membership in which is voluntary, and to which 99 per cent of the employees belong. Each employee pays $1.75 per month, the company helps financially, and the following benefits are provided:

Sick and accident insurance of $15 a week for 52 weeks.
$1,000 life insurance with the option of purchasing $2,000 additional at the co-operative rate.
Free medical attendance.
Nurse service.
Co-operative grocery stores and meat shops.

The brotherhood also provides social entertainment throughout the year for all departments and maintains a seven-team baseball league as well as a capable band. It is managed entirely by trustees elected by the employees and is an active institution.

A building and loan association with assets of $500,000 is maintained and managed by the employees for the purpose of encouraging thrift and building homes for its members. Over a period of thirteen years it has never had a foreclosure.

The average age of Kansas City Railways employees is 37, and for the past six years every applicant for employment has passed a rigid, insurable examination.

Frequent meetings are held in every division, at which officials of the company explain financial statements, company policies and all other matters of interest.

All rules in connection with seniority, discipline, the purchase of uniforms, and other things affecting the men, are taken up and threshed out in the various committees.

There is a live company publication.

The men are helped in other ways, such as loans, repayable in installments without interest; free legal advice and help, and many others, small in themselves but important in the aggregate.

Encouraging Loyalty and Pride

Loyalty and pride in the company and the organization are encouraged in every possible way. The results have been outstanding. When jitney competition was the chief factor in bringing about the receivership, the employees invaded the City Hall, petitioned their aldermen, and could not have been more active if the property was their own. Several years ago an attempt was made by imported organizers to form a union. This was put squarely up to the men, and I have in my files resolutions from every division and department that no such activity be permitted, and that any man who was approached by an organizer and who did not report the matter to his superior officer be immediately discharged. When the property went into the hands of the court, the employees employed an attorney to intervene in the case and petition the court that there be no change in the policies as affecting their Brotherhood organization or their other co-operative activities. These are only examples of what are every week occurrences.

Here I want to emphasize again that this type of co-operation from the human element in Kansas City, Philadelphia, Pittsburgh and elsewhere can only be secured when based squarely upon a just, fair and equitable scale of wages. I don't mean fancy wages, because these are not in the picture either for capital or labor. They must, however, be based upon living costs and be comparable with other trades, taking the steady nature of street railway work into account.

I am not a believer in the implied idea that a job, wealth or social position make any difference in our elemental processes and emotions. Mankind has the same feelings, the same ideals, the same aspirations, the only differences being those of education and environment. Under the veneer surge the same hopes, the same fears. Only yesterday we were skinclad and fighting for existence in primeval forests against the forces of nature. Fair treatment, a proper recognition of the brotherhood of man, and absolute sincerity will avail against prejudice. That concern in any industry is fortunate when its human element, both management and the rank and file, work whole-heartedly together for its success in mutual respect and esteem.

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Here May Be Seen the "Kendrick" and Also One of the New De Luxe Buses

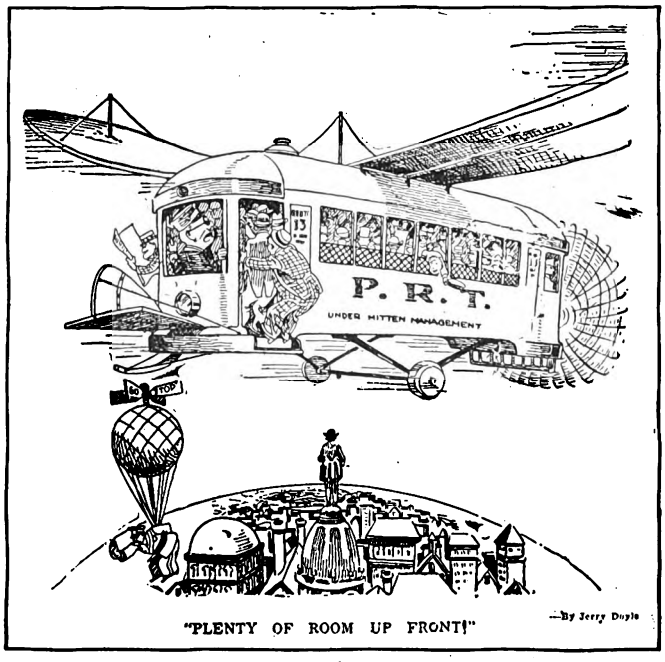
Wings the Latest Style for Railways

Philadelphia Rapid Transit Company Has Established a Regular Daily Passenger Air Service Between Philadelphia and Washington—This Is the First Commercial Service in the Country to Operate on Daily Schedules—Fokker Planes Used

EMERGING from its cocoon on the morning of Friday, July 16, the Philadelphia Rapid Transit Company's passenger air service spread its wings as an established institution. Twice daily in each direction flights are made between Philadelphia and Washington with large tri-motor Fokker monoplanes similar to the one used by Lieutenant-Commander Byrd in his successful flight over the North Pole. This marks not only the latest feat of the Philadelphia Rapid Transit Company in exploiting every conceivable form of public transportation, but it is also the first passenger air line in America operating on daily schedules.

Several days prior to the inauguration of the regular passenger service a member of the editorial staff of ELECTRIC RAILWAY JOURNAL made the flight to Washington. In this way a first-hand insight into the undertaking was obtained. This venture appears to be based upon a foundation of reliable service far removed from the realm of hit-or-miss. Back of it is the bulwark of the air mail contract received from the government, which will assist materially in placing the service upon a sound economic basis. The passenger rates established by the operators are sufficiently low to place the service within the reach of the average citizen, a condition essential to the continued popularity of the venture.

A particularly noticeable feature of the service is the high degree of comfort, which is easily comparable with that of the modern Pullman car. To one who has been used to bouncing around in the air currents with a small plane, the Fokkers give much the same impression as a dirigible in so far as stability of riding is concerned. And in the matter of safety the three Wright engines on the planes make the possibility of a forced landing almost unheard of. Any one of the engines could drive the plane for a time long enough to pick out an adequate landing place. Such factors as these, as they become generally known to the public, will remove much of the nervousness which many yet feel toward aërial transportation.



As the Artist of the Philadelphia "Record" Sees the Latest Venture of the Local Transit Company

The Philadelphia Rapid Transit Air Service, Inc., a subsidiary of the Philadelphia Rapid Transit Company, has been formed to handle the operation of the air service. Three of the planes have been ordered, two having been already delivered. These have been

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christened "Kendrick" and "Vare" and the third plane will be known as the "Hoover." At least for the present two regular trips every day will be made in each direction, the fare being $15 one way or $25 for the round trip, with a fifteen-day stop-over privilege. The distance covered is 125 miles and the flying time is one hour and a half each way. Each plane carries eight passengers, and 30 lb. of baggage may be transported by each passenger free of charge. Excess baggage is charged for at the rate of 25 cents per pound.

The planes leave from the Navy Yard flying field in South Philadelphia and Hoover Field in Washington but passengers are actually transported from center to center of each metropolis. Two de luxe buses have been purchased and officially dedicated to the air service. These leave the P.R.T. terminals at 237 Broad Street in Philadelphia and the Hotel Washington in Washington a short time in advance of the planes' departure and also meet the planes on arrival. The buses are small in size, being designed for the normal carrying capacity of the airplanes in passengers, baggage and mail. They are fitted up in much the same manner as the interiors of the planes. The latter are equipped with wicker chairs spaced for ample knee room, have inclosed cabins which make it possible for ordinary street clothing to be worn by the passengers, have also a lavatory and outside seats for the pilot and his mechanic.

Members of the air service personnel were carefully selected. Under the personal supervision of Anthony H. G. Fokker, designer and builder of the planes, will be the mechanical details of the service. He also is in charge of the flying and maintenance personnel and such men as Alton Parker, alternate pilot with Floyd Bennett on the recent Polar flight; Edwin Musick, former instructor in flying during the World War and formerly in the Havana-Key West service; and William DeWald, formerly a pilot in the U. S. air mail service and of long experience in European passenger service, have been selected as pilots. The operating manager is Victor Berteandias, one of the round-the-world fliers, chief inspector at McCook Field, and a member of Rickenbacker's famous war squadron.

The planes fly generally from 1,000 to 4,000 ft. above the ground, depending on the air conditions, and it is possible to get a very good view of the country-side between Philadelphia and Washington, as well as an excellent glimpse of the nation's Capitol upon the approach and departure from Washington. Practically the only sensation of speed which one receives comes at the moment that the planes leave the earth, for the closed-in cabin shuts out the rush of wind which normally adds thrills to the airplane jaunt. It is probable that passengers will soon come to look upon the air service in the same matter-of-fact light with which one now embarks upon a steamship or steps upon a trolley.

Effective Work in Telling the Public

An intensive publicity campaign has been carried on by the Philadelphia Rapid Transit Company in connection with its venture. Bulkhead signs and dash posters were used in the street cars and thousands of copies of *Service Talks* were distributed among the patrons, describing the air service in detail and urging the public to make early reservations for the trip. Reservation blanks were attached to *Service Talks* and it was stated that seats would be held until the morning preceding the date of flight for persons filling out these cards and handing them to conductors or cashiers of the company, or mailing them in directly to the air service headquarters. Thousands of postcards have also been printed and are distributed free of charge. These carry a picture of the "Kendrick," the first of the planes to be completed, and are designed especially for transportation by air mail, as a place for a 10-cent air mail stamp has been designated.

The air service is, of course, a particular feature of the Sesqui-Centennial, but if it continues to meet with the success that has been accorded it during the first week of operation it is probable that it will be continued indefinitely. Passengers have been very enthusiastic in their comments on the trip and a large number of reservations have been received for dates in the near future. It is possible for P.R.T. not only to advertise the air service widely on its cars and buses but the airplanes themselves are very effective heralds of the company and its varied activities. The legend "P.R.T. Air Service" appears on the undersides of the wings and on the bodies of the planes and is readily discernible from the ground. The buses also carry the insignia of the new service.

On This Trip Thomas E. Mitten, Chairman of the Railway's Board, Entertained Several Guests. Mr. Mitten Is Standing Fourth from the Right of the Group

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The Readers' Forum

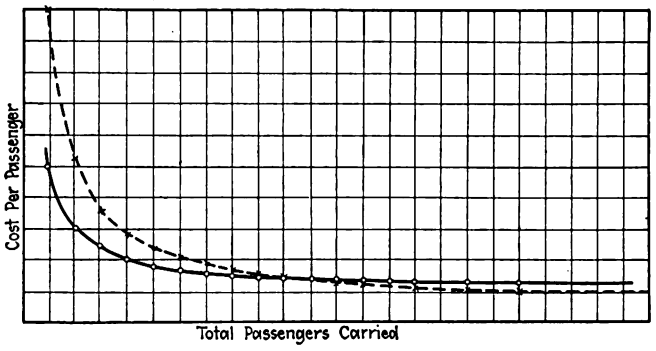
Graphic Study of Bus and Trolley Economics

NEW YORK, N. Y., June 10, 1926.

To the Editor:

Discussion as to the fields of the motor bus and the trolley includes psychological, social and economic matters. Some persons prefer to ride in a bus even if dilapidated and operated over poor pavements rather than to go the same distance in a new trolley car operated on new tracks. Most property owners prefer a bus line to a trolley in the street in front of their homes. On the other hand, trolleys have returned to the community more in taxes per passenger carried than have bus lines.

Each of these several factors in the long run is given an economic value. Any facility will eventually cease to exist unless it can operate without financial loss. The initial capital outlay per unit of transportation is higher for a trolley line than for a bus service. For each type the purely operating costs increase almost proportionately to vehicle mileage. In each case the total operating cost starts from a constant (larger for trolley than for bus) and increases roughly proportionately to the number of passengers carried, the rate of increase being greater for a bus line than for a trolley. The unit cost per passenger would then decrease from infinity with zero passengers in each case so as to approach some constant. The rate of decrease would be different for each type and the constants would differ. At first the bus service would be the most economical. Finally, the two lines would intersect and then the trolley would become the cheapest.



This Diagram Is Entirely Hypothetical. It Assumes One Starting at Twice the Initial Cost of the Other but Increasing at One-Half the Unit Rate per Unit of Passengers Carried

Typical curves are very close together throughout a long range and in two individual cases may be reversed in position at any given total of traffic because of slight differences in managerial efficiency or of advantageous initial capital outlay.

Just so long as a bus line can be started with an initial outlay less per unit of transportation capacity than a trolley, just that long will it be cheaper to start transit operation with buses. Just so long as the rate of increase of cost per passenger carried is less for trolley lines than for buses, there will be a theoretical point beyond which it will be cheaper to operate a trolley than a bus line. If it ever happens that the rates of increase per passenger become the same for the two types of transit, then the bus will supersede the trolley because the bus will be the cheaper for all traffic quantities. Until that time is reached there will be an economic field for each type of vehicle.

As between subways and either buses or trolleys, the same economic conditions hold as between trolleys and buses. With large masses of passengers and high density a subway will always show lower costs than either buses or trolleys. In a special case it might chance that the line for a subway system in the diagram would cross both bus and trolley graphs before the trolley graph crossed the one for buses. In that rare case there would be no economic reason for a trolley system.

In some circles there is a feeling often expressed that buses will eventually supersede trolleys in all cases. This may actually happen under the economic conditions outlined above, but the idea is also unfortunately being pressed where those economic conditions do not hold. It is something like the pressure to substitute bridges and tunnels for ferries without giving the ferry a proper chance in the light of modern technical knowledge. Undoubtedly a good deal of scrapping of trolley lines needs to be done at the present time, but what is necessary is probably largely a scrapping of old-fashioned, inefficient management methods or systems rather than a substitution of a new type of vehicle for an old one. This is believed to be a matter of importance in these times when the inclination seems to be to embark on huge expenditures for changes of physical system rather than the improvement of existing operating methods.

ERNEST P. GOODRICH,
Consulting Engineer
Regional Plan of New York and Its Environs.

School for Bus Operators at Akron

RECENTLY the Northern Ohio Power Company, Akron, Ohio, instituted a school of instruction for bus operators, realizing the great need of instruction in that field. The bus end of the transportation department really has grown so swiftly that it has run away from much of the old-time régime and is about to stand alone as a unit on the merits of its popularity. School is held at Kenmore shops at the hours of 9 a.m. and 7 p.m. on Monday and Thursday of each week. Twenty-one lessons with three reviews constitute the full course of instructions. Illustrated lectures of 30 minutes each are given by representatives of the mechanical department, the transportation department and the safety department.

B. S. Paugh, J. K. Petty and G. H. Shaw represent the respective departments composing this school and act as instructors. Every phase of mechanical equipment, bus operation and safety is being taught in this school. It is planned to extend the instructions to all operators, old and new, and the co-operation of every man on the payroll is expected in order to make the venture a success.

Strict attendance is requested of operators when notified to attend the school, for it is purely a bus operator's school, intended for none other than the bus operator and designed to make his work more pleasant for himself in every way. One of the chief purposes of this school is to prepare the operator thoroughly for his daily work and to increase the feeling of good will between himself and the public which he serves for his company.

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Maintenance Notes

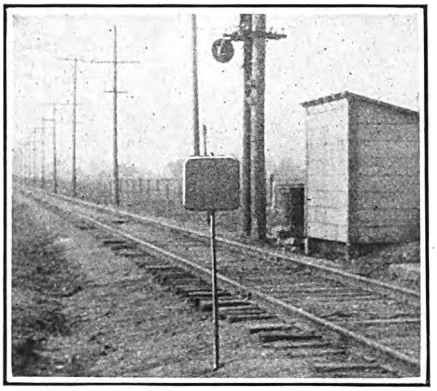
Metal Signal Flags for Section Crews

BY D. H. WALKER
Assistant Engineer T. H., I. & E. Traction Company

FOR some time past the section crews of the Terre Haute, Indianapolis & Eastern Traction Company have used cloth flags for posting along the track where work was being done. Each crew was equipped with two yellow flags for slow and two green flags for proceed signals. These flags required frequent replacement because of bleaching by the sun and natural exposure to weather conditions. Also in a strong wind they would often wrap themselves around the pole on which they were fastened and thus become practically useless as signals. This created a condition of danger for those working on the track, as the motormen were sometimes unable to distinguish the signal.

As an experiment we had made up in our shops a number of metal flags to replace those of cloth. These metal flags were 15 in. x 15 in. and made of sheet tin. A §-in. solid iron rod about 5 ft. long was flattened out at the top and the sheet tin riveted to the rod. The rod was left projecting about 3 in. above the top of the flag in order that green or yellow lanterns could be hung on this when necessary to maintain signals after dark. The cost of making one of these metal flags was approximately the same as the cost of the cloth flags.

As a result of our trial we equipped each section with metal flags. So far they have lasted several months and show no deterioration. We expect them to last for at least a year and probably longer, while the cloth flags on most sections had to be replaced about three times a year. In addition, when metal flags become too dim for use as the paint scrapes off they can be repainted at a negligible cost and would then be as good as new again. The iron rod can be firmly planted in the ground and will remain undisturbed as a warning signal. Both section crews and trainmen are better satisfied and safer with the new flag and our cost of maintenance for this item has been cut to a fraction of the cost of the cloth flags.



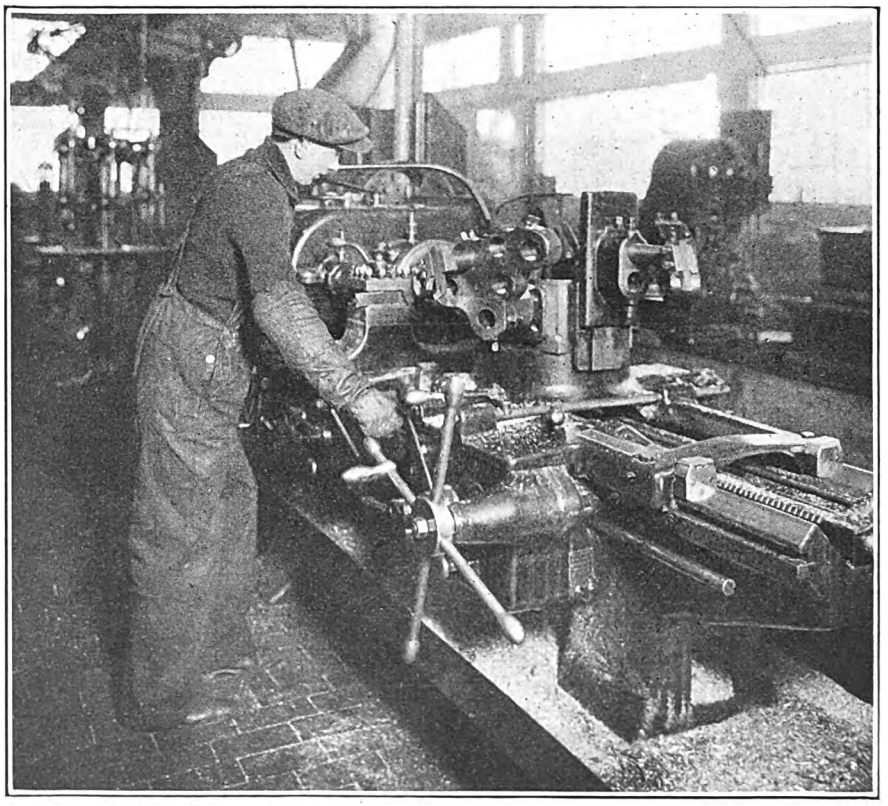
Better Protection for Trackmen Has Been Secured on the Lines of the T. H., I. & E. Traction Company by the Use of Metal Markers Instead of Cloth Flags

Trolley Wheel Mileage Increased by Better Contact

BY INCREASING the tension with which the trolley wheels press on the wire from 30 to 35 lb., the Department of Street Railways, Detroit, Mich., has increased its average yearly mileage per wheel 20 per cent. The pressure is measured at a height of 18 ft.

Turret Lathe Saves Time in Finishing Bearings

FINISHING of bronze armature and axle bearings keeps a No. 2-B Foster turret lathe busy in the shops of the Department of Street Railways, Detroit, Mich. The accompanying illustration shows the set-up for doing this work. In the finishing of bearings the tools for the several machining operations are clamped to the turret head of the carriage. Axle bearings are finished in pairs. With the outside sections finished at the small end the remaining portion and the flange end can be finished and the bearings bored accurately without removing them from the lathe. The same method applies to the boring of armature bearings except, of course, that these are solid instead of being in two parts.



Finishing Bearings in a Turret Lathe in the Machine Shop of the Department of Street Railways, Detroit, Mich.

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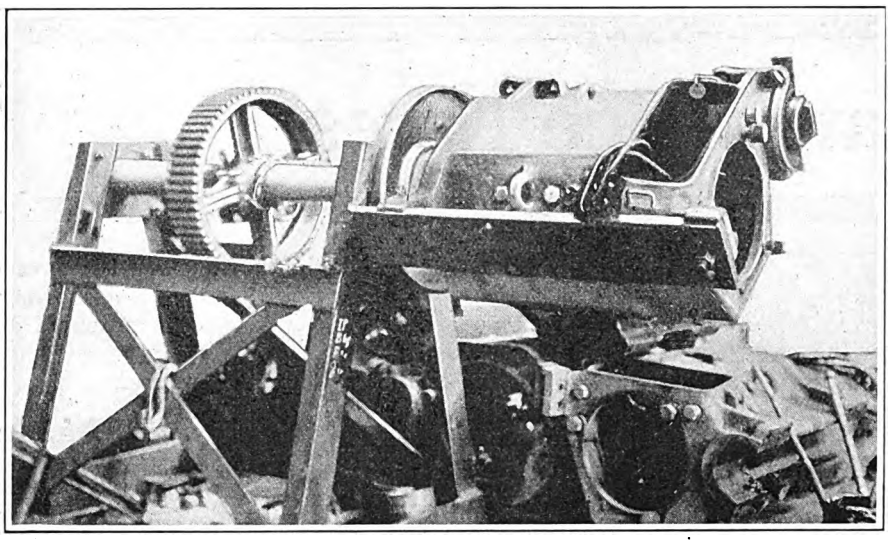


The Motor Frame Can Be Rotated to Most Convenient Position for Work

Handy Support for Motor Frames

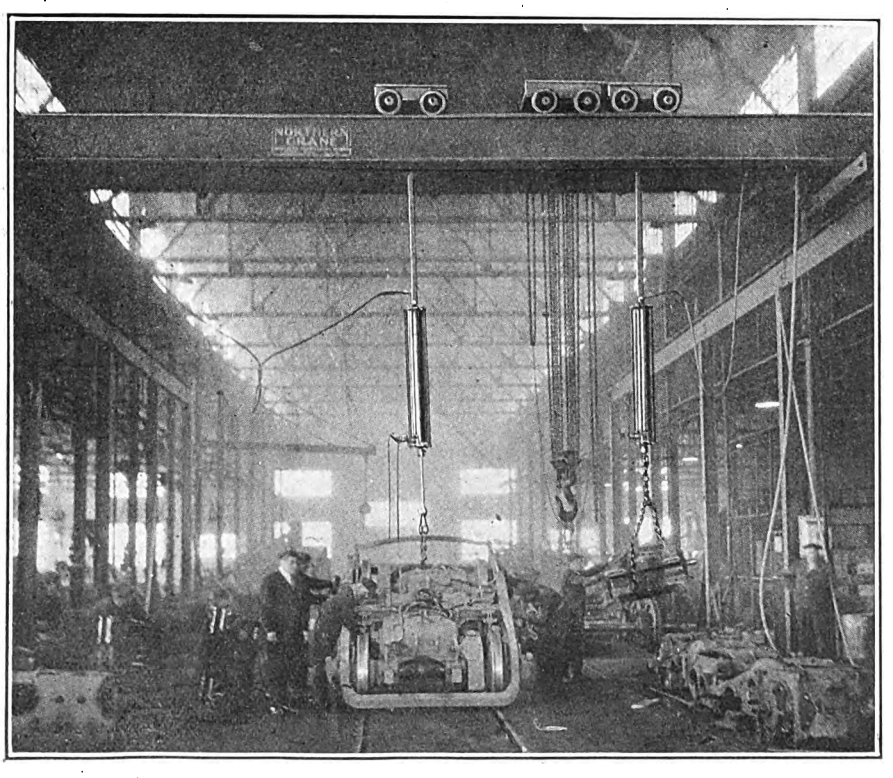
FITTING pole pieces and mounting field coils in railway motors is often a back-breaking job. To overcome this the United Railways of St. Louis built the device shown in the accompanying illustration for holding the motor frame in any desired position while workmen do this. The standard is constructed of structural steel members and an old car axle is used to support the jig on which motor frames are bolted.

An old gear is fastened to the axle and used for a handle to turn the apparatus to the desired position or as a lock to hold it securely. This lock is a short section of angle steel that can be slipped along the frame and made to engage between the teeth of the gear, thus effectively locking the apparatus in place.

Added Efficiency for Overhead Crane

GREATER usefulness has been obtained from an overhead crane in the shops of the Detroit United Railway, Detroit, Mich., by adding two air hoists. The crane, which is used in the truck overhauling shop, is of 20-ton capacity. Originally it had a chain hoist. Besides this, two air-operated hoists have now been installed, one on either side of the chain host, and carriages have been added for moving these crosswise of the bridge. In lifting out truck parts the air hoist can be used independently. Where heavy loads are to be lifted the two can be operated in unison. The chain hoist is also available where needed.

Aside from the two air-operated hoists, a 1½-hp. electric motor has been installed for operation back and forth over the overhauling bay. This motor is controlled from the floor.



Usefulness of This Crane in the Shops of the Detroit United Railway Was Increased by Adding Air Hoists

Improved Babbitting Room in Los Angeles

REBABBITTING armature, axle and journal bearings in the shops of the Los Angeles Railway, Los Angeles, Cal., is being handled in a section just completed. The equipment now provided is fully modern. It consists of three electrically heated and automatically controlled unit melting pots and a preheating oven. In addition an electrically heated Oakite cleaning tank and various metal-lined bins and benches made in the railway shops have been installed.

The company's experience with babbitted bearings has shown that to obtain best results the lining metal must be heated to a definite temperature which must be kept uniform. The heating parts of the new equipment have thermostatic control which when set for the correct temperature is then automatically maintained at that point. The cleaning tank, heating parts and the preheating oven were installed in order to obtain the most efficient step-by-step process of production.

In rebabbitting bearings the old shells are first placed in the Oakite cleaning tank and boiled until clean. They are then placed in the melting pot and all of the old babbitt metal is melted off. If the bearings are allowed to cool they are placed in the preheating oven and heated to the proper temperature for tinning. The bearings while hot have a flux applied to the surface which is to be babbitted so as to make the tinning metal adhere properly. All other surfaces are swabbed with a clay wash to prevent the adherence of the tinning metal. Mandrels and forms are provided for the different types of bearings. The bearing shell is placed in the proper fixture and the babbitt is poured into it with self-skimming ladles to insure a clean and

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uniform texture of the metal. The bearing is allowed to cool gradually and the shell is then removed and machined to proper size.

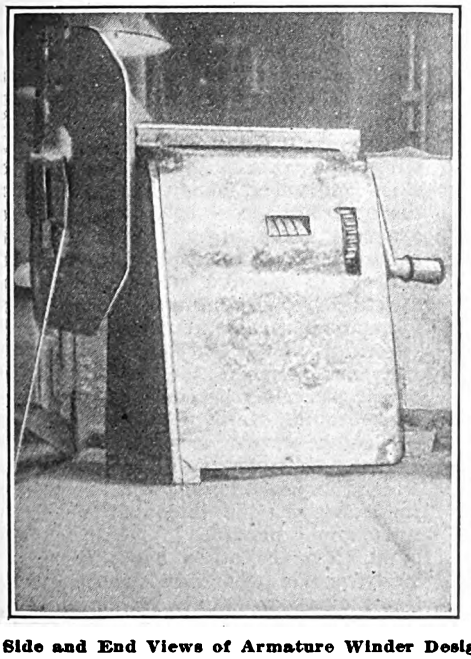
Winder for Heater Motor and Smaller Armatures

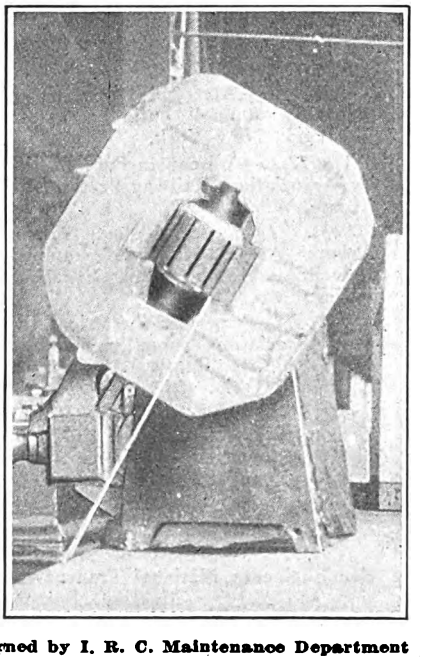
WINDING armatures for heater motors and other smaller motors is accomplished with a considerable economy of effort in the shops of the International Railway, Buffalo, N. Y.

As compared with the old method of winding armatures by hand, which permitted of handling scarcely more than one armature a day per man, the new equipment developed in the I. R. C. shop for this purpose is now able to cope with eight or more units per day and but one man is required to handle it.

The winding machine was designed and constructed in the I. R. C. shops. It is equipped with a counter which counts the number of turns. The winder is turned by hand, the wire being fed from a spool and guided into the slots by means of a large shield as shown in the accompanying illustration. The shield is so curved that the wire is guided into the armature slots with practically no attention from the operator, thereby making for great speed in winding.

As each slot is completely wound the armature is given a fractional rotation and the winding continued in the next slot. Normally the machine is fastened to a wood block of considerable weight to give it stability.





Side and End Views of Armature Winder Designed by I. R. C. Maintenance Department

New Equipment Available

Portable Resistance Arc Welder

CONNECTIONS for 400 to 600 volts and current steps from 30 to 210 amp. are provided on a new design of portable resistance type arc-welding machine just placed on the market by the Ohio Brass Company, Mansfield, Ohio. Resistance elements are arranged on the unit plan, fourteen individual units being used. Any one unit may be removed without disturbing the other units. Instead of one complete element block for the full 600 volts two element blocks are used and these are insulated from each other electrically as well as from the main plane. Voltage stress on any one insulator is thereby cut in two and the possibility of shorts between resistance wires is greatly reduced.

A unique design of support for the resistance element has been worked out, as illustrated. Two designs of insulators shown by letters *A* and *B* are used, so that when assembled they are easily held together by a support frame *C*. The resistance wire *D* is coiled and placed in the porcelain insulators as shown. An especially prepared heat-resisting porcelain has been developed to provide maximum strength, both mechanically and electrically, at high temperatures. Holes and sharp corners are avoided in the insulators in order to prevent breakage under rapid temperature changes. The insulator surface which supports the resistance coil *D* is made convex in order to give the greatest heat dissipation possible. The supporting frame assembly is so designed that if for any reason any of the porcelain should become cracked or broken it is still held in place and the resistance coils cannot short or ground.

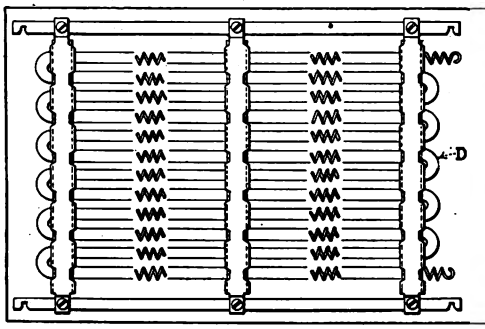
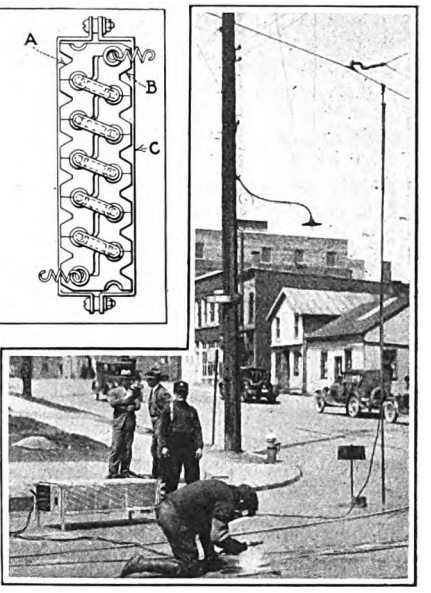


Diagram Showing the Design of Supports for the Resistance Element



One of the New Portable Resistance Welding Machines in Operation

The coil support spacings are very short, being approximately 5½ in., which prevents any undue stretching or sagging of the resistance coil. The element illustrated is a 300-volt 30-amp. unit. Control of the machine is provided by a push button on the electrode holder and a contactor is supplied in the arc circuit. The main frame is grounded. These features afford the operator complete protection from shock. The machine is built wide and long.

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Association News & Discussions

Fares and Fare Collection Methods Demand Careful Consideration*

Fares Must Be High Enough to Insure Fair Return on Investment—Various Combinations of Rates Being Tried—Theory Must Give Way to Practical Business Demands

BY BARNEY W. FRAUENTHAL
General Traffic Agent United Railways of St. Louis

THE ideal street car fare should accomplish two things, one possibly as important as the other. First it should produce sufficient revenue to pay all expenses, to provide for depreciation and to pay a return on capital invested in the property, sufficiently high to attract new capital. Secondly, it should be in convenient form and low enough to attract car riders.

A careful balancing of values is indeed necessary in devising a fare structure that will satisfy both of these conditions. Most electric railway operators know through experience that a fare can be so low that insufficient revenue comes in to pay operating expenses, much less a return on invested capital. There is no doubt that the "Dark Ages" through which the electric railway industry has just passed, were caused primarily by the fact that fares did not increase as fast as expenses. The franchises under which a majority of the companies operated called for a flat rate of fare, usually 5 cents, with no provision for adjustments to meet changing conditions. In other words, the ordinances governing fares were inflexible. With the formation of public service commissions the jurisdiction over fares was placed in their hands, with power to make such adjustments as were necessary to put the street railways back on their feet.

In St. Louis the adult fare was 5 cents up to June 1, 1918, at which time a 6-cent fare went into effect. On Sept. 20, 1919, the fare was changed to 8 cents cash, two tickets for 15 cents, seven tickets for 50 cents and 50 tickets for $3.50. On April 10, 1920, the fare was reduced to 7 cents cash and 7-cent tickets. We are still operating under the latter fare, although application has been made by the receiver to the Missouri Public Service Commission for an increase to 8 cents cash and two tickets for 15 cents, the reason for applying for this increase being the fact that we are not earning a fair return under the 7-cent fare. The actual return for the year 1925 was less than 5 per cent. Thus you will see that at present our fare in St. Louis does not satisfy the first requirement of an ideal fare, namely, furnishing sufficient revenue. Although our tokens sell for the same price as the cash fare, 7 cents, nevertheless for the year 1925 tokens sold amounted to 61.84 per cent of adult passengers. For the first four months of 1926 the percentage is 62.16.

Our tokens are sold at all car sheds, at the company's general offices, at various banks and stores and by the conductors. All parties other than the railways company sell these tokens merely as an accommodation to the public and receive no compensation. We have signs in practically all cars urging passengers to buy tokens in order to save time. A large portion of our tokens are sold by giving them as change to the passengers.

Some differentiation should be made between the frequent and the infrequent rider, since the former contributes a more dependable support to the railway. However, the patron whose riding consists in going down town in the morning and home at night, six days a week, with no additional riding, is not particularly profitable to the company, since he tends to make the load factor low. About the only reason for wanting his business is to keep his automobile off the streets in the rush hours. If this passenger, in addition to his travel to and from work, will make several additional round trips each week, he will become a valuable customer.

In order to encourage such frequent riding railway managers usually favor a considerable concession in the price of tickets when sold in quantities, provided the cash fare is high enough to permit this, which it is not in St. Louis. Most railway men doubtless favor a 10-cent cash fare with tickets sold in half dollar or dollar lots. This would eliminate much change making, and because of the convenience of the dime would induce many to pay the cash fare who, if the cash fare were 8 cents, would buy tickets. Car riders may be divided into two classes. To one class the amount of the fare is of little or no importance. To the other it is of considerable importance. The convenient 10-cent cash fare would appeal to the former, and the low ticket fare to the latter.

From the passenger's standpoint, there is probably no great choice between paper and metal tickets, some doubtless preferring the former and others the latter. From the company's standpoint, metal tickets have the advantage of being repeatedly usable, and the disadvantage of higher first cost.

In a number of cities the weekly pass has been used with varying results. From the passenger's standpoint the pass has the following advantages: Many petty cash transactions are eliminated. There are no transfers to bother with, and the passenger can pick his own route. Stopovers may be made without extra cost. If the passenger rides frequently, money is saved. Since the use of the pass is voluntary, there are no disadvantages. From an operating standpoint the pass has the advantage of speeding up fare collection and thereby speeding up the cars, which of course reacts in the passenger's favor.

From a financial standpoint the effect of the pass may be either favorable or unfavorable. Many people spend more per week on carfare under the one-fare-per-ride system than they would under the pass system. With respect to these people, the introduction of the pass would mean a loss to the company. On the other hand, there are many people who ride exactly twelve times every week, always in the rush hour. If these people can be persuaded to buy passes at the price of, say, fif-

*Abstract of paper presented before annual meeting of Midwest Electric Railway Association, Denver, Col., July 8-10, 1926.

COMING MEETINGS OF *Electric Railway and Allied Associations*

July 28-30—Electric Railway Association of Equipment Men, Southern Properties, semi-annual meeting, Chattanooga, Tenn.

Aug. 11—Metropolitan Section A.E.R.A., annual outing, Pelham Bay Park, New York.

Aug. 12-13—Wisconsin Public Utility Association, Railway Section, La Crosse, Wis.

Sept. 17-18—Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

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teen rides, and to double their riding, the company will gain, since the additional rides will be taken in the non-rush periods, when they can be handled at little or no additional expense. In some cases the pass may prove an effective weapon of competition, since the pass holder will not be prone to divide his patronage. The pass is sometimes criticised on the ground that it is a departure from the principle of measured service. The usual flat fare is open to the same criticism.

Methods of preventing transfer abuses usually include one or more of the following: Directional indication, indication of lines to be used, time limit and date.

The round-trip abuse arises from the fact that in some cases three or more lines must be used in making a legitimate one-fare journey. Many people are not above taking advantage of this to go to their destination and return on a single fare. This abuse can be minimized by indicating upon the transfer the lines to be used, provided that the conductor knows where the passenger boarded the car. With the pay-as-you-pass and pay-as-you-leave system in vogue in many cities, the conductor does not know where the passenger boarded the car, and the line-to-be-used indication is not much protection.

The time limit is the most effective means of combating long stopovers. The worst form of this abuse is that in which the passenger rides to work in the morning and home in the evening for one fare, making both trips in the rush periods. In order to work this it is necessary either to use one of the round-trip schemes previously mentioned, or to exchange transfers with other persons working in the same place but living on different car lines. Enforcement of the time limit will, of course, eliminate this abuse, even though the issuing conductor is liberal in his allowance.

Rapid fare collection is an important desideratum in street railway operation, and this cannot be secured if any large amount of information must be placed upon the transfer by the issuing conductor and read by the lifting conductor. Therefore, the transfer system should be as simple as possible. In view of the difficulty of preventing transfer abuses which involve routes and directions, it may be good policy to adopt a transfer system which will be very liberal in these respects, and to concentrate on the time limit. Practically all the round tripping done for one fare under such conditions will be in the non-rush hours, and it is possible that the increase in travel brought about will balance the losses due to such round tripping. The conductor, being able to watch the time limit more closely, will be in a better position to check the dangerous abuses mentioned above in connection with long stopovers and use of transfers by other than the issuee. Elimination of disputes over routing will promote good public relations and tend to increase travel. Fare collection will be speeded up with consequent improvement of service.

In many cities a charge of 1 or 2 cents is made for transfers. This is discriminatory, since the passenger who uses a transfer does not necessarily travel a greater distance than another passenger who does not transfer. The fact that one trip requires a transfer while another does not is due to the arrangement of operated routes. The transferring passenger is not responsible for this arrangement and should not be penalized for it. However, a transfer charge may in some cases be a more painless way of getting revenue than a higher fare. Also, it permits a somewhat lower fare and thereby permits the company to get more short-haul, non-transfer business, especially where there is some other competitive public carrier.

In some cities, largely in order to meet competition, transfers have been abolished entirely and the fare reduced. It sometimes happens that exact justice must be abandoned in order to keep a business going on to please its customers.

New Englanders Visit Casco Bay

ON THURSDAY of this week a delightful summer outing was enjoyed by 300 members and guests of the New England Street Railway Club at Portland, Me. Through the courtesy of the Cumberland County Power & Light Company the Steamer *Aucocisco* was placed at the service of the club for the day without charge, and free transportation from and to Boston by motor bus was supplied by the Mack Motor Truck Company. The party assembled under the leadership of President Fred D. Gordon of Portland and members of his staff in the Cumberland County Company at 10 o'clock Thursday morning on the steamship pier serving the Casco Bay Boat Lines, and a most enjoyable trip down the harbor to Long Island followed. Amid the ocean breezes outdoor sports occupied the program for the rest of the forenoon, the events including contests for both men and women, a baseball game between the supply men and the railway men, which the latter won by a score of 10 to 7, and a tug of war in which the victory was reversed. After a shore dinner a steamer trip around some of the outer islands of Casco Bay was greatly enjoyed and the party disbanded at the close of an informal supper at the Falmouth Hotel. Many prizes for athletic events were awarded, among the doners being the following: Mack Motor Truck Company, White Motor Truck Company, John A. Roebling's Sons Company, American Steel & Wire Company, Westinghouse Traction Brake Company, General Electric Company, Westinghouse Electric & Manufacturing Company, National Railway Appliance Company, Electric Service Supplies Company, Griffin Wheel Company, Albert & J. M. Anderson Manufacturing Company, Bemis Car Truck Company and Graybar Electric Company. Charles H. Wood was chairman and George E. Haggas vice-chairman of the entertainment committee.

American Association News

Entertainment

MEMBERS of the entertainment committee of the Amreican Association held a meeting in the office of President J. J. Stanley of the Cleveland Railway on July 9. Those present were S. J. Cotsworth, chairman; J. H. Alexander, chairman of the exhibit committee; C. H. Beck, H. L. Brown, J. A. Dewhurst representing Charles Gordon, H. B. Doyle, R. N. Graham representing C. S. McCalla, R. A. Hauer, H. J. Kenfield, George Stanton, J. B. Stewart, Jr., J. V. Sullivan, W. F. Weh representing C. M. McCreery, F. H. Wilson, Paul Wilson, by invitation of the chairman; J. W. Welsh, executive secretary, and F. C. J. Dell, director of exhibits. Mr. Dell was appointed secretary of the meeting.

A committee was appointed to investigate the possibilities for golf, consisting of F. H. Wilson, chairman; Paul Wilson and W. F. Weh.

On the subject of music several propositions were considered. Full plans have not been made, but it was decided to have organ music in the Auditorium four times daily.

Sub-committees have been appointed to take charge of the entertainment each evening, as follows:

Monday—S. J. Cotsworth, chairman; C. H. Beck, H. L. Brown, C. C. Castle, George Stanton, J. B. Stewart, Jr., J. V. Sullivan, Paul Wilson.

Tuesday—H. L. Brown, chairman in charge of all arrangements, to select his own committee.

Wednesday—T. O. Kennedy, chairman. All exhibits are to remain open for the Cleveland public.

Thursday—E. P. Waller, chairman; W. J. Stanton, F. V. Gantt, K. A. Simmon, L. J. DeLamarter, Charles Gordon, H. B. Doyle.

In the absence of Chairman C. M. McCreery the report of the ladies' entertainment committee was read by Mr. Weh. It was decided to appoint a committee of Cleveland women to have complete charge. The following were appointed: Mrs. W. F. Weh in charge and Mesdames L. G. Sircoulomb, C. E. Ballou, J. H. Alexander, Morris Ireland, W. P. Hurst, Raymond Snell, H. K. Huack and G. M. Kryder.

Coffin Contest Closes Aug. 2

IN THE rules for the Coffin Award contest, Aug. 1 has been set as the latest date upon which presentations will be received. Since this year the date falls on a Sunday it has been decided that it will be only fair to accept presentations which are received on Monday, Aug. 2.

All presentations should be addressed to J. W. Welsh, executive secretary American Electric Railway Association, 292 Madison Avenue, New York City.

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The News of the Industry

Strike on Interborough Subway Lines in New York Collapses

The strike of motormen and switchmen on the subway division of the Interborough Rapid Transit Company, New York, is over. The strikers, 300 of them, tacitly agreed on the night of July 22, without taking a vote, to go back to work at 10 o'clock on the morning of July 23. The action was taken at the Manhattan Casino, Eighth Avenue and 155th Street, after the leaders had announced the strike was lost and had cast blame on Mayor Walker, although the Mayor had come into the situation only at the eleventh hour.

During the evening the leaders of the strikers were in communication with Superintendent Abraham L. Merritt of the subway division of the Interborough. They planned to march in a body to the Interborough yards at Lenox Avenue and 147th Street on the morning of July 23 and ask to be taken back on the basis on which they were employed when they walked out.

No announcement was forthcoming from the company following the action at Manhattan Casino, but a statement made on behalf of Frank Hedley, president of the Interborough, during the afternoon, indicated that all the men would be taken back if they came as individuals. James L. Quackenbush, counsel for the company, has said frequently that the General Council of the Interborough Brotherhood will have to be consulted before the three men who led the strikers are put back to work.

On Thursday the Interborough again succeeded in increasing its service. While it will take some time to rearrange schedules, it was believed the subways would be back on normal operation either during the rush hour late Friday or within the ensuing twelve hours.

No Strike Likely in Chicago

William D. Mahon, international president of the Amalgamated Association, arrived in Chicago on July 15 from Detroit to assist in reconciling the demands of 14,000 surface lines employees, 5,000 rapid transit trainmen and 900 employees of the Chicago, North Shore & Milwaukee Railroad with the counter proposals of the several employer roads. He heard the grievances of the men at a joint conference on that day.

Conferring with Britton I. Budd, president of the Chicago Rapid Transit Company, on July 16, the union head was told that the company would stand firm on its demand for reduction of 5 cents an hour in pay instead of an increase of 5 cents asked by the men.

The elevated employees are seeking a wage increase of 5 cents an hour and insurance provisions, while the trainmen of the North Shore Line are asking an increase of 6 cents an hour. Similar demands are being made by trainmen of the Chicago Surface Lines, who now receive a maximum wage of 75 cents an hour. The demands of all but the Surface Lines employees have been rejected.

Bandits Get $8,000 East St. Louis Pay Roll

Robbers held up a car of the East St. Louis & Suburban Railway at Nineteenth and State Streets, East St. Louis, Ill., at 1 p.m. on July 19 and escaped with about $8,000 in cash which was being carried to a downtown bank. Five men who accompanied the money were lined up by the robbers.

A relay system of automobiles was used by the robbers in escaping. They drove from the scene in a green Lincoln and at Seventeenth and Broadway transferred the money to a Ford roadster. Two of the men went north to the Tri-Cities in the Ford, two drove away in the Lincoln, while the other two transferred to a large blue car, which went east on Broadway.

The money had been collected from the carhouses and was placed in two valises in the center of the trolley, which was being run as a special.

Substitutions Sought in Buffalo

The International Railway, Buffalo, N. Y., applied on July 16 to the Public Service Commission for approval of a declaration of abandonment, authorized by the stockholders of the company, covering that part of its line on Delaware Avenue in Kenmore from near Kenmore Avenue, and running along Delaware Avenue to the connection with the Buffalo-Tonawanda-Gratwick line near the Ellicott Creek Bridge in Tonawanda and that part of the line starting from Delaware Avenue and Schell Road in Tonawanda about 1,283 ft. in Schell Road to the end of the track.

The company says that this part of its line is no longer necessary for the successful operation of the road or convenience of the public. Receipts from transportation of passengers are considerably less than expenses and there is apparently no prospect of an increase in traffic sufficient to provide an adequate return on the basis of existing fares.

The International Bus Company also filed a petition for a certificate for the operation of a bus line in Tonawanda, Kenmore and the town of Tonawanda under local consents granted to it. It is planned under the application to extend the Delaware Avenue bus line now operated in Buffalo from the Buffalo city line and provide a substitute transportation service, if abandonment of the railway is permitted.

New Franchise Deal Wanted in Sacramento

The Pacific Gas & Electric Company has presented a proposal to the City Council of Sacramento, Cal., providing for six major bus line extensions and changes in its present system based on an anticipated 7-cent fare and conditioned on the understanding that the city authorities will acquiesce to an application to the Railroad Commission for an increase in fares.

The extensions and changes would serve growing districts and are based on a survey conducted by the company. The survey was the outcome of a conference held several weeks ago by city officials with Wiggington Creed, president; P. M. Downing, vice-president, and other officials of the company.

The proposal is signed by Mr. Downing, who says that if the fare is increased to 7 cents the system will earn 3.5 per cent on its present capital investment under existing conditions. He said:

> Our proposal, as outlined in our conference on May 5, is that we provide the additional bus service as set forth with the understanding that the City Council acquiesce in our applying to the Railroad Commission for an increase in fares.

The proposal reiterates previous statements of the officials that they are unwilling to make any additions to their present street railway trackage.

The bus line program proposes the establishment of new lines to serve the junior college district, territory north and east of McKinley Park, territory in the vicinity of 57th and M Streets, and T Street from 28th Street to 57th Street. A "crosstown" line over 39th Street from D to Third Avenue and 35th Street would serve territory en route and provide interconnections.

No Dealings with Indianapolis Strikers

Federal and state courts in Indianapolis, Ind., have taken the center of the stage in the strike of unionized trainmen of the Indianapolis Street Railway. Court action is being started as the result of vandalism that has marked the recent progress of the strike, including the dynamiting of cars and the injuring of passengers.

Hope of arbitration of the demands of the strikers is waning. It is understood Governor Jackson feels there is no occasion for him to act in the absence of an emergency and Mayor Duvall said he felt he had no power to take any action, regardless of the passage of a resolution by the City Council on July 19 calling on him to take steps looking toward a settlement.

Four men were arrested Tuesday by agents of the United States Department of Justice charged with vagrancy and

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held for investigation in a probe of dynamiting of cars.

No statements were made by officials of the company following their declaration Monday that they would decline to deal further with any of the strike committees looking to arbitration or any settlement other than that provided in the contract the company holds with its men.

In the meantime service seems to proceed as usual. The company now is turning down applications for employment and all cars are in operation, even the special one and two-trippers used in the morning and evening rush hours. Apprehension seems to be felt only late at night.

The Peoples Motor Coach Company, which formerly stopped its service at midnight, now operates during the entire night.

At night police ride virtually every car, and in every case where dynamite has exploded beneath the cars a policeman was riding the car. Thus far none of the police officers has been injured, but the vandals in each case have succeeded in making their escape before the officers on the cars could obtain any information of value.

John M. Parker and Robert D. Armstrong, vice-presidents and organizers for the Amalgamated Association, appeared in federal court at Indianapolis on July 22 and pleaded not guilty to contempt. They were charged with violating the federal injunction prohibiting them taking part in the strike in Indianapolis. Both pleaded for time, through their attorney, and were given until Monday to answer the charges. They were released on $10,000 bond each. The court informed the attorneys for the men that he wished all street car cases settled before the end of next week. He said he wanted attorneys to be ready, in case he overruled answers to the information, to try the case by next Wednesday.

By Thursday evening a total of eight, including the organizers, had been arrested on contempt charges, in connection with acts of vandalism. The other six pleaded guilty. They are being held without bond.

In talks to the other six men arraigned, Judge Baltzell informed them that they had a perfect right both to organize and to strike, if they so desired, but he intended to put a stop to acts which jeopardized property rights or endangered the lives of passengers.

All Chicago Riding Records Broken

Revenue rides on the Chicago Surface Lines during the month of June totaled 132,980,301, exceeding the corresponding month last year by 7,295,392. The average daily rides for the month, 4,432,677, reached the highest total in the company's history. During the three days of the International Eucharistic Congress, which was held in Chicago from June 20 to June 24, the surface lines carried 15,055,000 passengers, the largest total ever recorded by any single transportation agency in the city in a similar period.

This is the thirteenth consecutive month showing an increase in riding on the surface lines. During the first six months of the year there has been a gain of 29,313,867 over the corresponding six months of 1925. This increase, company officials declare, is greater than the increase for the entire twelve months of last year.

The income account for the month of June is as follows:

	1926	1925
Gross earnings.....	$5,135,965	$4,829,004
Residue receipts ...	1,137,160	982,493
Divisible receipts...	446,005	301,169
City's 55 per cent.	245,303	165,643
Company's 45 per cent	200,702	135,526

Reappraisal of Rochester Properties to Be Argued

As a result of a decision by Supreme Court Justice Adolph J. Rodenbeck the city of Rochester has won its fight to bring to trial this fall its long-standing suit for a reappraisal of the Rochester lines of the New York State Railways under the service-at-cost contract between the railways and the municipality.

Justice Rodenbeck denied a motion of the railways to dismiss the city's petition for a revaluation. The corporation maintained, through its attorneys, Harris, Beach, Harris & Matson, that the city, by delaying to ask for a review of the appraisal in the first two years of the service-at-cost contract, had forfeited its right to ask for such a review. The court ruled:

> There were issues raised in the motion that could not be determined save by a trial and the city is not barred by any delay or by its acts from raising questions in this suit.
>
> The record now in court shows that there is a question of fact as to the proper rules used in appraising the property and to the fairness and reasonableness of the appraisal arrived at.

It is expected that the suit will come up at the equity term of the Supreme Court in October in Rochester.

James F. Hamilton, president of the railway, said he would not appeal Judge Rodenbeck's decision and that the railways would be ready for trial in October.

The question has been hanging fire for more than three years. Five years ago the properties of the New York State Railways in Rochester were appraised at $19,216,000. The service-at-cost contract was put into operation then, with these valuation figures as a basis.

The Bureau of Municipal Research made a study which led to a recommendation that the appraisal be tested in court and a complaint against the five-year period of values which the appraisers used to determine reproduction costs. The bureau claimed the appraisers based their findings on figures for pre-war and war-time years when peak prices were in order, both for labor and material.

Mr. Hamilton maintained that a reappraisal would show the figure to be nearer $27,000,000 than $19,216,000.

The point at issue in the motion before Justice Rodenbeck had no actual bearing on reappraisal values but simply concerned the issue whether the city by its delay had not forfeited its right to ask for a review.

Franchise Hearing Held in Kansas City

Mayor Albert I. Beach was the principal inquisitor at the first Council hearing on the proposed new franchise for the successor to the Kansas City Railways, Kansas City, Mo., under reorganization. The old franchise, now in operation, has eighteen years yet to run, but the new owners and at least a portion of the city fathers deem certain changes in the franchise provisions beneficial to the successful operation of the system in future.

In answer to other questions, W. G. Woolfolk, who will be president of the new company, said the entire property of the Kansas City Railways will be owned by the Kansas City Public Service Company, but that the property in Kansas City, Kan., would be operated by the Wyandotte Street Railway, the securities of which will be owned by the Missouri corporation.

Councilman Gossett, who introduced the new ordinance, appeared to think that the entire system should be owned and operated by a single company. He asked Mr. Woolfolk if there is anything to prevent that plan being used. The latter agreed that it might be arranged. Mr. Gossett declared that he wanted that phase of operation provided for, but he mentioned none of his reasons for such demand.

Mr. Woolfolk told the Councilmen that securities will be more readily salable under a new 30-year franchise than under operation in the remaining eighteen-year period of the old franchise, and that new money would be brought to the property, benefiting both the company and the city. He also pointed out that the company is asking that the bus franchise be made a part of the railway franchise and that any excess return from the bus system would tend to reduce the car fares.

Mr. Woolfolk further discussed the question of service at cost, the 8-cent maximum fare provision of the proposed grant and the possibility of the lower fares as provided therein, and pointed out that if a higher fare was ever needed, it would have to be obtained by application to the Public Service Commission.

He said that it is planned to spend $2,000,000 during the next three years in rehabilitation of the system. Eventually all power will be purchased.

New Louisville Grant Introduced

Following discussion for several months of the terms of a new franchise ordinance for the Louisville Railway, a proposed new grant was recently introduced in the City Council and placed in the hands of the revision committtee.

The new ordinance would require a 7-cent fare for two years, or the same rate as is now being paid, but without a sliding scale. It also provides for transfers from bus lines of the company to street cars. This would permit suburban service to be increased through using the buses as feeders.

The Board of Public Works would supervise the management of the railways and the company would pay about $10,000 a year to the board to defray administration expenses.

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Chestnut Street Subway, Philadelphia, Nearer Reality

Virtually the last obstacle to the construction of the Chestnut Street subway has been removed with the consummation of an agreement between the Philadelphia Rapid Transit Company, Philadelphia, Pa., and the franchise-holding underlying transit companies.

The covenant indicates an early start on the tube, which eventually will mean the removal of surface tracks from Chestnut and Walnut Streets between the Delaware River and 22d Street. Consent of the Public Service Commission, which is understood to be ready to approve the program, and passage of a track removal ordinance by City Council are all that remain for complete approval of the project.

City officials say there is to be no change in the original agreement between the city and the Philadelphia Rapid Transit Company under which the municipality would build the $20,000,000 tube and the transit company would undertake to cancel the debt by paying the interest and sinking fund charges. Under that agreement the subway would become the transit company's property when the indebtedness was fully paid.

Traffic Census Under Way in New York

A traffic census is being conducted in New York to find out from each one of the 1,500,000 workers in Manhattan by which of 36 different lines of transportation he or she goes to work in the morning and the time of arriving at work. With this information it will be possible to make better use of existing transit facilities. If the necessary readjustments in riding habits can be brought about it is believed the capacity of present facilities can be increased 25 per cent.

Railway Operation Suspended by Hartford-Springfield Line

The Hartford & Springfield Street Railway, Warehouse Point, Conn., has discontinued all railway operation and will substitute further bus service as rapidly as permission can be secured from the State Department of Public Utilities.

For some time railway service has been operated between Hartford and Springfield on Saturdays only. The Warehouse Point-Rockville branch operated daily. Originally the Hartford & Springfield lines totaled 35 miles, the main line extending from the Massachusetts-Connecticut state line to East Windsor, Conn., where it connected with the Connecticut Company's lines. This line totaled 14 miles, and from the terminal points operated over the Springfield Street Railway lines and the Connecticut Company lines. The Warehouse Point-Rockville branch is 13 miles long and the Somersville-Thompsonville line 8 miles long.

The company has been authorized to operate buses between Phelps Corner and Rockville via East Windsor. It has been operating buses between Hartford and Springfield for some time. The new bus route will parallel the railway and the fare per zone will be 10 cents, with the exception of Rockville, where 15 cents will be charged to protect the Connecticut Company.

What to Do Before the Doctor Comes

Officers of the Detroit chapter, American Red Cross, recently presented certificates as first-aid instructors to ten employees of the Department of Street Railways, who formed the winning team in the recent state competition conducted by the Red Cross at Ore Lake, near Brighton. Of 35 teams entered the railway men captured first, second and third places and won a handsome loving cup.

First-aid instruction has been emphasized by Col. H. U. Wallace since he became general manager of the department. This first team will now organize other teams throughout the entire system and a team will be entered in the national Red Cross competition in the fall.

Emil Helferich is captain of the first-aiders and his team follows: John McGinity, Paul Penn, Harry Van Scriber, Muriel Shunk, Al Wiler, Steve Jass, George Duff, H. O. Johnson and G. Ruedesluix.

The Red Cross will have a national competition in Michigan this fall and the municipal railway hopes to bring home another cup.

Traffic Survey of Birmingham by Ross W. Harris

Ross W. Harris, traffic expert of Madison, Wis., has been selected to make a city-wide traffic survey of Birmingham, Ala., at a cost of $30,000, the expense to be borne jointly by the city and by the Birmingham Electric Company. It is expected the study will take from four to six months to complete. The problems to be studied include a thorough investigation into the parking question, downtown traffic congestion, street car routing and turning places, street car delays and residential traffic.

Wage Contracts Renewed

The Auburn & Syracuse Electric Railroad, Syracuse, N. Y., has signed a contract with its employees for one year, running from May 1, 1926, to May 1, 1927, on the same basis as last year's contract. The employees had asked an increase of 8 cents an hour.

The agreement between the San Antonio Public Service, San Antonio, Tex., and its employees covering wages and working conditions was renewed on July 1 by the clause which provides that all conditions shall remain the same for another year without change.

The Butte Electric Railway, Butte, Mont., has entered into a new agreement with its employees effective for a period of two years from May 1, 1926. The old wage rates will be continued.

Negotiations for a new contract between the Chicago & Interurban Traction Company, Chicago, Ill., and its employees have been postponed, but will be reopened some time later this fall. The wage scale, which expired June 30, will be continued in effect.

The wage agreement between the Rochester & Syracuse Railroad, Syracuse, N. Y., and its employees has been renewed for one year from May 1, 1926, without change.

The Syracuse Northern Electric Railway, Syracuse, N. Y., has renewed the agreement with its employees for one year from May 1, 1926, without change.

The agreement between the Richmond Light & Railroad Company and Southfield Beach Railroad, Borough of Richmond, New York, N. Y., and their employees, which expired June 1, 1926, has been renewed under the same terms and conditions as in effect last year.

The agreement between the Empire State Railroad Corporation, Syracuse, N. Y., and its employees has been renewed for one year from May 1, 1926, without change.

Public Utility Speakers for Ohio Schools

Emphasizing the fact that school students, and the public generally, cannot be too well informed on public utility matters, Vernon M. Riegel, State Superintendent of Public Instruction for Ohio, has sent a letter to all school superintendents in the state suggesting that they arrange for utility speakers to address student bodies. This letter was sent as a result of a conference which Fred J. Bollmeyer, director of the Ohio Committee on Public Utility Information, had with State Superintendent Riegel. As a result school talks have already been arranged through the Ohio committee. A copy of the letter follows:

> It is always helpful to be able to give students in the latter years of school authoritative information about forces and factors which condition our economic life. There is woeful ignorance as to the functioning structure of modern industrial society. In this industrial society our public utilities hold a somewhat unique position.
>
> The public cannot be too well informed on public utility matters and needs information on all phases of the problems involved. There has been organized an Ohio Committee on Public Utility Information for the purpose of disseminating information from the utilities' standpoint about four of these industries, electric light and power, gas, telephone and electric railways.
>
> The Department of Education does not want to thrust speakers upon the public schools. It does, however, want the schools to know that this committee stands ready to send speakers—men and women experienced in public utility work—to schools upon request. There would, of course, be no expense attached to these addresses before student bodies.

Extension of Winnipeg Grant Likely

It now appears certain that the Winnipeg Electric Company, Winnipeg, Man., will receive an extension of its franchise. Under the charter the city must give the company six months' notice of its intention to purchase the street railway, and if it fails to give such notice the company receives, automatically, a five years' extension of its franchise. No action has as yet been taken by the city in connection with the purchase of the railway, and in view of the fact that the time limit for serv-

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ing notice expires in August, it is regarded as certain that the company will receive its extension.

Although the company has not yet served notice of its intention to do so, it is rumored that it will apply for a longer extension than five years, in order to permit it to carry out satisfactory financial arrangements to take care of extensions to the system.

About four years ago there was considerable agitation, particularly among the Labor Aldermen, in favor of the city purchasing the street railway, but this agitation has completely died down.

Railway Presented to City of St. Petersburg

The first extension of the municipal railway at St. Petersburg, Fla., in the last thirteen years was opened recently when a line to Shore Acres, subdivision, was placed in service. The line was constructed by a local realty concern at a cost of about $90,000 and turned over to the city. It is 3 miles long.

N. J. Upham, president of Shore Acres properties, and past-president of the National Association of Real Estate Boards, made a brief speech and formally presented the system to the city of St. Petersburg, through Mayor Pearce, free and clear, the municipal railway to operate cars over the extension at any schedule deemed sufficient.

Mayor Pearce accepted the gift in behalf of the city and spoke of the appreciation and the benefit the city will derive from the extension.

Extension of One-Man Car Service in Milwaukee

The introduction of one-man car service on another line in Milwaukee, Wis., on Oct. 1 is contemplated by the Milwaukee Electric Railway & Light Company. In a communication sent to the Railroad Commission the company requests an immediate hearing on an order providing authority to install one-man cars on the Wells-Downer line, considered one of the most important transportation units in the city.

The company's proposal comes in compliance with recommendations made by the Railroad Commission recently in its extensive railway service report, which pointed out the need of increased service on a number of lines. Only partial use, however, would be made of one-man cars on this line, these cars merely providing the extra service recommended in the commission's report. The company plans to use twenty cars of the one-man type on that portion of the line running to the extreme ends, while the regular city cars running between the west city limits and Edgewood Avenue would still be manned by a crew of two men.

In commenting on the latest one-man car application, S. B. Way, president of the company, explained that the move was made in the interest of economy and was designed to demonstrate to patrons that one-man cars are capable of maintaining schedules and giving better service.

Newton D. Baker to Aid Toledo

The aid of Newton D. Baker, former Mayor of Cleveland and Secretary of War in the Wilson World War cabinet, will be sought by the city of Toledo, Ohio, in its efforts to work out a new franchise ordinance based upon the present Milner service-at-cost plan and the reports of Prof. H. E. Riggs, who made a general transit survey last summer. Law Director Frank M. Dotson, who has the responsibility for framing the new plan from the legal side, has secured the consent of Mr. Baker to act. As City Solicitor and as Mayor of Cleveland Mr. Baker had a great deal to do with the solution of the traction problem in that city.

Henry L. Doherty recently asked the city to prepare an ordinance for submission to the company based on the Riggs reports.

Most of the work of drafting the new document will probably be done in Cleveland, but Mr. Baker and Mr. Doherty may both be brought to Toledo for the final conferences on the measure. The hope is to place the plan before the voters at the November election. To do this the grant must be ready 30 days previous to the election date.

New Stone Mountain Cars Attract Riders

The new cars of the Georgia Railway & Power Company, Atlanta, Ga., have proved a real attraction for Sunday afternoon excursionists and for many recreation seekers on week-day evenings. The Stone Mountain line ends within 2 miles of the Stone Mountain memorial, and the Marietta line ends about the same distance from the Kennesaw Mountain battlefield, places of art and historic interest without superiors in the category of the world's places of interest. The rate of fare is moderate, and either trip can be completed in an afternoon.

New Loop Arrangement in Oakland

Franchises have been granted by the city of Oakland, Cal., to the Key System Transit Company in the name of F. W. Frost, secretary of the company, for the building of two loops to facilitate traffic in the downtown section of the city.

The first loop will be at Eighth and Franklin Streets, north to Ninth Street and thence west to Broadway. The second loop will be at Washington and Thirteenth Streets, west to Jefferson Street and south to Twelfth Street.

These loops are authorized as the result of the recent traffic survey made in Oakland by engineers of the railway, the city and the California Railroad Commission. Work on them will be started shortly. Upon completion of the loops, several lines of cars will be rerouted and the rush-hour congestion, which has long been a problem in downtown Oakland, will be greatly relieved, it is declared by officials.

Within two months work will be started on an extension to the Park Boulevard line. About 2,100 ft. of rail will be laid, the new terminus of the line to be the other side of Dimond Canyon. A bridge over this canyon was recently completed. A new section of East Oakland, now without transportation, will be served by the Park Boulevard line after the extension has been completed.

Birmingham Goes Back to Old Routes

Citizens of West End and East Lake, Birmingham, Ala., won their fight recently against the new downtown routing of the cars of the Birmingham Electric Company when J. M. Jones, president of the City Commission; Hugh White, attorney for the Alabama Public Service Commission, and I. F. McDonald, chief engineer for the Public Service Commission, assured a mass meeting of 500 that the cars would be turned back into the old routes. It was estimated that 100,000 persons in East Lake, Woodlawn, West End and Bessemer were affected by the change in the routing of the cars.

About two months ago the Birmingham Electric Company changed the downtown routes with the permission of the Alabama Public Service Commission, acting on the advice of the City Commission. That body believed at first that the change in the routes would be a safety measure, but Mr. Jones said the try-out had proved otherwise. The new routes, it was stated, worked a hardship on the users of the street cars in that virtually all were forced to walk longer distances to their destinations after leaving the cars.

Chicago Alderman Seeks to Force Commission's Hand

Failure of the Illinois Commerce Commission to pass on a petition filed in 1924 which would permit the Chicago Surface Lines to operate motor coaches as feeders to its railway lines and issue universal transfers was condemned during the week ended July 24 by members of the local transportation committee of the Chicago City Council. One Alderman proposed the circulation of petitions in every section of the city calling upon the commission for immediate action. Both the Chicago Surface Lines and the Chicago Motor Coach Company expressed willingness two years ago to place buses in operation on Diversey Boulevard and other sections of the city without adequate service. The City Council indorsed the surface lines' offer at that time, but the commission has continually deferred action.

New Franchise in Maywood.—By a vote of more than twelve to one citizens of Maywood, Ill., approved a twenty-year franchise to the Chicago & West Towns Railway, Oak Park, Ill., at a referendum held on July 10. The ordinance, previously adopted by the City Council and accepted by the company, provides for a general rehabilitation of the company's lines in Maywood. A new line of double track approximately 1 mile in length will be built on Madison Street. The railway recently installed two new buses, supplementing its car service, with universal transfers.

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Recent Bus Developments

Bus Subsidiary of Reading Company to Incorporate

The Public Service Commission has approved the application for a charter for the Reading Transportation Company, a subsidiary of the Reading Company. The charter must be approved by the Governor before it is effective.

This permits incorporation to operate bus lines in the state of Pennsylvania, but application must be made to the commission for each individual route. Application for approval of several of these routes has been made to the commission, but so far no action has been taken by the commission.

The Reading Transportation Company desires to operate buses in territory covered by the parent company's railroad charter, paralleling its lines and running auxiliary service, especially on branch lines where steam service is not paying dividends.

The commission has before it applications from the new company for the right to operate in Schuylkill, Northumberland, Dauphin, Cumberland and Adams Counties. The charter applied for gives the company right to operate in eleven counties, but if this is granted, the commission will act upon each specific route asked for after hearings.

There has been much opposition, particularly on the part of the electric railways, to some of these, especially routes in Schuylkill County and the route between Harrisburg and Gettysburg, which is now covered by the Gettysburg-Harrisburg Transportation Company.

Where there is adequate service, the commission has been loath to grant competitive certificates, and this policy may be followed in the Reading's application. The only other way to obtain the desired routes would then be by purchase.

Fixed Stops for Springfield Buses

Herbert M. Flanders, manager of the Springfield Street Railway, Springfield, Mass., and J. T. B. Woodruff, traffic expert for the city, have mapped out a system of stops for the passenger bus routes of the railway. Much attention has been given to the Orange Street bus route, where it was found too many stops interfered seriously with traffic.

Mr. Flanders wants the company's bus routes regulated as to stops much after the manner of the trolley system. Bus traffic has been growing each year and fewer stops are essential if service is to be expedited. The transportation board is also taking the matter in hand for the general relief of all traffic.

At present bus drivers take up passengers at any place they may be hailed. A system of specific stops, so announced to the public, is expected to correct some of the present evils. Operators will receive explicit instructions not to pick up passengers along railway lines and the rule will be enforced. The company wants the public to ride in the vehicle of its own chosing, but it believes the public is interested sufficiently in the regulation of the city's traffic to board its chosen vehicle at a designated stopping point.

Purchase of Buses for Substitute Service Approved

Purchase of five safety buses by the Morris County Traction Company, Morristown, N. J., for use on the Elizabeth-Springfield line has been approved by the Public Utilities Commission. Some time ago the company was granted permission to suspend trolley service on this line and substitute buses.

The conditional bill of sale for the buses, sanctioned by the board, mentions a total cost of $42,796, one-quarter to be paid out of funds in hand on delivery and the balance in 36 equal installments with interest on deferred payments at 6 per cent.

Commission Holds Tulsa-Capital Bus Unnecessary

The Corporation Commission of Oklahoma on July 9 consolidated hearings on the application of the Union Transportation Company for authority to operate through buses between Tulsa and Oklahoma City and of the Red Ball Bus Company to operate between Sapulpa and Tulsa, and after hearing in part the evidence of the former company dismissed both applications. Commissioner Hughes reaffirmed, Chairman Capshaw concurring, the policy of refusing to authorize motor service where adequate service by established lines exists.

The evidence showed that seven trains operated each way daily between Oklahoma City and Tulsa, with hourly interurban service, in addition to steam railway service, between Tulsa and Sapulpa. The application of the Union Transportation Company to operate buses between Sapulpa and Mounds was taken under advisement.

Civic Council Favors Grant to Brooklyn Railroad

The Civic Council of Brooklyn, N. Y., has written to the Mayor in support of the application of the Coney Island & Gravesend Bus Corporation for a bus franchise for Brooklyn. The bus company is affiliated with the Brooklyn-Manhattan Transit Corporation and the Brooklyn City Railroad. In their hands the franchise would be used for buses as feeders for rapid transit lines and for supplemental service for the new population which has settled beyond the reaches of the surface lines.

The Civic Council is opposed to the grant of a city-wide franchise. It fears that a new company would want to establish lines of a competitive nature rather than such as would be to the better advantage of the borough.

Municipal Bus Service in Buffalo Increased

Mayor Schwab has started two additional municipal bus line routes in Buffalo, N. Y. It appears now to be likely that the three lines will continue to operate indefinitely unless they are restrained by the courts. The lines operate over streets which have been designed as parkways. Route No. 2 is in direct competition with the Delaware Avenue-Kenmore line of the International Bus Corporation, a subsidiary of the International Railway. Policemen are acting as guards and conductors for the municipal buses. The City Council has voted an appropriation of $10,000 to the Department of Public Safety for the initial operating expenses of the new lines. All the buses are single-deck machines equipped with pneumatic tires. They seat from 33 to 35 passengers.

Buses Replace Trolley at Key West

Another little electric railway has passed out of the picture. It is the road at Key West, Fla., 4.08 miles, run as part of the system of the Key West Electric Company. Buses have taken its place in furnishing transportation to the public, and the work of removing the rails is under way. The date on which the road suspended was July 10. The first railway in Key West went into service in 1881. Louis Miguel, who drove the first car in the horse-drawn service and was the first man at the controller when the electric cars were placed in operation, piloted the last car into the carhouse. Since then the nine old trolley cars have been run onto temporary tracks at La Brisa and will be sold for junk. B. L. Groome, manager, says they are not of standard gage, and that open cars are now almost obsolete, so there is no demand for them for use elsewhere.

Midland Utilities Acquires Independent Indiana Bus Line

Withdrawal of one more independent motor bus line from the rapidly-developing industrial district of northwestern Indiana was announced on July 19, when the Midland Utilities Company contracted to purchase the entire equipment and franchises of the Calumet Motor Coach Company, Hammond, Ind. If the affairs of the company are found to be as represented after an audit of its books, the sale will be consummated.

The Midland Utilities Company, through its subsidiary companies, the Chicago, South Shore & South Bend Railroad, Gary Railways and Shore Line Motor Coach Company, is already engaged in the transportation business in this territory on a large scale.

The purchase of the Calumet Company's properties will include 41 buses now furnishing service in Hammond and between Chicago and Hammond and East Chicago and Hammond.

Co-ordination of schedules with those of the other Midland coach lines will result in large operating economies and improvement of service, according to C. W. Chase, president Gary Railways and Shore Line Motor Coach Company.

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Bus Line for Hamden, Conn.—The Connecticut Company, New Haven, Conn., has been granted permission to operate a bus route over Dixwell Avenue, Hamden, Conn., with terminals at Whitney Avenue and Putnam Avenue. Some time ago the company was ordered to construct trolley tracks over this section. This order was automatically rescinded when the bus license was granted.

Buses Displace Entire Toledo Line.—Substitution of buses by the Community Traction Company, Toledo, Ohio, on the Front Street line operating a downtown loop will provide the first displacement of an entire trolley line with motor coaches in Toledo. The 24 new buses will start operating on Aug. 1 provided paving operations on Front Street are completed.

P. R. T. Starts Emergency Line.—The Philadelphia Rapid Transit Company, Philadelphia, Pa., began operation recently of a motor bus line between towns in the northeastern section of the city and the Bridge Street terminal of the Frankford elevated on an emergency order from the Public Service Commission. The order was made after a two-day period of isolation of this section, caused when Wilbur F. Menke, who had been operating several bus lines, suspended service. He had been informed that his franchise, expiring on Aug. 31, would not be renewed, and his drivers were leaving him to obtain permanent employment elsewhere.

New Buses in Service.—The Washington Rapid Transit Company, affiliated with the Washington Railway & Electric Company, Washington, D. C., has retired its duplex buses and placed in service six double-deck Fageols of the type in use in Atlanta, Ga. These buses have a closed rear and a top with an awning. The color scheme has been changed and hereafter the vehicles will appear on the streets in a two-tone brown instead of gray and red.

Time for Bus Operation Extended.—An extension of time until Aug. 10, 1926, has been granted by the Railroad Commission to the Pacific Electric Railway, Los Angeles, Cal., for certain bus operation. Within this period the company will begin operation of an auto stage service between Lankershim Boulevard and San Fernando Road in the city of Los Angeles and the Pacific Electric Railway station in the city of Burbank.

Acquires New Line.—The Union Transportation Company, owned and operated in connection with the Oklahoma Union Railway, Tulsa, Okla., announces, through R. V. Miller, general manager, that it has acquired the Gordon-Smith bus line, route 77, between Henryetta and Okemah, and will consolidate this line with its service between Mounds and Henryetta. All service between Okmulgee and Okemah is by way of Henryetta except one round trip leaving Okemah at 9:45 a.m. and arriving at Okmulgee at 11:30 a.m. and leaving Okmulgee at 4 p.m. on the return trip, arriving at Okemah at 5:45 p.m. These buses connect with the interurban line of the Oklahoma Union Railway at its southern terminus at Mounds.

Financial and Corporate

Payments Announced Under Detroit United Bonds

The protective committee acting for the holders of the first mortgage and collateral trust sinking fund five-year 6 per cent bonds of the Detroit United Railway, Detroit, Mich., has issued notice that under a court order the Central Union Trust Company will pay as of Aug. 1 on and after Aug. 2 from funds held as trustee 18½ per cent of the principal amount of bonds presented. Holders of certificates of deposit issued under the bondholders' protective agreement dated No. 2, 1925, are entitled to receive this payment on and after the date specified.

The committee reports progress in negotiations with security holders of subsidiaries for a system reorganization, but say that it is evident no satisfactory reorganization can be effected this summer. They urge holders of undeposited bonds to deposit their securities with the Central Union Trust Company on or before Aug. 14, when the right to make these deposits expires.

Abandonment by Interurban Opposed

At a hearing conducted by the Illinois Commerce Commission at Blue Island, Ill., recently to consider the petition of the Chicago & Interurban Traction Company, Chicago, Ill., to cease operations between Chicago and Kankakee, four witnesses from as many towns along the route appeared in protest. E. E. Rollins, general manager of the Kankakee Electric Railroad, said abandonment would seriously interfere with the operation of the local lines in Kankakee. At the present time the Kankakee lines obtain all power from the Chicago & Interurban company. Severe automobile competition is said by officers of the Chicago & Interurban Traction to have made operation no longer profitable. Further evidence was heard by the commission at Springfield on July 19.

Claims Filed Against Holders of Bonus Stock

Two attempts to enforce liability against stockholders of the old Electric Short Line, Minneapolis, Minn., so that claims of $100,000 can be paid, were made recently in Hennepin County District Court, in separate suits filed by creditors.

Both actions are based on the theory that holders of common stock in the old company, which for several years has been in the hands of a receiver, are liable even though they received the stock as a bonus. In both cases receivers are asked, although the old company already is in the hands of a receiver.

The suits in no way affect the Minnesota Western Railroad, formed under the reorganization plan, when physical property of the company was sold to bondholders under foreclosure. Actions are against individual stockholders.

Attorneys seek to recover from all solvent stockholders who can be reached, planning by their actions to raise enough to pay off outstanding claims not disposed of in the federal court receivership.

Committee Contracts to Sell Rockford & Interurban Bonds

T. M. Ellis, Jr., Beloit, Wis., contracted on July 17 to purchase the first mortgage 5 per cent gold bonds of the Rockford & Interurban Railway, Rockford, Ill., on deposit with the committee of which Robert W. Baird is chairman. The consideration is to be paid in cash and is on the basis of 23½ per cent of the face value of the bonds. After the deduction of the expenses of the committee the amount remaining will be distributed among the holders of certificates of deposit. The right of the holder to withdraw his deposit is reserved to him if he acts within a stipulated period.

The announcement just made indicates the consummation of a deal reported before to be pending by which Mr. Ellis, who is president of the Beloit Traction Company, Beloit, Wis., will become actively affiliated with the affairs of the interurban in the effort being made to rehabilitate the road.

More Preferred Stock Offered to Brooklyn Employees

Employees of the Brooklyn-Manhattan Transit System are to have a second opportunity to purchase preferred stock of the B.-M. T. Corporation at a price considerably lower than the present market value and upon terms that will make the final net cost approximately $55 per share.

This second offer of preferred stock to its employees is made by the B.-M. T. at the suggestion of various committees of employees elected to represent them in the settlement of problems of mutual interest to the employees and management.

The original offer of B.-M. T. preferred stock to employees was made in July, 1924. The stock was selling in the market at that time at approximately $70 a share. Fifteen thousand shares were offered to employees at $65 a share and payments were extended over a period of a year. By crediting employees with dividends paid at the rate of $6 a share a year during the period of payment and charging interest on deferred payments at the rate of only 5 per cent a year, the net cost to employees was approximately $60.50 a share under the original offer.

Under the 1926 offer, the stock may be purchased by employees for $75 a share, although the market price at present is $85 a share. By again crediting employees with dividends as paid

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during the period of payment and charging only 5 per cent interest a year on deferred payments as in the first offer, the final cost to employees under the terms of the new offer will be reduced to approximately $55 a share. Subscriptions under the new offer are limited to twenty shares for each employee with the right reserved to the company to reduce subscriptions and allot shares so every employee may subscribe for and receive at least one share. When the first offer of 15,000 shares was made, subscriptions were received from 10,609 employees for a total of 20,235 shares.

Payments for the stock are to be extended over a period of five years so that employees may secure the stock by paying only $1 a share a month.

Incidentally it might be mentioned that employees in service on Aug. 1, 1926, who purchased preferred stock under the offer of 1924, will be entitled to a refund or bonus of $1 a share for each share of stock purchased under the plan and for which they retain ownership of the original certificate of stock issued to them.

Abandonment of Lincoln Line Approved

The Nebraska State Railway Commission has approved the application of the Lincoln Traction Company to abandon service on a short line paralleling the business district and to remove nearly a mile of tracks. The line helped serve the downtown campus of the University of Nebraska. It is the intention of the company later, when it develops its intramural bus lines, to operate buses between the campus and that of the State College of Agriculture, 2½ miles northeast. This bus line will pass through a well settled section of the city. It is expected to develop new business for the company. The commission says that the fact that the average number of passengers carried a day, including transfers, was only eight on the whole line indicates its almost complete abandonment by the public as a means of reaching the university and environs.

$5,000,000 More Preferred Proposed for P.R.T.

The new financing program of the Philadelphia Rapid Transit Company, Philadelphia, Pa., contemplates the issue of $5,000,000 of additional preferred stock, as revealed in a communication to City Council by President W. K. Myers.

Of this sum, $3,272,000 is for normal capital and additional improvements, and the rest to finance new buses and bus lines and garages. The details were sent to Council in conformity with the agreement between the city and the P.R.T. entered into in 1907. The city must give its consent to the financing.

The previous capital of the P.R.T. was $30,000,000 common stock, and $3,000,000 preferred, issued recently for the purchase of buses, the purchase of taxicabs and franchises of the Yellow Taxicab Company. The new issue proposed will increase the stock issue of P.R.T.

The statement from the P.R.T. was referred to the committee on transportation and public utilities. An ordinance will be introduced after the recess of Council terminates in September to approve of the new issue.

The city-company 1907 agreement provides that when P.R.T. is desirous of making expenditures chargeable to capital account, it shall advise the city of these expenditures with the estimated cost of same. The additional money is to be spent in 1927 as follows:

Normal capital expenditures for track improvements and extensions, improvements, additions and betterments to carhouses, substations, transmission and distribution system, etc.	$1,700,000
Retirements of underlying securities, viz.:	
P.R.T. collateral bonds, due 1957	84,225
P.R.T. sinking fund bonds, due 1962	59,970
P.R.T. car terminal mortgage bonds, due 1944	103,000
P.R.T. car trust certificates, D, E, F, G, H and J	1,253,000
Philadelphia & Willow Grove Railway bonds, due 1934	20,000
Union Traction Company bonds, due 1952	27,600
People's Passenger Railway stock trust certificates, due 1943	25,000
Total	$3,272,795
Down payment on 250 buses	800,000
Motor bus service equipment	150,000
Motor bus garaging	800,000
Total	$5,022,795

Suit for Receiver for Sharon-New Castle Road

The New York Trust Company, New York, has filed an equity suit in the United States District Court against the Sharon & New Castle Street Railway, New Castle, Pa., to recover interest on $120,000 first mortgage 5 per cent bonds, issued by the railway in 1901.

The bill of the plaintiff company sets forth that the railway issued 120 first mortgage bonds for $1,000 each in July, 1901, payable on July 1, 1931, and with interest payable semi-annually on the first days of January and July. It is averred the defendant has failed to pay the installments of interest.

The railway operates 17 miles of track. The securities of the property are all controlled by the Pennsylvania-Ohio Edison or its subsidiaries and the present proceeding is an internal action for readjusting the relations of the companies.

Net Up More than $670,000 on Brooklyn Property

The statement of the Brooklyn-Manhattan Transit Corporation and affiliated companies, Borough of Brooklyn, New York, shows an increase of $674,434 in the net income for the twelve months ended June 30 over the similar period last year. The statement follows:

	Year Ended June 30 1926	1925
Total operating revenues	$44,840,967	$43,312,417
Total operating expenses	29,220,839	28,426,390
Net revenue from operation	$15,620,127	$14,886,026
Taxes on operating properties	3,260,384	3,068,461
Operating income	$12,359,742	$11,817,564
Net non-operating income	1,180,492	1,084,581
Gross income	$13,540,235	$12,902,146
Total income deductions	7,777,877	7,814,221
Net income	$5,762,358	$5,087,925

Chester Valley Lines Makes Progress in Combined Service

The net income of the West Chester Street Railway and subsidiary corporations, West Chester, Pa., for the year ended Dec. 31, 1925, was $58,887. This represented a balance applicable to reserves, dividends and surplus. In the annual statement of the Chester Valley Lines, comprising the electric railway and bus lines of the West Chester Street Railway, Charles B. Cooke, Jr., president, said it should be borne in mind that the results were obtained during a period of twelve months, in nine of which bus operation, which yielded more than half of the gross revenues, was burdened with extraordinary costs of operation, since eliminated as a result of consolidating the various bus lines into a unified system on Sept. 27, 1925.

The report goes into detail on the bus expansion. The company acquired control of bus routes in order to establish a unified and profitable service and to eliminate the possibilities of competition. Control of bus routes was completed on Jan. 1, 1925. The only additional route taken over in 1925 was that connecting Pottstown, Spring City and Royersford. With the acquisition of these routes and the Reading-Pottstown Bus Company, the Chester Valley Lines will have a continuous bus route between Norristown and Reading, a distance of 42 miles through a most active section of the Schuylkill Valley. It will also permit of "through" bus service between Reading, Pa., and Wilmington, Del., via Pottstown and West Chester.

As a result of methods used to increase traffic on the bus system substantial increases in revenue were obtained all through the year, these being equivalent to an increase in the business at a rate of about $100,000 per annum obtained in the first twelve months. New equipment was purchased and new financing was undertaken, with the stockholders authorizing an increase in capitalization of $250,000 in the form of 7 per cent participating cumulative preferred stock, of which a substantial part has already been sold. In line with modern utility practice, investors in the territory along the company's railway and bus lines are being permitted to purchase this stock.

The report states that while the three years ended Dec. 31, 1925, represented the most notable period in the company's history, considering the growth of assets and earning power, the company's funded debt remained almost stationary.

In addition to its regular service the company has installed a package express service without additional capital outlay and with an almost negligible increase in operating expenses. This service parallels certain of the bus lines and provides store-door delivery to the various communities along those lines. The company is at present negotiating with several large wholesale houses for hauling their merchandise under exclusive contracts, and has completed arrangements for interchange of business with one of the leading express companies covering the Philadelphia and Camden district.

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CONSOLIDATED INCOME ACCOUNT OF THE WEST CHESTER STREET RAILWAY AND SUBSIDIARIES, YEAR ENDED DEC. 31, 1925

(After Giving Effect to Present Financing)

Operating revenues		$435,195
Operating expenses (A)		344,497
Operating income		$90,698
Other income		28,869
Gross income available for bond interest		$119,567
Ratio to bond interest		2
Interest on bonds:		
First mortgage 5 per cent $838,000	$41,900	
First lien and collateral trust 6 per cent $213,000 (B)	12,780	54,680
Net income		$64,887
Interest on floating debt		6,000
Net income—balance applicable to reserves, dividends and surplus		$58,887
Dividends $250,000—7 per cent participating cumulative preferred stock		17,500

Note (A): Includes taxes other than federal income taxes.

Note (B): Includes interest on 6 per cent bonds in treasury, proceeds from sale of which are to be applied to liquidation of floating debt.

In view of the extraordinary growth of the company's interest in bus operation, the management deemed it advisable to call on independent consulting engineers to make a report of the company's condition. The purpose of the report was to obtain a reliable, unbiased opinion on the stability of the company's bus development and the reciprocal advantages of increased traffic, as well as a forecast of the financial results that could reasonably be expected from the consolidated system. It was thought the report should give particular attention to its bus systems, since the operating results of the company's railway lines were already firmly established. The report was made by Ford, Bacon & Davis. Extracts were republished in the annual statement of the company.

President Cooke states that a summary of these engineers' estimates would show gross earnings for the year 1930 of the consolidated system amounting to about $830,000 and net earnings, after deducting operating expenses, maintenance, depreciation and taxes, of about $218,000. These figures do not give effect to the earnings of the Pottstown-Spring City line, purchased in November, 1925, or of the Reading-Pottstown line, purchased in January, 1926; or to any further extension of the company's operations. Neither do they give effect to any increase of earnings from the operation of the company's package express service, which was only established in February, 1926. However, "the financial results of the company's operations are thus far considerably exceeding the forecast made by Ford, Bacon & Davis, Inc."

More Madison Lines to Be Discontinued

An order has been issued by the Railroad Commission permitting the Madison Railways, Madison, Wis., to discontinue its railway line on Harrison Street, and handle traffic by bus, a service which has already been installed. Railway service on Regent Street has also been discontinued temporarily until the Regent Street line is connected with the Breese Terrace line. The Harrison tracks will be removed and the street paved by the city. Tracks on Regent Street from Harrison Street to the cemeteries will be left untouched until the company is ready to establish a connecting link on Regent Street between Breese Terrace and Harrison. The commission found that the operation of cars over the Illinois Central bridge on Harrison Street would be unsafe if the track of the railroad were lowered to the grade outlined and demanded by the city in its paving program. Patrons of the Harrison Street line are opposed to the removal of the tracks. They are expected to appeal to the courts for a continuance of railway service.

New Owners to Take Ohio Interurban

Another interurban in the Central West is about to change hands. The Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, will be sold to E. S. Little and associates by an agreement of present security holders, who have assured new owners of at least 75 per cent of the entire outstanding preferred and common stocks.

The agreement of purchase offers the same terms to minority holders as were granted to the large stockholders of the company in the sale. The purchasers have posted $100,000 as a guarantee and have named the Fourth & Central Trust Company, Cincinnati, as depository for the stocks and bonds of the company.

Under the terms of sale the 7,500 shares of preferred stock are to be purchased at $72 a share plus accrued dividend, and the 11,250 shares of common at $52 a share, while the 6 per cent bonds, of which there are $956,000 outstanding, are to bring 92 per cent of par value. An issue of $480,000 of Toledo & Findlay Railway 5s will be purchased at 90 per cent of par.

The company operates an interurban line from Toledo to Findlay and does a lighting and heating business in the latter city.

The offer of the purchasers to take up the minority holdings expires on Sept. 1.

Road in Westchester Sold to New York City Line

At public auction on July 19 the Westchester Street Railroad, serving the central section of Westchester County, adjoining New York City on the north, was sold for $70,000 to the Union Railroad, a subsidiary of the Third Avenue Railway.

Leverett S. Miller, trolley receiver and president of the County Transportation Company as well as president of the New York, Westchester & Boston Railroad, was present at the sale. When the Union Railway's bid reached $70,000, attorneys for the New Haven Railroad consulted with Mr. Miller and then ceased to bid.

The various lines had been sold separately earlier and they had been purchased by the Union Railway for $45,450. The New Haven did not bid at that time, but there were opposition bids from H. C. Salzberg Company, machinery and engineering contractors, of 50 Church Street, Manhattan.

Mr. Davidson's bids at that time for the various lines and property were:

Tarrytown line, $11,000; Silver Lake line, $1,750; Mamaroneck line, $8,700; Scarsdale line, $4,500; Harrison carhouse property, $9,000, and cars and equipment, $10,500.

He began to bid for the entire property at $46,000 and it went rapidly up to the selling point $1,000 at a time. It had been announced that the various parcels would be sold separately and then altogether, with the highest price taking them.

Although no official announcement was made, representatives of the Westchester Street Railroad indicated that the trolleys would be kept in operation until the purchaser takes them over or some other form of transportation is substituted. The Union Railway is expected to take title in ten days.

The purchaser operates lines under its name in New Rochelle and Mount Vernon. The Third Avenue Railroad operates trolley and bus lines in Yonkers and also a bus line between New York and Rye Beach.

The property that was sold comprises 20 miles of track.

Alfred T. Davidson, Third Avenue Railroad attorney, who conducted its bidding, declined to announce that company's plans, but he intimated that a statement might be forthcoming later.

Financing of Buses for Newark Approved

Execution of $2,900,000 notes by the Public Service Transportation Company, Newark, N. J., to be used in paying for 333 gas-electric buses has been approved by the Public Utilities Commission.

The buses cost the Public Service Transportation Company $3,281,202, less a deduction of $343,300 for 404 second-hand buses turned in.

This developed at a hearing recently before the commission of an application for approval of the issuance of the notes. The cash the transportation company obligated itself to pay after the allowance for the second-hand buses was made was $2,937,800. Of this $2,900,000 was advanced by the Public Service Corporation on the proposed note issue and the remaining $37,800 was taken out of the subsidiaries' general fund.

Testifying for the transportation company, one of its general officers said the $2,900,000 was to be divided into ten notes, each of $290,000, one payable on April 1 of each year from 1927 to 1936. They will bear 6 per cent interest and be secured by a chattel mortgage with the 333 machines as security.

Since the two orders were placed, Public Service has placed an order for 21 buses of the gas-electric drive type which will be fitted with special bodies for the de luxe and semi-de luxe lines contemplated between Newark and Plainfield, Hackensack, South Orange and Maplewood and the Forest Hill service.

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Personal Items

C. C. Fast Receives New Post at Harrisburg

C. C. Fast, general superintendent of transportation of the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio, has been appointed general superintendent of the Valley Railways, Harrisburg, Pa., effective July 1.

Mr. Fast has been connected with the Springfield company since Sept. 1, 1905, when he was employed as a conductor. In this capacity he worked for several months during the construction of the Fort Wayne, Van Wert & Lima Traction Company and until the officials of that company were ready for a dispatcher to handle their train operations. The opportunity came in November, 1905, and for two years he dispatched trains so efficiently that he was later made chief dispatcher. He fulfilled the duties of this job until Mr. Dicke's resignation as superintendent of transportation of the line in 1911, when he succeeded Mr. Dicke. Mr. Fast continued in this work until January, 1921. The Ohio Electric Railway then went into the hands of a receiver, and at that time Mr. McClure, the receiver, appointed Mr. Fast general superintendent of transportation. He moved from Lima to Springfield.

Mr. Fast was graduated from the High School in Delphos, Ohio, in 1897. He worked as a telegraph operator for the Pennsylvania Railroad until 1901 and later as a conductor on the lines of the Western Ohio Railway for one year. He was then promoted to the dispatcher's office and worked as a dispatcher until Sept. 1, 1905. It was at that time that Mr. Dicke employed him as a conductor on the Fort Wayne, Van Wert & Lima Traction Company lines until such time as a dispatcher was needed.

H. A. Schiebler with New York Commission

Howard A. Schiebler has been appointed assistant secretary of the New York State Transit Commission. He will fill the position as head of the information bureau, recently vacated by F. N. Robinson, who resigned to become publicity director of the Boy Scouts of America.

Mr. Schiebler brings to his new work seven years experience in the newspaper field, during which he specialized in politics, transit and labor matters. Joining the staff of the Brooklyn *Daily Eagle* in 1919, he was assigned the task, two years later, of handling local politics for that paper. In 1922 he became Albany correspondent for the *Eagle*, covering the activities of the Legislature from that year until June, 1926, a period in which transit matters were much to the fore on Capital Hill.

Mr. Schiebler was born in Brooklyn in 1900 and was graduated from Erasmus Hall in 1918. His grandfather, George W. Schiebler, a manufacturer of silverware, was a prominent figure in "old New York."

More Appointments Made on Syracuse Lines

Appointment of Floyd Sparrow, instructor, as superintendent of the Tallman division, Syracuse lines of the New York State Railways, and the transfer of J. J. Flood from head of the Tallman division to the superintendency of the Wolf division have been announced by Ernest K. Miles, superintendent of transportation for the Syracuse lines.

Clarence Wombles, inspector, was appointed instructor to succeed Mr. Sparrow and F. S. Curtis, motorman, was promoted to Mr. Wombles' position. These changes are part of a general reorganization of personnel of the lines, due to the death of J. E. Duffy, veteran transportation superintendent, and the advancement of Mr. Miles to that position.

Receivers Make Plans for Future

Francis M. Wilson, one of the receivers of the Kansas City Railways, Kansas City, Mo., returned to Kansas City recently after conferring with Judge Kimbrough Stone, referee, at St. Paul, Minn., and received a check for $71,000, the final allowance made to each receiver for his services. Each receiver had previously received $110,000.

Mr. Wilson has not announced his plans following the termination of his duties with the railway. Fred W. Fleming, co-receiver with Mr. Wilson, said he will sail soon for his sixth trip to Europe, where he expects to remain six weeks.

An insurance company is being organized in Kansas City, with Mr. Fleming as president. The new concern will be ready to operate upon his return from Europe.

Mr. Wilson had been away from his desk a total of only 60 days during the 5½ years of the receivership.

New Officials of Texas Electric Railway

Statement of Recent Changes on 80-Mile Interurban with Biographies of Officials in Important Executive Posts

IN CONNECTION with the changes in the personnel of the Texas Electric Railway, Dallas, Tex., the organization of officials has been announced with the exception of the office of treasurer. This position will probably not be filled until next September. As noted previously in the ELECTRIC RAILWAY JOURNAL, Burr Martin retired as vice-president and general manager and J. P. Griffin was given the title of active vice-president in charge of all operations. The roster of officials as now announced follows:

C. F. McAuliff, M. J. Loftus, H. G. Floyd, John R. Self, Walter Silvus, G. H. Peters, Mike R. Fewell, D. W. Milam, Jr., and John A. Hiett. Three of the above-mentioned gentlemen, Messrs, Loftus, Floyd and Silvus, continue in their present positions from the previous administrations. These appointees and their positions were mentioned briefly in the ELECTRIC RAILWAY JOURNAL, issue of June 5, page 996, at which time the career of Mr. Griffin was reviewed.

C. F. McAuliff, purchasing agent of the Texas Electric Railway for the past seven years, has been promoted to the postion of assistant to the vice-president in charge of operation. He has also been elected assistant secretary of both the executive committee and the board of directors. He will continue as purchasing agent of the company, consolidating the offices.

He was first employed by the New York Central Railroad in the maintenance of way department on the Hudson River division, with headquarters at Poughkeepsie, N. Y. In 1912 he was transferred to New York City, in the Madison Avenue office of the New York Central Railroad, in connection with the construction of the Grand Central Terminal and the Biltmore Hotel. On the completion of this work Mr. McAuliff went to Dallas, where the interurban service from Dallas to Waco was being started. Joining the Texas Electric in February, 1913, he has been with it continuously for the past twelve years, with the exception of the year 1918, when he was in the 868th Aero Squadron of the U. S. Aviation Corps.

He was born in Peekskill, N. Y., in 1892. He was graduated from the public school and Morrall Hall Military Academy in 1910.

M. J. Loftus has been retained as superintendent of the Dallas-Denison division of the Texas Electric Railway, in charge of transportation, overhead and roadway. He went to Dallas in 1908 to become superintendent of the Texas Traction Company, then under construction between Dallas and Sherman, starting operation of this line in July, 1908. He also started the operation for the Southern Traction Company of the Dallas-Corsicana and Dallas-Waco divisions in 1913.

His first experience with electric lines was in Wheeling, W. Va., in 1889. Before going to Texas he had considerable experience in both construction and operation of city and interurban railways with the following properties: Duquesne Traction Company, Pittsburg; Allegheny & Manchester Traction Company, Coney Island & Brooklyn Railroad, Wheeling & Elm Grove Railroad, Indianapolis & Martinsville Rapid Transit, the Appleyard Systems of Ohio and the Ohio Electric Railway.

Mr. Loftus was born in Wheeling, W. Va., in 1874.

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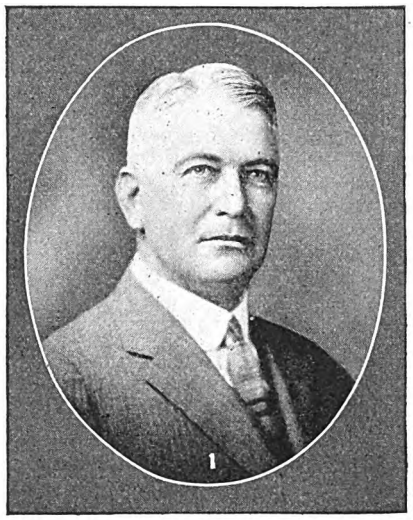
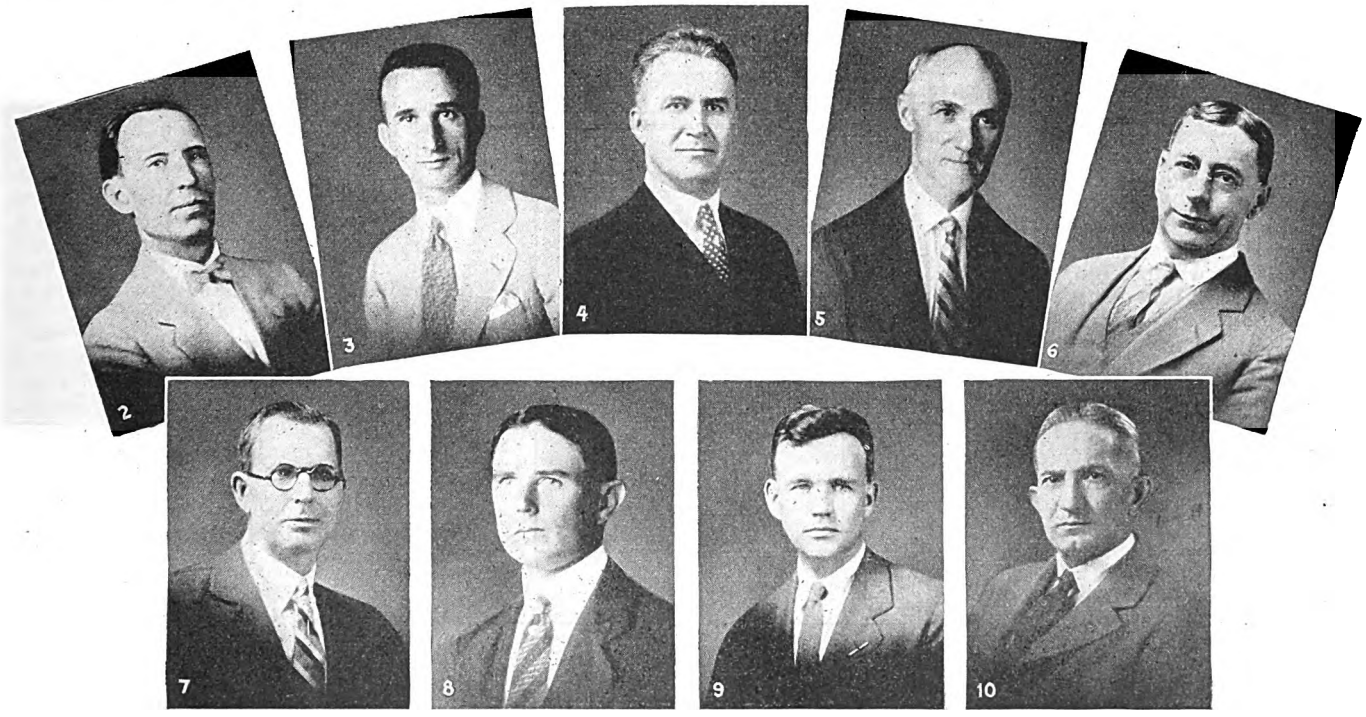
H. G. Floyd has been retained as superintendent of the transportation, roadway and line departments. He has been with the Texas Electric Railway since 1912, when the Dallas-Waco division was acquired by the late Col. J. F. Strickland. Mr. Floyd's divisions are from Dallas to Corsicana and Dallas to Waco, with city lines at Corsicana and Waxahachie.

In 1910 he began his electric railway career with the Louisville & Eastern Railway as trainman and train dispatcher, leaving in 1912 to join the Dallas Southern Traction Company. In 1915 Mr. Floyd was appointed superintendent of transportation on the Dallas-Waco division, and in 1916 accepted a similar position with the Dallas-Corsicana division, merging the two offices. Four years later he was placed in charge of three departments, transportation, roadway and line, on these divisions.



Born in Oakland, Ky., in 1888, Mr. Floyd, after leaving the public schools and Vanderbilt Training School, started with the Southern & Adams Express Company at Louisville, Ky., in 1908, leaving there a year later to go with the Southern Railway at Princeton, Ind.

John R. Self, assistant superintendent of the Denison division of the Texas Electric Railway, has been appointed superintendent of the company's Waco city lines, with headquarters at Waco, Tex. Mr. Self is a veteran of nineteen years service with Texas Electric Railway. He jointed the company in 1907, during the time the interurban was being built from Dallas to Sherman by the late Colonel Strickland. Starting in the maintenance of way department of the Texas Electric Railway in 1907, Mr. Self was transferred to the mechanical department, the line department and the transportation department, at three-year intervals, and in 1923 he was appointed assistant superintendent of the Denison division.



New Officers Texas Electric Railway

1. JAMES P. GRIFFIN, Vice-president
2. JOHN R. SELF, Superintendent Waco City Lines
3. C. F. MCAULIFF, Assistant to Vice-President in Charge of Operation and also Purchasing Agent
4. H. G. FLOYD, Superintendent Waco & Corsicana Divisions
5. WALTER SILVUS, Superintendent Equipment
6. M. J. LOFTUS, Superintendent
7. JOHN A. HIETT, General Claim Agent
8. GEORGE H. PETERS, Superintendent of Power
9. D. W. MILAM, JR., Auditor
10. M. R. FEWELL, General Passenger Agent

Born in Calb County, Tennessee, in 1884, he moved to Texas in 1892, residing with his parents on a Collin County farm.

Walter Silvus has been retained as superintendent of equipment. This position he has held since March 1, 1913, when he resigned his position with the Twin City lines at St. Paul to join the new interurban system in North Texas, now known as the Texas Electric Railway.

He began work with the Baltimore & Ohio Railroad in its shops at Zanesville, Ohio, in 1893. In 1903, when he left, he had advanced to the position of general car shop foreman at Garrett, Ind. In 1904 he was with the Elgin, Joliet & Eastern Railroad at Chicago as foreman of its car shops, leaving a year later to go with the Twin City lines at Minneapolis and St. Paul, where he stayed for five years as inspector and shop foreman. In 1909 he left the Twin City lines to accept a master mechanic's position with the Chicago, North Shore & Milwaukee Railroad at Highwood, Ill. In 1910 he was made superintendent of equipment of the Michigan United Traction Company at Albion, Mich., where he stayed until 1912, when he again joined the Twin City lines.

Mr. Silvus was born in Washington County, Ohio. He completed a short college course.

G. H. Peters, for the past five years assistant to the electrical engineer, has been promoted to superintendent of power, in charge of the power and substation departments.

Mr. Peters began his railway career with the Mobile Light & Railway in 1906, with headquarters at Mobile, Ala. In 1909 he returned to Waco, entering the service of the Waco city street railway lines, then known as the Citizens' Railway. When the Texas Power & Light Company took over the Waco city power franchise Mr. Peters joined the Texas Power & Light Company, remaining with it in the transmission and power departments, being located at Waco, Hillsboro and Dallas, until 1920. In that year he was secured by the Texas Electric Railway. Mr. Peters was born in Waco, Tex.

Mike R. Fewell has been promoted to general passenger agent. He was appointed assistant general passenger agent of the Texas Traction Company, with headquarters at Denison, June 28, 1909. On Aug. 1, 1913, he was made assistant general passenger agent of

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the Texas Traction Company and Southern Traction Company, with headquarters in Dallas. In 1917 the Texas Traction Company and Southern Traction Company were consolidated and Mr. Fewell retained the title of assistant general passenger agent with the Texas Electric Railway. Ten years prior to his connection with the Interurban he was in the drug business at Denison, Bonham and Paris, Tex.

Mr. Fewell was born Jan. 24, 1882, at Bonham, Tex.

W. D. Milam, Jr., has been promoted to the position of auditor, and has also been elected assistant treasurer of the company.

He took his first position with the Arkansas Trust Company at Hot Springs, being employed in the accounting department. In 1913 he joined the Texas Electric Railway at Dallas as bookkeeper, and has advanced through different positions in the accounting department, serving as assistant auditor for the last seven years.

In 1917 Mr. Milam obtained a leave of absence and entered the United States officers' training camp at Leon Springs, Tex., and served as lieutenant with Motor Transport Company 365 of the Seventh Division in overseas service with the American Expeditionary forces for two years.

Mr. Milam was born in Dallas, Tex. He attended the University of Arkansas, at Fayetteville.

John A. Hiett, senior claim agent for the past nine years, has been appointed general claim agent for the Texas Electric Railway.

In 1914 Mr. Hiett entered the employ of the Northern Texas Traction Company as claim agent on its interurban line between Dallas and Fort Worth, leaving this position to join the Texas Electric Railway.

Born in 1873 in Wood County, Texas, Mr. Hiett spent his boyhood and early manhood on his father's Texas farm. Having moved to Tarrant County, Texas, in 1906, he was elected County Commissioner, holding this public office for four consecutive years, all of which time he was chairman of the court. From 1910 to 1912 he was general supervisor of road building in Tarrant County, leaving this office to enter the real estate business in Dallas, Tex.

DeBerard Joins Chicago Regional Planning Association

W. W. DeBerard, Western editor *Engineering News-Record*, a McGraw-Hill publication, has been granted a leave of absence to become chief engineer of the Chicago Regional Planning Association.

The association is a corporation not for profit, the principal purpose of which is to co-ordinate the construction activities of the many authorities now planning and carrying out public and private works projects, so that orderly and connected systems of highways, sewers, parks and other public and private works may be developed. This is being accomplished through joint agreement of these authorities in committees on each of the twelve major subjects being studied. Progress and special reports are issued as needed for public education. Ultimately these reports may be assembled into a master volume covering the entire regional project.

Mr. DeBerard has been connected with *Engineering News-Record*, and its predecessor, *Engineering Record*, since 1910, all of that time in charge of the Chicago editorial office. He was graduated from Massachusetts Institute of Technology in 1901 and from that time until 1910 was engaged in engineering work, mainly on water and sewer projects.

A. E. Reynolds Heads Midwest Body

Executive of Springfield Utility and Former Eastener in Important Association Post

Once more in his long and successful career in electric railway and public service management Albert E. Reynolds, vice-president and general manager of the Springfield Traction Company and Springfield Gas & Electric Company, Springfield, Mo., is honored—this time by election to the presidency of the Midwest Electric Railway Association. For the past year Mr. Reynolds has been vice-president of that organization and in his activities in the public utility field has served also as third vice-president and chairman of the executive committee of the Missouri Association of Public Utilities, member of the executive committee of the Midwest Division of the National Electric Light Association, committee member of the American Gas Association and of the American Electric Railway Association.

A. E. Reynolds

Although an Easterner who has lived in Springfield only about three years, Mr. Reynolds has already become a big factor in all the plans for betterment of the city. In each of the localities where he has worked he has identified himself with activities intended to promote the public good. He has the gift of promoting good feeling toward and interest in the projects under his management.

Mr. Reynolds went to Springfield in 1923 as vice-president and general manager of both the Springfield Traction Company and the Springfield Gas & Electric Company, under Sanderson & Porter, New York, a firm of engineers which operates public utilities in various cities of the United States.

For about seven years previous to his appointment to the Missouri property Mr. Reynolds had been general manager of the United Traction Company and the Hudson Valley Railway, having offices in Albany, N. Y., and had under his direction on the operating side all the electric railway lines in and about Albany.

As a young man, Mr. Reynolds assisted in the construction and operation of the Plattsburg Traction Company, Plattsburg, N. Y., then owned and operated by Sanderson & Porter, the firm to which he returned after eleven years. He remained with the traction company as manager, after its purchase by the Delaware & Hudson Company, until 1909, when he was transferred to Glens Falls, N. Y., as general manager of the Hudson Valley Railway. That company had unwittingly incurred the enmity of some of the people along the line and the system was in poor physical condition, but Mr. Reynolds was able in a short time to correct that unfortunate state of affairs.

A short time ago Mr. Reynolds figured as the subject of one of a series of sketches by Wallace McDougal, in a Springfield paper, of public-spirited men of that city. Mr. Reynolds was shown in characteristic activities—controlling the light and power of the municipality, swinging a golf club, and symbolically indicating his interest in the local fraternal, civic and commercial life and in the Boy Scouts. This sketch showed unerring appreciation of the man as a man and as an executive.

Changes on Fox River Property

John W. Gunderson, for many years divison superintendent of the Aurora, Elgin & Fox River Electric Company in Elgin, Ill., has been appointed general manager of the company, succeeding J. F. Egolf, Aurora, whose appointment as assistant to the vice-president of the Chicago Rapid Transit Company was referred to recently in the ELECTRIC RAILWAY JOURNAL.

At the same time announcement was made of the appointment of J. C. Johnson, Aurora, as general superintendent of the Aurora, Elgin & Fox River concern. Mr. Johnson for several years has been division superintendent in Aurora and under the new plan will be superintendent of both branches.

Walter S. Van Sickle has been appointed assistant general manager of the Fort Smith Light & Traction Company, Fort Smith, Ark., in charge of operations in 22 municipalities as supervisor of the plants of the Mississippi Valley Power Company.

Charles T. Rowland, who has been in the employ of the Arkansas Central Power Company, Little Rock, Ark., has resigned as claim agent to become secretary-treasurer and manager of the Commonwealth Finance Company and Industrial Loan Bank, both of Little Rock. Mr. Rowland has been claim agent for the Little Rock property since June, 1919.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Bids Wanted on 150 Cars

City of Philadelphia Is Now Ready to Order Cars for the Broad Street Subway — Thorough Study of Equipment Has Been Made

Director of City Transit Henry E. Ehlers advertised on July 16 for bids to be received Aug. 27 for furnishing and delivering 150 steel passenger cars for the Broad Street subway in Philadelphia. These cars will be considerably wider and of greater carrying capacity than the units now in use on the Market Street subway and Frankford elevated. The new equipment will have a seating capacity of 75 passengers and a total capacity of 212, these figures being compared with 51 and 152 respectively, the capacities of the rapid transit equipment now used by the Philadelphia Rapid Transit Company. The specifications, as advertised by Mr. Ehlers in behalf of the city, call for deliveries to begin not later than May 1, 1927, these to continue at the rate of not less than 25 a month, so that all deliveries will be completed not later than Oct. 31, 1927.

In passenger-carrying capacity and in general dimensions the prospective cars will be somewhat similar to those now in operation on the lines of the Brooklyn-Manhattan Transit Company, in New York, and on the Cambridge division of the Boston Elevated Company. They will of course be of all-steel construction, 67½ ft. long, 10 ft. wide and 12 ft. 3 in. high from rail to top of roof. As a preliminary to the development of the design the city transit authorities made a thorough canvass of the types and general arrangements and details of cars in use on other subway and elevated systems, railroads and street railways, with a view to incorporating, so far as possible, the best features of all cars studied and the latest developments in the art.

The maximum convenience of the car rider in the matter of seat comfort, the arrangement and freedom of entrance and exit, the safety of the passenger and operating crew, the utilization of the total carrying capacity of the subway tube, together with the effects of these various elements upon the costs of investment and operation, were stressed by the Department of City Transit.

Three sets of double-leaf doors are to be provided on each side of the car, the door openings being located so that each opening is conveniently accessible to one-third of the passengers. Doors are to be provided at each end of the car to enable movement from one car to the other.

Side doors will be opened and closed by pneumatic equipment electrically controlled from one of the cars. Automatic signal lights are provided for on the side of each car, in the roof and also in each motorman's cab to indicate whether the doors are in the opened or closed position.

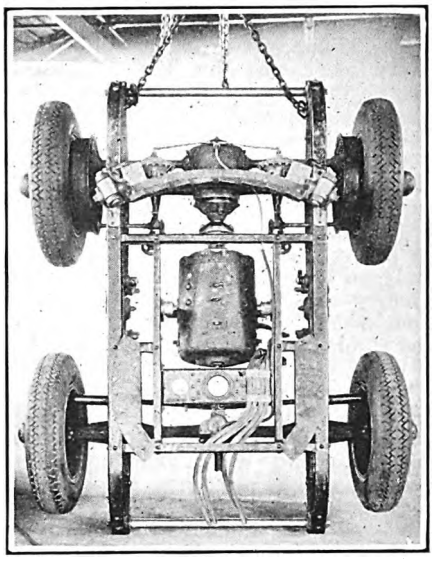
There are 75 seats shown on the car plan, of which number 25 are longitudinal seats on either side of the main doors. The seats will be of the stationary spring cushion type, covered with rattan. Hand grabs on the end of the cross seats, hand straps suspended from the car roof in front of the longitudinal seats, and pipe stanchions located in front of the door openings will be provided.

In addition to the regular system of overhead lights, emergency lights will be placed in the ceiling of the car at all of the doors, which will receive their current from a storage battery and will be automatically lighted whenever the power is cut off.

Flexible Eight-Wheel Coach Now on the Market

Railway men who attended the Atlantic City convention last October will remember the exhibit made there by the Versare Coach Company of Albany, N. Y., showing the first eight-wheel bus ever to be developed in this country. But, as is always the case with pioneer developments, the first bus of this type was rough in appearance and lacked many of the refinements necessary to esthetic design and efficient operation. Since that time the Versare company has made many improvements in the design, the general specifications of which are shown in an accompanying table.

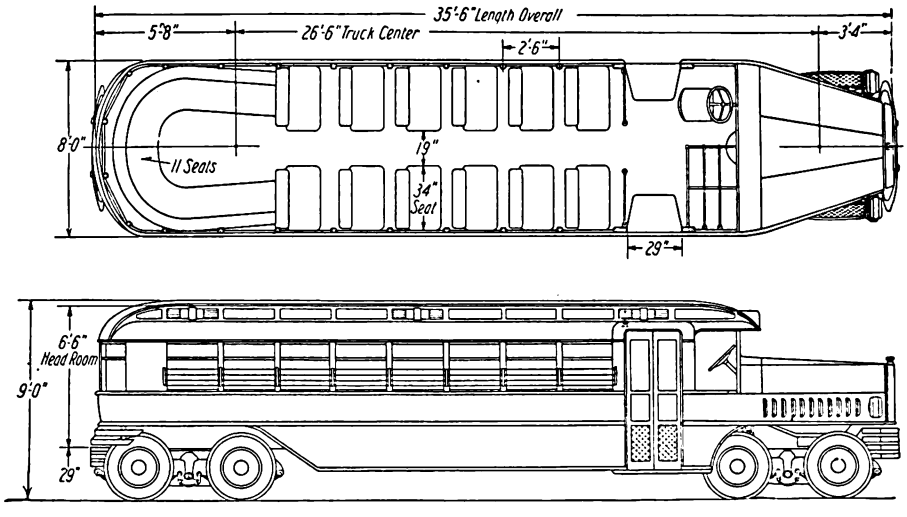
The flexibility with which this 35-ft. 6-in. coach may be handled in crowded traffic lanes is said to be remarkable. Because it turns upon two swiveled bogie trucks, in much the same fashion as a railway car, it can be turned in a space of 40 ft. Steering the coach is simple as the steering apparatus has been delicately balanced and the rear truck automatically follows the front truck in making turns.



One of the Versare Bogie Trucks, Showing Motor Suspension and Air Brakes

The light weight of the large body is due to the use of various aluminum alloys in the construction of the frame and of pure aluminum in the sheathing. The highly stressed castings of the body truss are of special aluminum alloy No. 195, heat treated. The non-stressed castings are of No. 43 silicon alloy. The more important structural members are of duralumin alloy No. 17S,

Passenger capacity	35 seated, 37 standing
Total approximate weight	18,000 lb.
Total wheelbase	26 ft. 6 in.
Bogie wheelbase	4 ft. 6 in.
Length over all	35 ft. 6 in.
Width over all	8 ft.
Height over all	9 ft.
Track	69 in.
Interior height	6 ft. 6 in.
Height of steps	13½ in. and 14½ in.
Width of doors	29 in.
Normal speed	30 m.p.h.
Engine rating	120 hp. at 2,000 r.p.m.
Generator rating, continuous	40 kw.
Motor rating, nominal	28 hp. each
Number of motors	2
Diameter of turning circle	40 ft.
Tire size	35x7 N.S. cord
Gear ratio	10.5 to 1



Seating Arrangement and Side Elevation of Versare Coach Bought by Chicago & Alton Railroad

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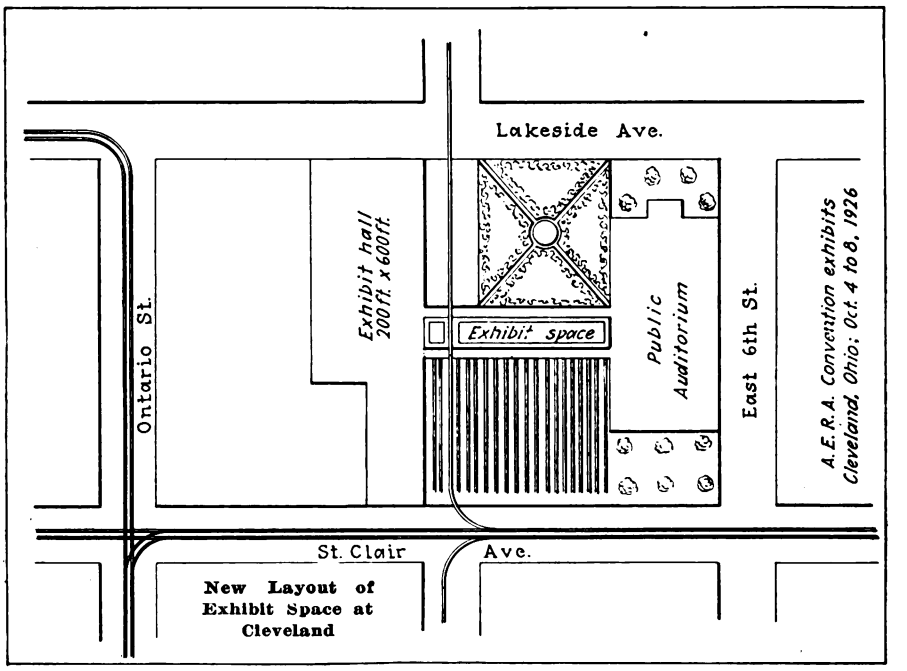
an alloy which is both wrought and heat-treated.

A 120-hp., six-cylinder engine recently developed by the Waukesha Engine Company has been provided as standard equipment on the new units. The engine is connected to a 40-kw. Westinghouse generator by means of a disk-type coupling and the two are mounted as a unit on a sub-frame. The generator, with a continuous rating of 40 kw. at 1,200 r.p.m., is a specially designed machine provided with a field winding arranged for separate excitation, which assures a positive pick-up and stable operation under all load conditions.

The generator is capable of utilizing the full output of the engine and is able, without overheating, to supply full power to two Westinghouse traction motors which are mounted on the bogies. The motors are of the vehicle type and have a nominal rating of 28 hp. at 175 volts. They are so constructed as to protect the commutator against dirt and water, two conditions always encountered under a road vehicle.

Control of the coach is effected through the main controller and the braking controller. The main controller has three operating positions, series and parallel, forward, and parallel reverse. The parallel position forward is the first operating position from the "off," as it is used more frequently than the series. In operating the coach the driver first starts the engine and then throws the controller into one of the operating positions. The engine throttle is practically the only control regularly used, the variations in engine speeds being sufficient to produce the desired voltages. A field resistor unit which is provided is used only in climbing very steep hills or under abnormal load conditions.

An advantage of the Versare coach is that the trucks are removable. Thus any electrical or braking troubles may be corrected without putting the entire unit into the shop. All that is necessary is to run a spare truck under the body and repair the one taken out of service at leisure. The Versare company is also building a six-wheel unit, which is similar in its major points to the larger coach, although of necessity the arrangement of trucks and motors has been altered somewhat.



New Layout of Exhibit Space at Cleveland

Space Assigned for Exhibits

One Hundred and Seven Thousand, Six Hundred and Thirty Square Feet Has Been Allotted Exclusive of Track Space for the Cleveland Convention Oct. 4-8—All Arrangements Well in Hand

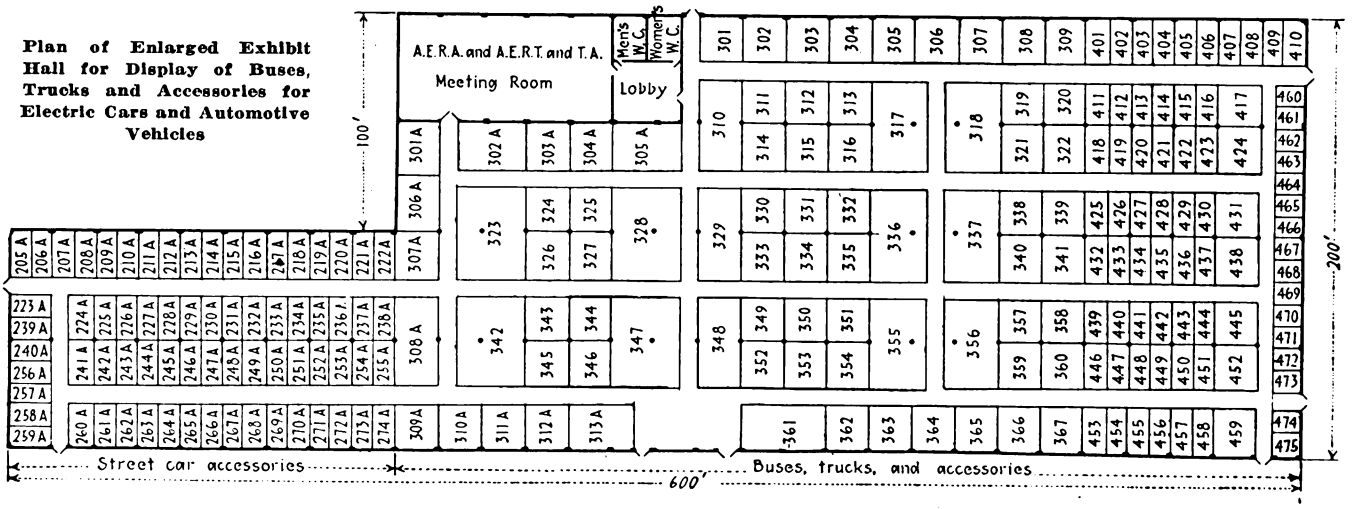
PLANS for the Cleveland convention of the American Electric Railway Association are progressing with dispatch. The various committees in charge of convention arrangements have details will in hand. The demand for exhibit space has exceeded all expectations, as may be gathered from the fact that when the exhibit committee met to make the official space assignments, it had in hand applications from 195 members. When the assignments were completed, a total of 107,630 sq.ft. had been allotted exclusive of track space.

When the 1925 convention opened last October there were 204 exhibitors who occupied 100,030 sq.ft. of space with a display of equipment that totaled in value approximately $1,750,000. Almost three months still remain before the 1926 convention opens. Past experience has shown that space applications keep coming in to association headquarters all through the summer, and there are even some concerns which postpone the filing of applications until a day or so prior to the opening of the convention. Needless to say, these, if they can be cared for at all, are necessarily placed in odd corners, or wherever it may be possible to put them, without interfering with fire department rules and regulations.

There are, of course, instances where sales managers have questioned the value of exhibits. The following tabulation will be of interest in this connection as will also the list of exhibitors to whom space has been assigned for this year, many of whom have exhibited consistently at A.E.R.A. conventions for years back.

The following members have applied for track space upon which to show cars:

The J. G. Brill Company.
Cleveland Railway Company.
Cummings Car & Coach Company.



Plan of Enlarged Exhibit Hall for Display of Buses, Trucks and Accessories for Electric Cars and Automotive Vehicles

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List of Exhibitors and Space Assigned, A.E.R.A. Convention, Cleveland, October 4-8

Name	Booth Number
Adams & Westlake Company, The	405
Alumino-Thermic Corporation	250-A
Aluminum Company of America	126
American Brake Shoe & Foundry Company	274, 275, 287, 288
American Brass Company, The	½ of 206
American Brown Boveri Electric Corporation	214, 215, 227, 228
American Car & Foundry Company	131, 133, 135, 147, 149 and Corridor
American Car & Foundry Motors Company	323, 324, 325, 326, 327, 328
American Malleable Castings Association	459
American Steel & Wire Company	253, 254
Anaconda Copper Mining Company	½ of 206
Anderson, Albert & J. M., Manufacturing Company	232
Associated Spicer Companies	437, 438
Association of Manufacturers of Chilled Car Wheels	298
Bacon Safety Fender Company	411, 418
Baker-Raulang Company, The	304-A, 305-A
Baldwin Locomotive Works	216-A, 217-A
Bender Body Company	301, 302, 303
Bethlehem Steel Company, Inc	210, 211, 212, 224, 225
Black & Decker	276, 277, 278, 289, 290, 291
Bosch, Robert, Magneto Company, Inc	450
Bragg-Kliesrath Corporation	322
Brill, J. G., Company	120, 307, 308
Brown Body Corporation	304, 305, 306
Brown-Lipe Gear Company	472, 473
Buda Company, The	445, 452
Budd Wheel Company	427, 434
Bus Transportation	102
C. G. Spring & Bumper Company	463, 464
Carey, Philip, Company	236-A, 237-A, 238-A, 253-A, 254-A, 255-A
Carnegie Steel Company	238
Carr Fastener Company	428
Chase, L. C., & Company	453, 454
Cheatham Electric Switching Device Company	273
Chillingworth Manufacturing Company	265-A
Chilton Class Journal Company	401
Christensen Air Brake Company, The	442, 449
Clark Equipment Company	429
Clark-Williams Engineering Company, Inc	262, 282
Cleveland Fare Box Company	207
Cleveland Frog & Crossing Company	266
Cleveland Pneumatic Tool Company, The	417, 424
Clipper Belt Lacer Company	140
Collier, Barron G., Inc	104
Columbia Machine Works & M. I. Company	465
Consolidated Car Heating Company	221, 222, 223, 234, 235, 236, 237
Continental Motors Corporation	430, 431
Copperweld Steel Company	239-A
Cyclops Steel Company	219
D'Arcy Spring Company	469
Dayton Mechanical Tie Company, The	243-A, 244-A
Dayton Steel Foundry Company, The	462
De Laval Separator Company	457, 458
De Vilbiss Company, The	240-A
Dixon, Joseph, Crucible Company	467
Doyle, Kitchen & McCormick	204-A
Drew Electric & Manufacturing Company, The	202-A
Duff Manufacturing Company	211-A
Eagle-Ottawa Leather Company	460, 461
Earll, C. I.	246
Eberhard Manufacturing Company, The	444, 451
Economy Electric Devices Company	118
Eclipse Railway Supply Company, The	248
Edwards, O. M., Company, The	403
Egyptian Lacquer Manufacturing Company, Inc., The	468
Electric Railway Equipment Company, The	268-A
Electric Railway Improvement Company, The	221-A, 222-A
ELECTRIC RAILWAY JOURNAL	101
Electric Service Supplies Company	216, 217, 218, 230, 231
Electric Storage Battery Company, The	426
Electric Traction	103
Erie Malleable Iron Company	471
Forbes, B. C., Publishing Company, Inc	121
Fuller & Sons Manufacturing Company	412
Galena Signal Oil Company	127, 129, 141, 143, 145
Garford Motor Truck Company	302-A, 303-A
General Electric Company	113
Gilbert, A., & Sons Brass Foundry Company	247
Glidden Company, The	338
Globe Ticket Company	213, 226
Godwin, W. S., Company, Inc	266-A
Gold Car Heating & Lighting Company	297
Graham Brothers	311-A, 312-A, 313-A
Graybar Electric Company	212-A, 213-A, 214-A
Griffin Wheel Company	106
Hale-Kilburn Company	201, 202, 203, 204, 205
Haskelite Manufacturing Corporation	407, 408
Heywood-Wakefield Company	294, 295, 296
Hyatt Roller Bearing Company	260-A, 261-A
Illinois Steel Company	239, 252
Indianapolis Switch & Frog Company	226-A
International Harvester Company of America	356, 357, 359
International Motor Company	329
International Register Company	209
International Steel Tie Company	218-A, 219-A, 220-A
Irving Iron Works Company	264-A
Irvington Varnish & Insulator Co	138
Jeandron, W. J.	256-A
Johnston, R. F., Paint Company	137, 139
Karpen, S., & Brothers	340
Kellogg Manufacturing Company	358
Lang Body Company, The	337
Leece-Neville Company, The	455
Lorain Steel Company, The	242, 243, 255, 256, 257
Lovejoy Manufacturing Company	309
MacDonald Manufacturing Company	257-A
Mack-International Motor Truck Company	½ of 331, 332, ½ of 334, 335
Mack Motor Truck Company	330, ½ of 331, 333, ½ of 334
Mack Trucks, Inc	336
Manganese Steel Forge Company	124
Manley Manufacturing Company, The	441, 448
Martindale Electric Company	223-A
Metal & Thermit Corporation	264, 265, 251
More-Jones Brass & Metal Company	261, 262
Motor Improvements, Inc	420
Motor Products Corporation	439
Motor Coach Transportation	466
Nachman Springfield Company	406
Nachod & United States Signal Company	272
National Brake Company, Inc	271-A
National Carbon Company, Inc	320
National Malleable & Steel Castings Company	446, 447
National Motorbus & Taxicab Journal	470
National Pneumatic Company	107, 109, 111
National Railway Appliance Company	116
National Tube Company	240, 241
Nichols-Lintern Company, The	125
Norma-Hoffman Bearings Corporation	273-A, 274-A
North East Electric Company	416, 423
Northern Ohio Power & Light Company	309-A, 310-A
Nuttall, R. D., Company	108
Ohio Brass Company	115
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FIGURES ON REGISTRATION AND EXHIBIT SPACE SOLD 1916-1926

Year	City	Total Registration	Number of Exhibitors	Total Space Sold, Square Feet
1916	Atlantic City	3,271	125	57,329
1917	New York City	Conference only	No exhibit	No exhibit
1918	New York City	Conference only	No exhibit	No exhibit
1919	Atlantic City	3,166	157	62,219
1920	Atlantic City	3,300	136	59,529
1921	Atlantic City	1,189	No exhibit	No exhibit
1922	Chicago	4,200	141	61,895
1923	Atlantic City	4,404	163	75,681
1924	Atlantic City	5,804	192	86,349
1925	Atlantic City	7,147	204	100,030
1926	Cleveland	.....	195-7/8/26	107,630 (assigned July 8, 1926)

The Differential Steel Car Company.
Northern Ohio Power and Light Company.
The Phoenix Ice Machine Company.
St. Louis Car Company.

The companies shown below have also made application for track space upon which to show actual working displays of their several products:

Electric Railway Improvement Company.
Ingersoll-Rand Company.
Metal & Thermit Corporation.
Railway Track-Work Company.

Paving Brick Shipments Increase

Increases in production, shipments and unfilled orders, with a corresponding decline in stock on hand, are reported by the paying brick industry to the United States Department of Commerce for June as compared with May.

Production went from 21,103,000 in May to 26,342,000 in June. Shipments went from 22,645,000 in May to 30,312,000 in June. Stock fell from 123,808,000 in May to 115,971,000 in June. Unfilled orders climbed from 71,430,000 the first day of May to 75,283,000 the first day of June.

These figures are compiled from the reports of 26 companies, representing 76 per cent of the normal tonnage of the industry. Ohio leads the list in consumption for June with 8,685,000. Kansas was next with 3,700,000, Texas third with 3,198,000 and Illinois fourth with 2,446,000.

Railroads Order More Gas-Electric Cars

Additional railroad companies, including one in Canada, have placed orders for Brill-Westinghouse gas-electric cars, according to an announcement made recently. One of the railroads, the Reading Company, is placing its second order for this type of car, having already placed in operation the first Brill-Westinghouse car ever built. It was delivered and put in operation in August of last year. The other orders received were from the Wheeling & Lake Erie Railroad and the Temiskaming & Northern Ontario Railroad.

The Reading Company's order calls for three standard designed 60-ft. passenger and baggage cars with the standard 250-hp. gas-electric generator units and all the other construction features embodied in previously delivered cars. When completed and delivered to the railroad these cars will be operated in the service between Trenton and Bound Brook, N. J., it was announced. The order received from the Canadian railroad calls for one 73-ft. passenger and baggage car which is to be delivered at the road's headquarters at North Bay, Ont. The contract placed by the Wheeling & Lake Erie Railroad calls for two 60-ft. passenger and mail cars and one 60-ft. passenger and baggage gas-electric car.

As in the past all the cars will be assembled at the Brill Works, while the motive equipment will be furnished by the South Philadelphia and East Pittsburgh Works of the Westinghouse Electric & Manufacturing Company.

Yellow Will Build Twin City Buses

Seven gas-electric buses have been ordered by the Minneapolis Street Railway for operation of its first auxiliary service southward from the city center to the outskirts. The service will begin early in September. The buses will be built by the Yellow Truck & Coach Manufacturing Company, Chicago and the bodies by Eckland Brothers Company, Minneapolis, and will cost $12,500 each. The route is a zigzag course to 24th Street, to Hennepin Avenue, thence to 36th Street and will accommodate passengers who want faster and more direct service and to points not reached directly by trolley lines.

Track and Line

Chicago Surface Lines, Chicago, Ill., has constructed nearly a mile of track on Ashland Avenue between 89th and 95th Streets, Chicago. The work was begun early last spring and service was started over the extension on July 6. The Ashland Avenue line formerly ended at 87th Street. Last year it was extended to 88th Street.

Scranton Railway, Scranton, Pa., will spend approximately $225,000 in rebuilding tracks and in general improvement to roadways during the current year. Just recently the work of relaying 2,000 ft. of new track on the Bellevue line was completed at a cost of $20,000. The company is placing 3,600 ft. of double track starting at the city line and running 3,600 ft. south into Taylor Borough. The estimated cost of this work is $88,000. The company has arranged for the rebuilding of ½ mile of single track in Blakely Borough at a cost of $35,000. Work is being rushed on the placing of 2,500 ft. of single track on Cedar Avenue. This work will entail an expenditure of $28,000. New track will also be placed on Hemlock Street costing $700. The building program also calls for the construction of new double track on Pittston Avenue, at a cost of $55,000. Another improvement to the Pittston Avenue route will be the laying of 2,000 ft. of new track, at a cost of $20,000. In addition to these jobs the company will spend considerable money for maintenance work.

Wisconsin Gas & Electric Company, Kenosha, Wis., has been asked by the Common Council to improve its system. The recommendations include the extension of one line, the building of two single-track lines and the double tracking of three lines.

Metal, Coal and Material Prices

Metals—New York	July 20, 1926
Copper, electrolytic, cents per lb	14.25
Copper wire, cents per lb	16.00
Lead, cents per lb	8.50
Zinc, cents per lb	7.475
Tin, Straits, cents per lb	63.375
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.35
Somerset mine run, Boston, net tons	1.875
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.825
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.475
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	12.4
White lead in oil (100-lb. keg), N. Y., cents per lb	15.50
Turpentine (bbl. lots), N. Y., per gal	$0.88

New Advertising Literature

Laclede-Christy Clay Products Company, St. Louis, Mo., in a combination letter and catalog folder, says there are at least 3,000 users, "large and small, in every part of the world," of the Laclede fire brick. The names of about half a dozen each of automobile, glass and iron and steel manufacturers, railroads and oil producers and refiners are given as examples of the varied lines of businesses that use the fire brick. In addition two or three laudatory letters are quoted. Five different bricks are specified, manufactured by two different methods, and designed to withstand different conditions of service.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has just published a very interesting little book entitled "Industry's Electrical Progress." The author undertakes to prove that the competitive advantages which electric power brings to industry lie in the effectiveness with which electricity is utilized. From this it is a natural sequence to discuss progress which has been made in electric control equipment, and many examples are given of the manner in which proper control equipment has been applied to devious fields of operation. Many photographs of actual installations are shown. The Cutler-Hammer company will be glad to send free a copy to any one requesting it.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has recently announced the release of publication M.A.C. 7379, which treats clearly the subject of the application of motors and their control for heating and ventilating of modern buildings. This 25-page publication contains nine full pictorial pages showing office buildings, hotels, clubs, lodges, schools, theaters, railway terminals and tunnels. A complete discussion of the types of fans and the type of motors available for fan drive, types of control and distinctive characteristics of motors and control, with illustrations of equipment, and two pages of engineering data complete this circular.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, July 31, 1926 *Number* 5

Experience Proves Soundness of No-Parking Theory

THEORETICAL arguments showing how transportation conditions could be improved in congested streets by the restriction of automobile parking usually have fallen on deaf ears. Lately, however, the soundness of this theory has been proved beyond dispute in two widely separated cities. In Chicago the huge crowds attending the Eucharistic Congress were successfully handled by the existing local transportation agencies because parking had been completely eliminated in the congested districts. More recently, when the Interborough subway strike in New York City placed a heavy additional burden on the surface lines, the Police Department promulgated strict no-parking regulations to facilitate traffic movement. Remarkable success attended the execution of this plan. A million extra passengers a day were accommodated above ground without any serious difficulty.

Fifth Avenue, where traffic congestion has long been a serious problem, furnishes an excellent example of improvement. Vehicles now move in each direction in three lanes instead of two as used to be the case. Buses move in a column close to the curb instead of weaving in and out. It is no longer necessary to discharge passengers in the middle of the roadway because of the impossibility of drawing up to the sidewalk. The average speed of private automobiles is practically double what it was with parking.

Similar good results have been obtained on other streets. If this eminently sensible restriction of parking is continued after the termination of the strike, the considerable inconvenience occasioned by the curtailment of subway service will be more than made up for by the permanent improvement in surface transportation conditions.

Hope for the Industry Seen in Aggressive Effort of Competitors

SOME good in the active competition affecting practically all electric railways today is seen by Charles E. Thompson, vice-president of the Chicago, North Shore & Milwaukee Railroad. He sees encouragement in this competition because the competitor realizes the essentiality of transportation.

The electric railway manager and owner has not been aroused entirely from the lethargy brought on by the first appearance of that competition. The transition from a comfortable monopoly to a competitive industry has brought a change in managerial conception from inwardly watching the wheels go round to one of looking outwardly to see how the wheels of his own vehicles can serve the public better than the other fellow's. In short, it means a change from the swivel chair to the street. And some are loath to make the change.

In his address before the Central Electric Railway Accountants' Association at Chicago, Mr. Thompson further said that "no one cares to bother about a business headed toward oblivion." Facts of the last months have shown that the industry is headed toward oblivion only in the minds of the halt and the blind. Forward-looking cities, such as Cleveland, Chicago, Milwaukee, Cincinnati, Grand Rapids, Pittsburgh, Youngstown and many others, have seen through the mist of the present day and have dared to take the step to recreate and put their properties on a parity with the modern conception of a transport system. Some have accomplished results and others are in the process.

In the light of such real accomplishments, Mr. Thompson's address strikes home as indicating the dividing line between the old and the new. Primarily it is not cars and track that make a railway—they are only the physical tools of the industry. The attitude back of them is the real thing that counts. Mental apathy is the fundamental barrier that blocks the way and prevents the acquisition of a directed energy so necessary to recreate our public transport systems.

If the actions of our competitors will accomplish only the thorough awakening of the industry and its owners, then the temporary losses in revenue can be transferred to the capital account of the new company as an asset of no mean value.

Old Car Bodies Make Poor Waiting Rooms

COMMENDABLE anxiety to save money sometimes leads railway managements to adopt practices of doubtful desirability. For example, it is not unusual to see an old car body being used as a passenger waiting room. In point of first cost, this is perhaps the cheapest form of protection that could be provided. But it is a "penny wise and pound foolish" policy.

Surveys have shown that more than a third of the electric railway cars now in service are over twenty years old. Since this is so, it is safe to say that a car which has been retired as obsolete is not good for much. Since the requirements for a transportation vehicle differ widely from those of a stationary shelter a new car would make a poor enough waiting room, but an old car is worse.

Attractive modern cars are operated with a view to encouraging more passengers to ride. It is utterly illogical at the same time to repel people by expecting them to use worn-out, decrepit, old car bodies as waiting rooms. If need exists for some sort of shelter or station it is far better and cheaper in the long run for

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the railway to build an adequate structure designed for this particular purpose.

Besides the lack of suitability from the standpoint of design there are serious objections from a psychological standpoint to making such use of old rolling stock. When a car has become obsolete it should be removed permanently from sight. It should not be allowed to stand rotting and rusting on some siding to remind passers-by that its days of usefulness are over. That is too much like suggesting that the day of usefulness of the electric railway itself is over. No doubt it would be over, too, if it relied on obsolete cars to carry its passengers. But the industry as a whole has made real progress in improving its rolling stock. The less the public sees of the old cars, the more definite will be the impression of modernization.

Planting the Seed Where the Soil Is Richest

NAPOLEON owed much of his success as a military leader to the skill he employed in selecting the weak point in his adversary's defenses in which to drive an opening wedge. So today, in the campaign to stimulate car purchases by electric railways, it is well to determine at what point the most effective work can be accomplished in furthering the modernization program. It is not enough merely to say "buy new cars." Equally essential is the need for unification of car design, the simplification of car funding plans, and all such subjects dealing with the acquisition of rolling stock.

What would seem to be a promising point at which to start this entering wedge is the holding or management corporation, with its group of subsidiary railway properties and the important rôle which it plays in determining the buying policies of those companies. That there is fertile ground for work in this direction is indicated by the recent policy of one of these parent companies in ordering cars for several of its subsidiary properties. The cars were all built by one manufacturer, they were practically similar in general design and in specified equipment, yet the over-all dimensions on the cars for each of the properties varied by amounts not exceeding two or three inches. These variations, however slight, were sufficient to render impossible any attempt to standardize on the manufacture of these cars and the expense to the purchaser was accordingly increased very materially. It is possible, albeit not very probable, that these differences in dimensions were rendered essential by local operating conditions. The reason should indeed have been a substantial one to warrant departure from a standard specification, especially when the number of cars ordered for each property was small.

The A.E.R.A. special committee on essential features of modern cars has rendered its report. It goes without saying that in the adoption of its recommendations will lie the solution of many of the car purchasing ills which have beset the industry in the past. The advantage of strong leaders cannot be gainsaid, and if the holding companies and the management corporations take the initiative in the move to simplify car specifications they will have a strong influence in causing individual companies of the industry to fall into line. The issue is a crucial one and only a broad-minded and far-seeing attitude on the part of railway managements will assure an ultimately satisfactory outcome. It is time for the submersion of personal ego by individual companies and executives and the working together of the whole for the good of all. As in 1776, "United we stand —divided we fall."

State Regulation of Highway Traffic Essentially Upheld

PUBLICATION in full in the legal reporters of the opinion of United States Supreme Court in the case of Frost et al. vs. Railroad Commission of the State of California, decided June 7, with the dissenting opinions, helps to a better understanding of the case. Thus, it shows that the Supreme Court did not declare that a state cannot require private carriers to take out certificates of convenience and necessity from the Public Service Commission or that the commission did not have power to regulate their rates. The criticism of the Supreme Court was directed against the attempt of the commission to enforce such regulation under the act as passed. This act was limited by its wording to "common carriers," which are words which have a very definite meaning in law. When, therefore, the Railroad Commission of California tried to regulate a private carrier under this law, the United States Supreme Court declared that it had exceeded its authority, saying: "A private carrier cannot be converted against his will into a common carrier by mere legislative command," nor can the state require a private carrier to give up his rights as such in order to use the highways. The United States Supreme Court does not say, however, that a law specifically covering private carriers, but in all other respects exactly like the present law, would be unconstitutional.

This fact is emphasized in the dissenting opinions filed at the same time. One was written by Justice Holmes and is concurred in by Justice Brandeis. The second is by Justice McReynolds. The former foresees a great deal of legislation by states for keeping streets reasonably clear for travel and sees nothing to prevent it from requiring every user of the street to take out a license. Justices Holmes and Brandeis differ principally from the majority opinion in finding nothing in the act which requires private carriers to become common carriers, but if there is such a requirement, they say, this clause could be declared invalid and the rest of the act allowed to stand. Justice McReynolds goes even farther, saying that if the California Supreme Court had simply approved the action of the Railroad Commission and had said nothing more, there would be little, if any, difficulty in finding adequate grounds for affirming its decision by the federal Supreme Court. He added that having built and paid for the roads, the State of California certainly has the general power of control over them, and if the state legislature had said that no intrastate carriers for hire except public ones should be permitted to operate over the state roads, it would have violated no federal law.

In other words, the conclusion reached from reading this decision is that all members of the court realize the growing necessity for greater regulation of street traffic by local authorities, and that the majority found fault with the wording, but not with the essence, of the act by which the state attempted to exercise this control.

One sometimes hears statements to the effect that the highways have been dedicated for public use and that laws on parking, speed regulation, varying rates of taxes for different classes of vehicles, etc., contravene some inalienable right of the citizens. It is sufficient

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to say that no such view has been expressed in this last decision of the United States Supreme Court or in any other that can be recalled.

The "blind spot," or land of no jurisdiction, in the whole regulation of highways now is the case of the motor bus which does an exclusively interstate business. The trouble here, of course, is not with the courts but with Congress, because it has failed to act in this matter as yet. In the meantime, both federal and state courts have been defining more closely just what limitations may be placed by state legislatures on the activities of interstate motor buses. Briefly, these are some of them:

An interstate motor bus cannot do any intrastate business on any part of its route without the consent of the state concerned; that is to say, it cannot receive and discharge the same passenger or passengers for travel wholly within the boundaries of one state. The intrastate operator must also obey the local laws governing speed, safety and weight of his vehicles and must pay reasonable taxes on them. The word "reasonable" means presumably the taxes paid by like vehicles in intrastate business for like use of the road.

Some of the things which the individual state cannot do are as follows: It cannot withhold a license for a bus intended for purely interstate business because on parts of the route it is in competition with an existing route (Buck-Kuykendall case), and it cannot place upon an interstate private carrier the duties and liabilities of an intrastate common carrier (Michigan-Duke case). Where a common carrier does both an interstate and an intrastate business, the latter with the approval of the state, there is some question as to the possible extent of the latter control, but the power of a state to deal absolutely with its internal commerce is generally recognized except where such state action is clearly a burden or restriction upon the carrier's interstate business. Those wishing an extensive review of recent decisions on this general subject will find it in an opinion given by the New Hampshire Supreme Court on May 7 in the case of Hazelton vs. Interstate Bus Lines (133 Atlantic Rep., 451).

Possibilities Exist for Getting the Summer Business

BACK some years ago the season of warm nights and warmer days induced people to take a trolley ride to cool off. Maybe there are a few such folks left, who would be tempted to partake of the pleasures of facing the breeze in a comfortable, safe and roomy vehicle, if they were reminded that the way was still open to them.

It can't quite be true that these folks have all gone for a dash in their flivvers. One thing that shows that summer business is still a big factor is the scramble for the upper seats on the double-deck buses. Such vehicles are no longer confined to Fifth Avenue in New York and Michigan Boulevard in Chicago, but they may be found in quite a number of cities of half a million population and even smaller. Buses are well adapted to taking care of the special summer routes. It may be desirable to run special Sunday and holiday routes to picnic grounds, the zoo and similar places to get the last bit of summer business. Extra dollars obtained in this way help to pay dividends.

In many cases it may be felt that the transportation business should normally drop off during the summer with so many of the regular rush-hour riders on their vacations. Those who do not leave town will have more time to ride in the off-peak hours; and summer visitors should in some measure compensate for those who leave for recreation elsewhere. Posters and advertising may be used to good advantage to tell of the ways prepared by the railway to make the irritable summer days easier for those in town. Summer route buses may in some cases be run through the center of town so that they will be convenient and inviting.

While buses are the facilities needed for the special and occasional routes for which the company cannot afford to lay track, the street car has its possibilities for summer business. Band concerts and ball games are sources of off-peak traffic. It is well to advertise somebody else's business if it is going to help one's own. The people can be told just how to reach such gatherings by trolley, and in case of an especially big event the patrons may be given a pleasant surprise by running through cars from the heavier lines.

Special Care Needed in Long Run Chartered Bus Service

NEED of great care in the operation of buses, especially in special and long run service, is emphasized again in the accident at Sparkill, N. Y., on July 22, when a chartered bus overturned, killing eleven passengers and injuring 33. The party was one of women and children returning to Brooklyn after an outing at Bear Mountain Park, and the cause apparently was too rapid descent of a hill, at the foot of which was a sharp curve. The evidence so far presented as to the detailed causes of the accident is somewhat confused, but it appears that the driver was not very well acquainted with the road and that the bus was not one originally designed for cross-country passenger service. It had a truck chassis built in 1918, on which a body capable of holding 40 passengers had later been placed. As electric railway companies are engaging extensively in bus operating, including chartered service, they should endeavor to heed any lessons which this accident may teach. This is the only good which can come out of the catastrophe.

Bus operation is an important part of the service which common carriers can give, but it demands great care in the selection and maintenance of equipment and in the training of operators. Whether these demands are in greater amount or proportion than in railway operation is beside the question just now. At least the operating problems are different, particularly in cross-country runs. Steep grades are apt to become slippery after a shower, sharp curves abound, and at any moment another user of the highway may pass directly in front of an oncoming bus.

That service can be given in these circumstances at fairly high speeds without serious liability of accident is being proved, of course, every day all over the country, but this is no reason for the neglect of great precautions, particularly in chartered service over unfamiliar routes. It is not every driver of an automobile that can be intrusted with the operation of a bus, nor should equipment unsuitable to the service be used. Responsible carriers will also gain if greater safeguards than now exist in many states are thrown around the service by the constituted authorities, these safeguards to include adequate responsibility for injuries caused.

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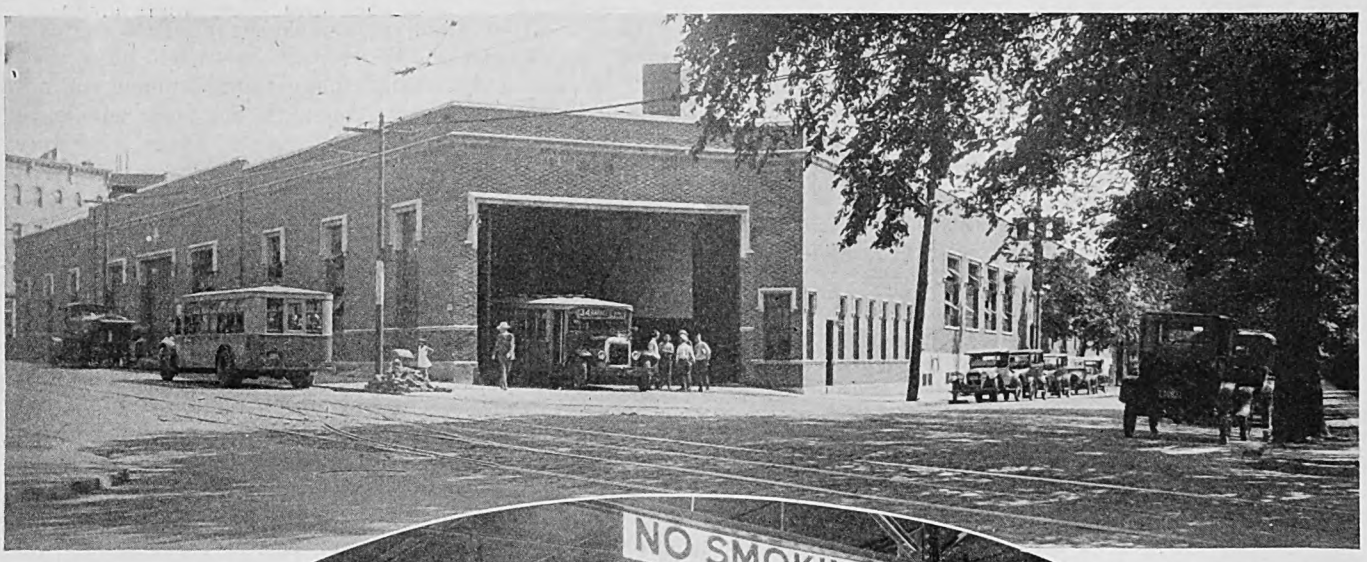
Housing Facilities for Public Service Buses



THE view at the top shows the Lake Street garage, which is the largest operating station in the Essex division and houses 140 buses. It was built on the site of an open car storage yard. Four doorways give access to the street on three sides.

The oval shows the interior of the Sherman Avenue garage, which was originally built for industrial purposes. It has been rearranged to accommodate 128 buses.

The lower view shows the rear entrance of the Sherman Avenue garage, the second largest unit in the Essex division.

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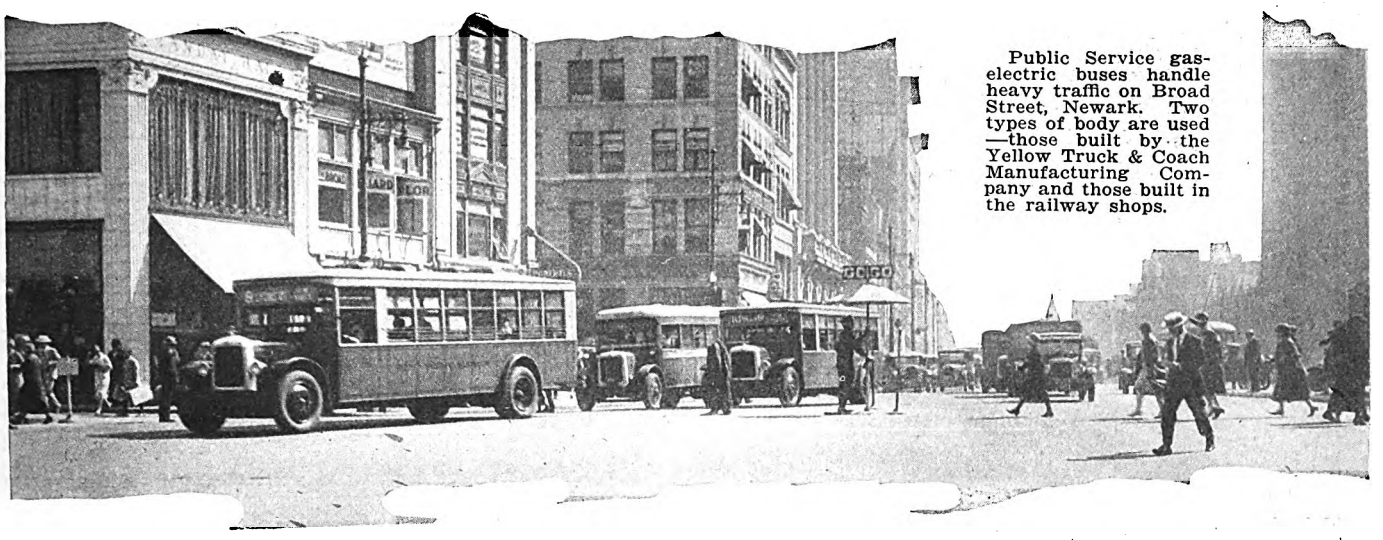


Public Service gas-electric buses handle heavy traffic on Broad Street, Newark. Two types of body are used—those built by the Yellow Truck & Coach Manufacturing Company and those built in the railway shops.

Public Service Standardizes Bus Equipment

Since the Delivery of 387 New Gas-Electrics More than 400 Vehicles of Older Types Have Been Retired from Service—At Present 843 Buses Are Operated on 99 Routes —Only Yellow Coaches, Whites and Macks Are Used

PURCHASE of 387 gas-electric buses by the Public Service Transportation Company, a subsidiary of the Public Service Railway, Newark, N. J., has made it possible to retire from service more than 400 vehicles of older types and to standardize on only four models. These are Yellow gas-electrics, Yellow mechanical drives, Whites and Macks. Standardization of equipment was one of the underlying reasons for the placing last December of an order for 333 gas-electrics, the largest single bus order on record. Later this was supplemented by an order for 54 additional vehicles of the same type. Delivery of these new buses has been completed and the obsolete vehicles formerly used have been scrapped.

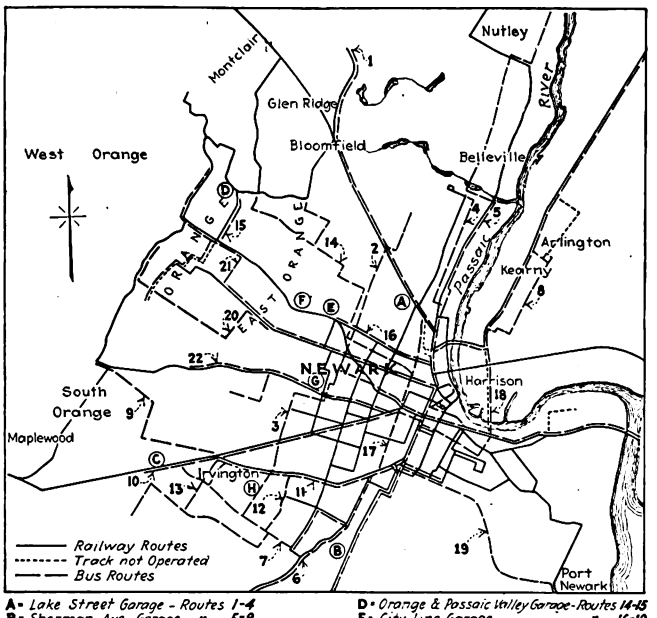
Originally this company had more than 60 different types of buses. These had been bought during a period of several years, one at a time or in small groups from independent operators competing with the railway. It was a little more than two years ago that the company commenced bus operation on a large scale and many new buses, mostly Whites, Macks and Yellow Coaches with mechanical drive, were ordered from the manufacturers to replace the worn-out vehicles taken over from the independents. By this means a reduction in the number of types from 60 to 35 was effected. Recently 31 other types have been eliminated, so that there now remain only four types in regular service. The number of each is shown in the following table:

RECAPITULATION OF BUS EQUIPMENT

Type	Number
Yellow Coach, gas-electric	387
Yellow Coach, mechanical drive	102
White	229
Mack	231
Miscellaneous	22
Total	971

The 22 buses listed as miscellaneous are the result of the recent purchase of several existing lines. The equipment on these routes will be standardized as quickly as possible. Present schedules call for the operation of 843 buses on 99 routes. These figures show a substantial increase over those of last fall as given in an article in ELECTRIC RAILWAY JOURNAL, Nov. 28. A total of 25 garages are used. The operation is distributed among the various garages in the six divisions of the company as shown in the table on page 176.

Acquisition of the 387 new gas-electric buses has made it possible to standardize the rolling stock by lines and also by garages. In Essex, the largest of the operating divisions, this has been carried out to a greater extent than in the other divisions. The two largest garages—Lake Street, from



A- Lake Street Garage - Routes 1-4
B- Sherman Ave. Garage - " 5-9
C- Hilton Garage - " 10-13
D- Orange & Passaic Valley Garage- Routes 14-15
E- City Line Garage - " 16-19
F- Grove St. Garage - " 20-21
G- 18th Street Garage - Route 22
H- Irvington Shops

Bus Service in Essex Division Is Given by 22 Lines Operating from Seven Garages

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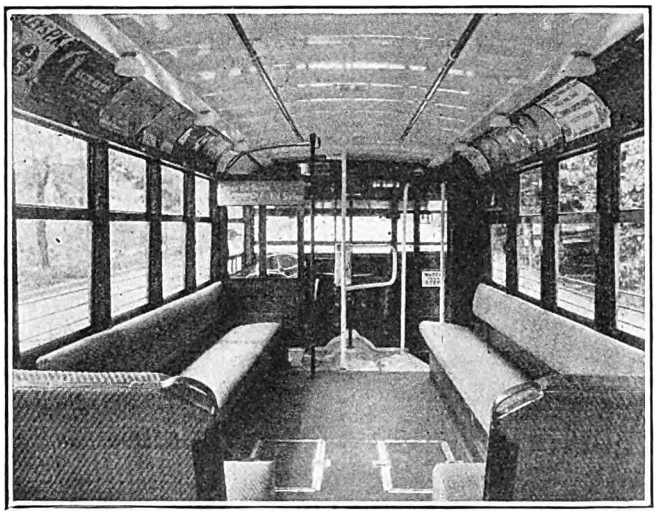


The Forward Part of the Benedict Body Has Longitudinal Seats, Thus Providing Space for Passengers to Stand When Paying Fare, etc.

DISTRIBUTION BY DIVISIONS

Garage	Capacity	Routes	Buses
Essex Division (7)			
Lake Street	140	4	74
Sherman Avenue	110	5	65
Hilton	85	4	77
Orange & Passaic Valley	25	2	17
City Line	36	4	21
Grove Street	40	2	34
Eighteenth Street	26	1	28
Totals	462	22	316
Hudson Division (1)			
Union City	100	7	83
Passaic Division (3)			
Paterson	130	20	109
Lakeview	40	4	30
Great Notch	30	2	25
Totals	200	26	164
Central Division (5)			
Elizabeth	40	5	28
Plainfield	40	4	16
Rahway Avenue	35	3	14
New Brunswick	70	7	51
Manville	3	2	4
Totals	188	21	113
Southern (6)			
Newton Avenue	130	13	105
Gibbstown	8	1	6
Berlin	15	1	13
Grenlock / Williamstown	20	1	15
Hainesport	6	1	4
Totals	179	17	143
Bergen Division (3)			
Rutherford	10	2	12
Hackensack	5	2	8
Edgewater	5	2	4
Totals	20	6	24
Grand total	1,149	99	843

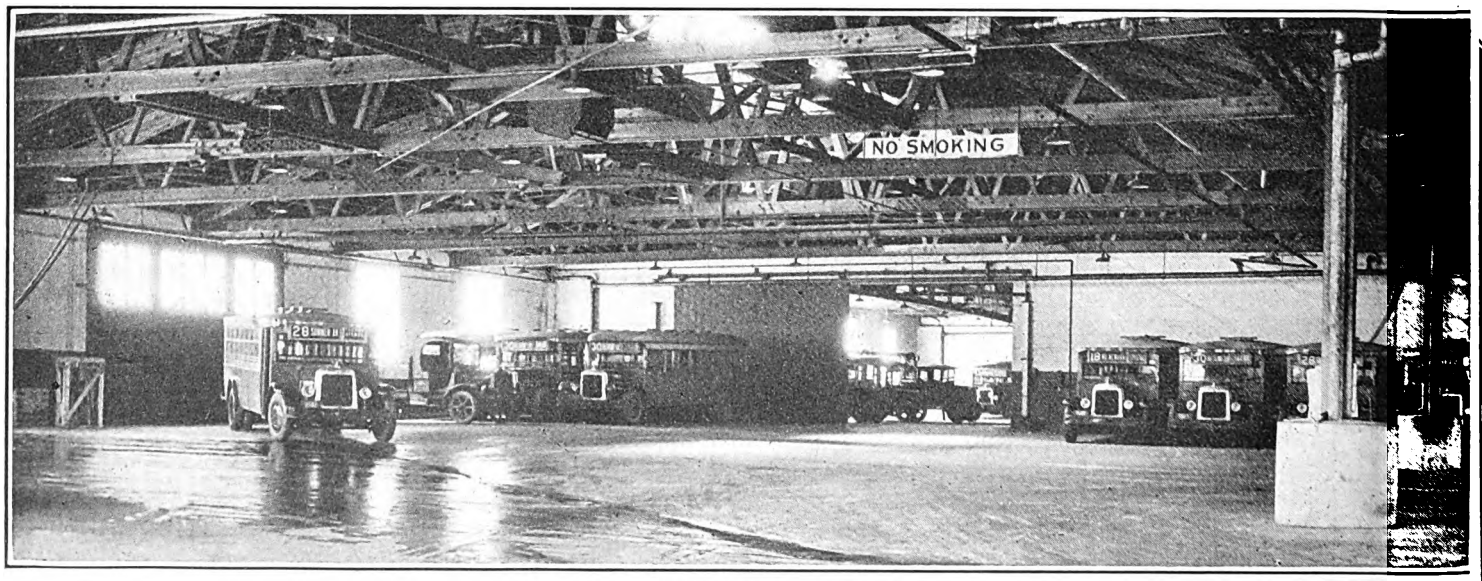
which four routes are operated, and Sherman Avenue, serving five lines—have been completely equipped with gas-electrics. Orange and Passaic Valley garage, one of the smaller units in Essex division, also has all gas-electrics. The third largest garage, Hilton, has standardized on Yellow mechanical-drive buses. Other garages in this division are equipped with Yellow mechanical-drive buses and Whites.

Outside of Essex division it has been found impracticable completely to standardize the equipment of the various garages. For example, in the Passaic division the largest garage is at Paterson, with twenty lines and 109 buses. Such a wide variety of operating conditions are encountered on these lines that it was not considered desirable to select a single type of bus for service on all of them. Equipment of the individual lines, however, has been standardized. Some routes have been equipped entirely with gas-electric buses, some with Yellow mechanical-drive buses and others with Whites. Mack buses are used extensively in the Central division.

The Southern division presents a situation somewhat similar to that of the Passaic division. Thirteen routes are operated from Newton Avenue garage, utilizing a total of 105 buses. Approximately one-quarter of these are of the new gas-electric type. In this division, however, the practice of standardizing the equipment by lines has not been followed as was done in the Passaic division. On the contrary, one or more of the gas-electrics has been assigned to nearly every line. Bus routes in the Southern division radiate from Camden to numerous outlying towns and this course was pursued in order to avoid criticism.

Bus operation in the Hudson division is conducted from the Union City garage, accommodating seven lines with 83 buses. Two of these lines, the Hillside and the Bergen routes, have been completely equipped with gas-electrics. In all divisions a total of 38 lines have been equipped wholly or in part with gas-electric buses.

Great progress has been made by the company during the past two years in providing adequate garage facilities for its buses. At first, spare room in the



Carefully Designed Roof Trusses Render Interior of Lake Street Garage Remarkably Free

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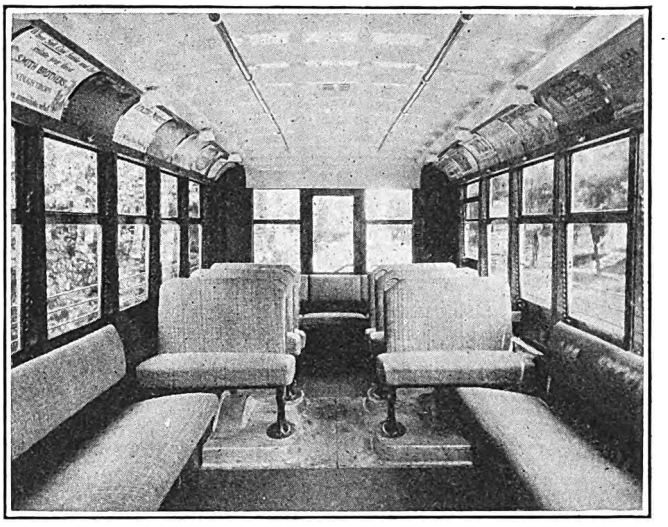
various carhouses was utilized to accommodate these vehicles. As the scope of bus operation was extended, however, it became necessary to provide more room, and a number of large garages were built or purchased.

Of these the largest is the Lake Street garage in Newark, with a capacity of 140 buses. This is a new structure built on the site of an old open car storage yard. The location is convenient to the four routes which are operated from it, one passing by the door and the three others being but a short distance away. An accompanying illustration shows the attractive exterior appearance of this building. Sherman Avenue garage, the second largest in Newark, is a large industrial building which has been converted for use as a garage. This is the case also at Paterson. At Hilton and Newton Avenues, on the other hand, garage space has been secured by reconstructing parts of existing carhouses.

At present the company is using a somewhat larger number of buildings for garage purposes than will be needed after the completion of certain new structures already planned. This contemplated reduction in number of garages will increase the benefit derived from standardization.

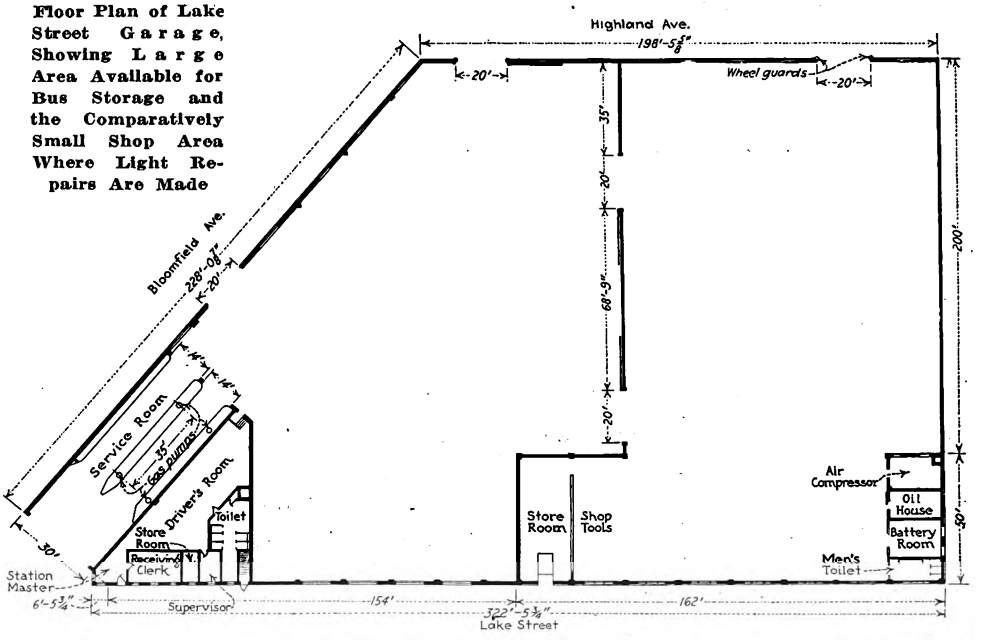
Considerable variety is encountered in the operating conditions on the various lines using the new buses. For example, in the Essex division the Bloomfield, Market Street and Summer Avenue lines operating from Lake Street garage, the North Newark, Weequahic, Lyons Avenue and Kearny lines operating from Sherman Avenue garage, and the Ampere line from Orange and Passaic Valley garage are all heavy traffic routes through closely built-up territory. To a considerable extent they parallel railway lines, and in these instances the gas-electric buses are performing a service similar to that of the street cars.

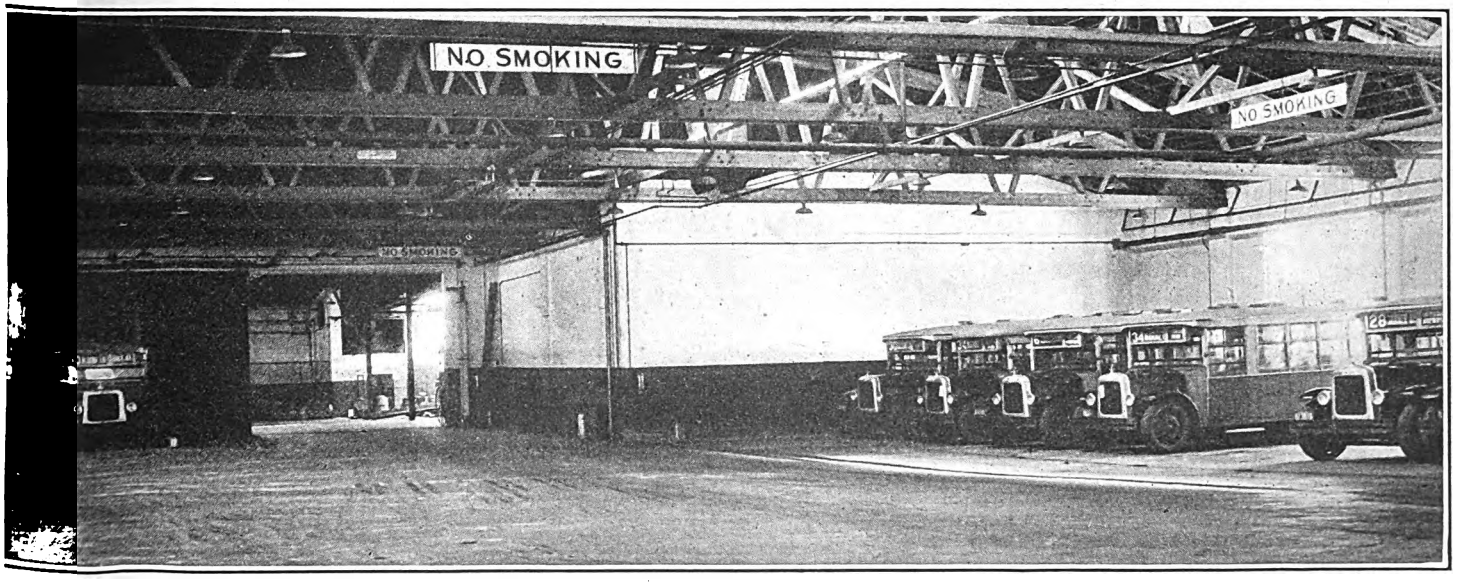


Cross-Seats Occupy the Rear Half of the Body. Note the Emergency Door in the Center of the Back

On the other hand, gas-electrics are used on the Orange crosstown line, a suburban feeder route, where traffic is light. The reason for this, however, is to per-

Floor Plan of Lake Street Garage, Showing Large Area Available for Bus Storage and the Comparatively Small Shop Area Where Light Repairs Are Made





from Columns. Gas-Electric Buses Are Standard Equipment for All Lines Housed Here

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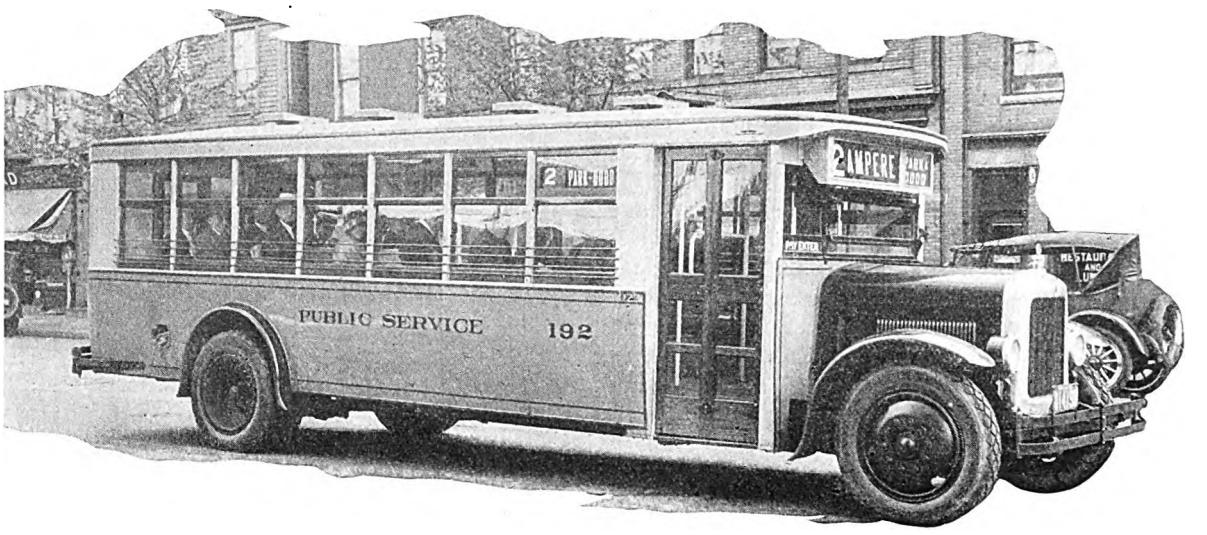

A Comparatively Flat Roof and Windows with Stationary Upper Sash Are Features of the Benedict Body Built in the Railway Shops

mit standardization of equipment at the O. & P. V. garage.

The routes selected for gas-electric operation in the Passaic division are generally similar to those already mentioned in Essex division. In the Central division gas-electric buses are used on long interurban routes, from New Brunswick to South Amboy and from New Brunswick to Perth Amboy. A similar use of these buses in interurban service occurs in the Hudson division on the route from Hackensack to Weehawken.

To a slight extent the distribution of new buses has been influenced by competitive conditions. Where independents have been operating on the same routes with the company buses frequently they have followed the practice of running a few seconds ahead of the Public Service vehicles to try to scoop up the greatest possible number of passengers. By completely equipping such lines with the latest and the most attractive buses the company has been able to regain a great deal of this traffic.

Color Has Been Standardized

Some time ago it was the general practice throughout New Jersey to have all the buses on each line painted a distinctive color. As most of these vehicles were owned by individuals with permits to operate only on one route no difficulty arose in connection with the transfer of a bus from one line to another. When the Public Service Transportation Company took over a large part of the operation, however, it was often found desirable to shift buses between routes. Moreover, the cost of painting various vehicles in different colors was con-

Buses and Cars of Public Service Railway Give Co-ordinated Transportation Service in Newark

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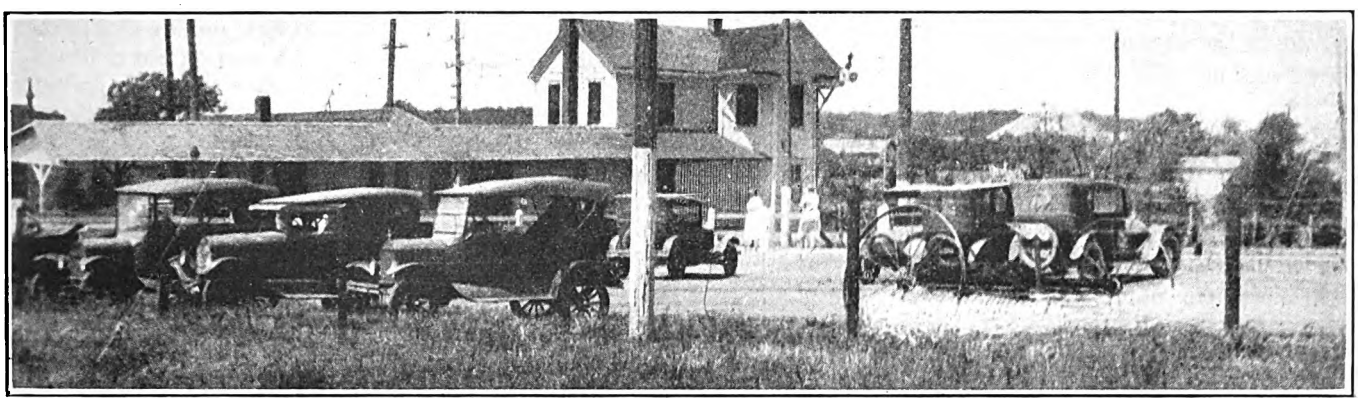


By Utilizing Vacant Space for Parking Automibiles the Northern Texas Traction Company Induces Their Owners to Travel via Interurban to Fort Worth to Do Their Shopping

siderably in excess of that for painting the same vehicles a uniform color. The company, therefore adopted the policy of painting all its buses the same distinctive orange color which it had used for a number of years for the exterior of its cars. With the acquisition of the new gas-electrics and the retirement of 400 vehicles of older types the standardization of exterior color has been carried considerably further than ever before.

Identification of the route on which the bus is operating is now made by means of a large route number in place of the former distinctive route color. All buses have now been equipped with standard roller signs. These are divided into two parts. The left-hand side, as the prospective passenger faces an approaching bus, shows the route number. In the center is the name of the route in white letters on a black background. On the right in white on a red background is shown the destination of the particular trip. A similar sign of smaller dimensions has been placed on the side of the bus near the entrance door.

Standardization of bus bodies has also been carried out to a considerable extent. Bodies for some 200 of the latest order of gas-electrics were built in the Plank Road shops of the Public Service Railway, while the remainder were built by the Yellow Truck & Coach Manufacturing Company. Some points of difference exist between these two bodies, but they are generally similar. The seating arrangement follows the same general plan in all the buses recently purchased by this company. On both sides near the front are short longitudinal seats providing a space in which passengers can stand while paying fares or preparing to alight. Cross-seats are used in the rear part of the bus with short longitudinal seats over the wheel housings.

Free Parking Space Brings Business to Interurban

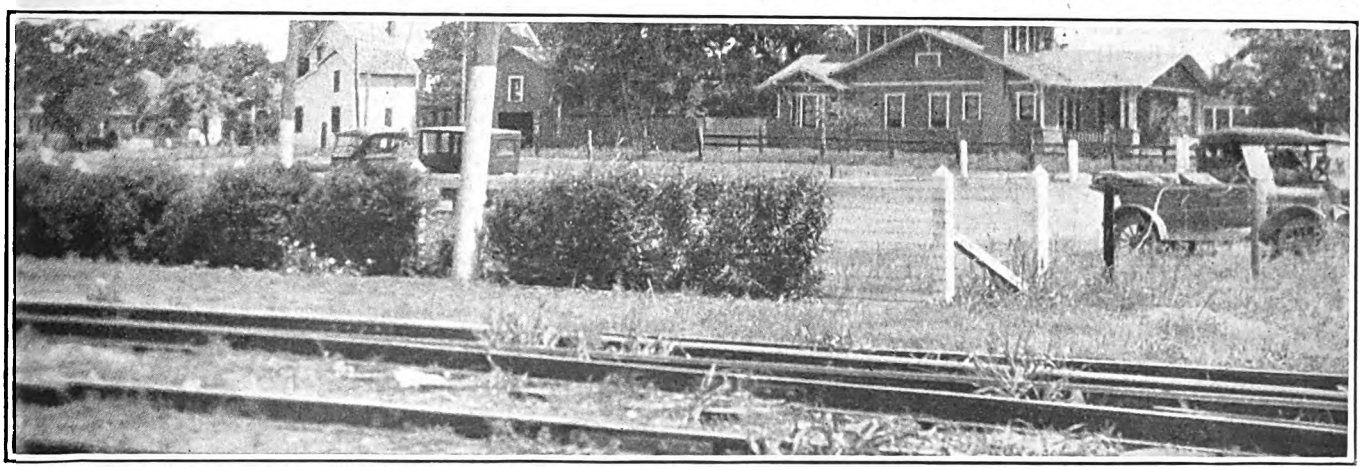
By A. J. Rowe
Northern Texas Traction Company

FOR the purpose of inducing patrons who live some distance from the interurban line to use the service a large, attractive parking station has been arranged just opposite the Handley interurban station of the Northern Texas Traction Company. The town of Handley is 8 miles from Fort Worth's business district, but is practically a suburb of the city. A neat fence, flowers and shrubbery make this space attractive and its proximity to the station affords sufficient protection that patrons leave their automobiles with all confidence, either night or day.

Difficulty in finding parking space in the city and the convenience of driving to the interurban, leaving their automobiles in the railway parking space and going to town, have developed quite a lot of new business for the interurban line from the residence section of Handley and the rural section surrounding this town. The number of autoists taking advantage of the station is gradually increasing. From ten to twenty vehicles can be found there at all times of the day, as shown by the accompanying illustrations, which were taken about noontime during a normal day. The additional space is needed on large days and at night when some special event is in progress in the city.

The cost of preparing this parking space was very small and the upkeep amounts to practically nothing.

In addition to furnishing a place for patrons to park, the station has improved the looks of the property,



The Parking Space Is Adjacent to the Northern Texas Traction Company's Tracks, Making It Very Convenient

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added to the appearance of the town, and in this way has had a splendid effect from a public relations standpoint.

Instruction Books for Bus Men

The Wisconsin Motor Bus Line Gives Information to Educate Employees in Selling Better Transportation

TWO attractive books have just been issued by the Wisconsin Motor Bus Line, a subsidiary of the Milwaukee Electric Railway & Light Company. These are entitled "instruction books" and are distinctive from rule books. One is directed to city bus operators and the other to city bus collectors. The intent of these books is to educate both new and old employees in the art of selling better transportation. The text is replete with excellent messages that should inspire all operators in the performance of a better service.

Under the caption of "Serving the Public" the book issued to the city bus collectors reads as follows:

Our company is engaged in selling a very special kind of service to the public. The most important part of the collector's job is to assist in providing this service and to make it satisfactory to the passengers.

In many respects operating a bus line is just like any other business. Every business is dependent upon its customers to keep it going. If people do not buy the place must close its doors. With the bus line the same holds true. If passengers do not ride we will not have sufficient money to meet our expenses and we cannot continue to operate buses. In order to insure ourselves a large patronage and a successful business we must do everything in our power to give satisfaction to our customers. First, we want to attract people; then, when they patronize our buses, we should make their ride so pleasant that they will ride again.

In performing your duties as collectors you deal with the public as a representative of the company. You stand in place of the company, supplying its service and transacting its business and meeting its customers. To the passengers you are the company. Bear this in mind. Many people, especially strangers, will never meet any other representative of our organization but you. Their opinion of us and the service we render, as well as their attitude toward us, depends upon you. If you present an untidy appearance, if your bus is not clean, if you are reckless, grouchy, discourteous, or disagreeable and smart, you will surely create an unfavorable impression. But if you are neat, and if your bus is clean; if you are careful, businesslike, pleasant, courteous, the passengers will think favorably of our company.

The book then goes on to give similar and intimate comments on the questions of courtesy, information, making announcements, destination signs and general conduct, and later on tells of the routine which is to be followed in the station, when taking out buses, and at the end of each line. The various signals and the method of making them are explained to the operator. The book is replete with line drawings, showing the proper position for a collector and the different positions, such as when operating from the top deck and in the usual position on the lower platform. Traffic signals are described in the text, as well as in small line drawings.

Detailed instructions are given in regard to the inspection of buses before they are taken out of the garage; the collection of fares and transfers, the making of traffic checks, filling out the trip cards, making change on the refund slips. Detailed description is given relative to accident and road delays.

In the back of the book sets of examination questions are given, all of which the operators are supposed to be able to answer intelligently.

The bus operator's book follows a similar plan, except that the text has been entirely rewritten, being directed at the work of the operator rather than the collector. Detailed instructions are given in regard to starting the engines of the different types of buses that are used and the handling of the different types of equipment. Instructions on the shifting of gears and "double clutching" are given. Likewise, detailed instructions are given for every condition that may be met, such as speed, skidding, overhead obstructions, pulling away from the curb, turning corners, intersections, silent police, safety zones, crossing and following vehicles, pedestrians, road trouble and accidents. To illustrate the nature of the text the paragraph on skidding is quoted:

There is no rule against skidding, but there is against careless driving, and skidding is the result of careless driving. When a bus skids it is not under control. The only skid that is ever controlled is the one that never gets started. A bus being properly operated will not skid. To prevent skidding when on a slippery pavement put the bus in low gear and travel slowly. The only safe speed is one which will allow you to stop instantly without skidding. If the bus shows a tendency to slide, keep the front wheels turned in the direction of the skid.

On slippery streets always go up to the stop with the bus in gear, never throw off the clutch if there is any danger of skidding. Let up on the accelerator and use the engine as a brake.

The city bus operator's book likewise has a list of 142 questions, all of which the operators are supposed to answer intelligently.

While these books are supposed to supplement the rule book, it is of interest to note that they are written in an unusual language rather than in the stereotyped manner of the old style rule book.

Early Purchase of Weekly Passes Capitalized in Pittsburgh

CO-ORDINATION in a new form has been illustrated in Pittsburgh, this time between two affiliated companies. Announcement has just been made in the *Transit Guest* as well as in the poster herewith reproduced that those people who buy the weekly pass during the three days before they become effective will receive a coupon which is good for 50 cents toward the purchase of an electrical appliance.

Pittsburgh Gives Premiums to Early Purchasers of Passes

This double-barreled merchandising stunt is commendable as it at one time advertises the transportation facilities and encourages the use of electrical appliances in the home. Purchasing of the pass before Monday morning is also encouraged. Usually the peak day on which purchases are made is Monday, and the peak hour is during the down trip that morning.

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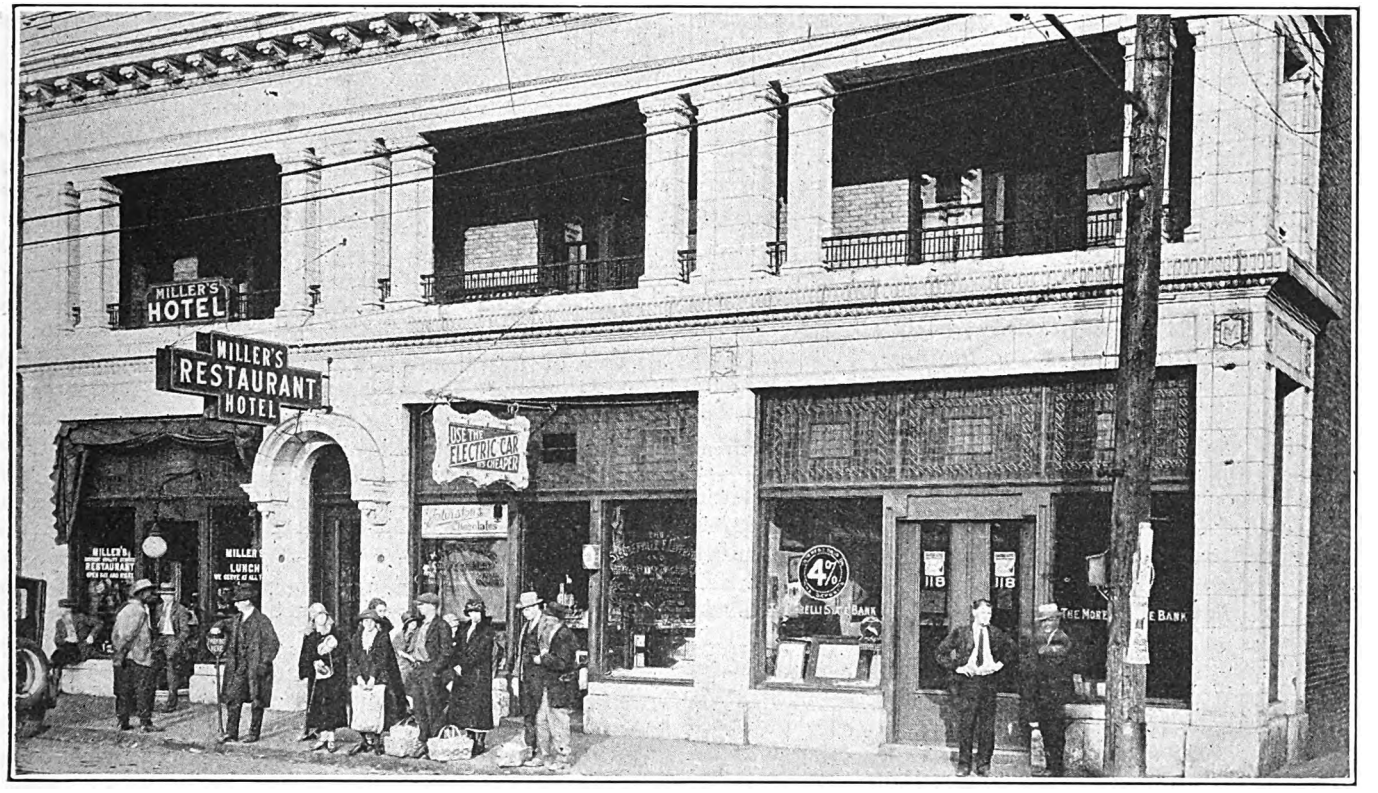
One Owner's Faith in the Trolley

A Major Factor in the Rehabilitation of the "Stream Line" Was the Inauguration of Improved Schedules to Give the Service Needed by the Communities Served—Headways Were Cut, with the Result that There Was a Material Increase in Patronage

THIRD ARTICLE



In Steubenville a High-Class Building Was Selected as the Location for the Waiting Room

CARRYING out the program of physical improvements on the Steubenville, East Liverpool & Beaver Valley Traction system referred to in detail in articles in this paper for June 26, page 1101, and July 3, page 15, made possible a material betterment in service. As regards the local lines, the following improvements were made:

On Oct. 25 of last year service over the main line between Midland and Wooster was put on a 30-minute headway by supplementing the interurban locals run hourly. On the same day, the local service between East Liverpool and Wellsville was increased from a 20-minute to a 15-minute headway while the running time was cut from 50 to 45 minutes. The over-all results indicate an increase in earnings, but the exact percentage cannot be given owing to the division of this business with interurban locals.

On Dec. 12 service on the La Belle route in Steubenville was doubled in going from twenty-minute to ten-minute headways. By January, the trolley revenue was more than 18 per cent ahead of the same period a year earlier and more than twice the earnings of the temporary motor-bus operation which preceded the reconstruction of this route. This line serves automobile-owning territory, which makes so prompt a response gratifying indeed. The center-entrance cars on this route are being remodeled for one-man operation, as described in a previous article. The combination of lower costs and constantly rising patronage should soon make this route pay for its rehabilitation.

An interesting proof that the La Belle line's improved service has not yet sunk in thoroughly is the fact that during the first month of better headway the revenue from weekly passes comprised only 10 per cent of total revenue. On the other hand, the Fourth Street route in Steubenville, which has had a ten-minute headway for a long time, shows a 20 per cent revenue ratio from passes. The pass sales are stimulated, of course, when the buyer knows that the headway is short enough to make luncheon riding convenient and also short enough to make him prefer the trolley to the automobile during his hours of voluntary travel.

On Jan. 10 service on the Grand View line in East Liverpool, a route serving the best residential area, was increased by changing from a 24-minute to a 15-minute headway, with an extra tripper in the afternoon. The very first week showed 14.2 per cent more revenue. Comparison of like parts of 1926 and 1925 show that Jan. 1-9, 1926, was 1 per cent under, while Jan. 10-16 was 7.5 per cent over, or an actual better-

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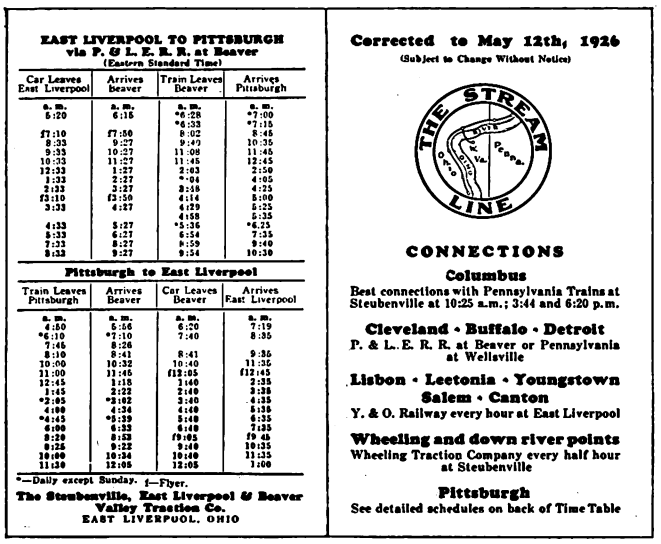

EAST LIVERPOOL TO PITTSBURGH
via P. & L. E. R. R. at Beaver
(Eastern Standard Time)

Car Leaves East Liverpool	Arrives Beaver	Train Leaves Beaver	Arrives Pittsburgh
a. m. 5:20	a. m. 6:15	a. m. *6:28 *6:33 8:02 9:47 11:08 11:45 2:03 *4:04 3:58 4:14 4:29 4:58 *5:36 6:54 8:59 9:54	a. m. *7:00 *7:15 8:48 10:35 11:45 12:45 2:50 4:05 4:25 5:00 5:25 5:35 *6:25 7:35 9:40 10:30
7:10	7:50		
8:33	9:27		
9:33	10:27		
10:33	11:27		
12:33	1:27		
2:33	3:27		
2:33	3:27		
f3:10	f3:50		
3:33	4:27		
4:33	5:27		
5:33	6:27		
7:33	8:27		
9:33	9:27		

Pittsburgh to East Liverpool

Train Leaves Pittsburgh	Arrives Beaver	Car Leaves Beaver	Arrives East Liverpool
a. m. 4:50 *6:10 7:45 8:10 10:00 11:00 12:45 1:45 *2:05 4:00 *4:45 6:00 8:20 9:25 10:40 11:30	a. m. 5:56 *7:10 8:26 8:41 10:32 11:45 1:15 2:22 *3:02 4:34 *5:39 6:33 8:53 9:22 10:34 12:05	a. m. 6:20 7:40 8:41 10:40 f12:05 1:40 2:40 3:40 4:40 5:40 6:40 f9:05 9:40 10:40 12:05	a. m. 7:19 8:35 9:35 11:35 f12:45 2:35 3:35 4:35 5:35 6:35 7:35 f9:45 10:35 11:35 1:00

*—Daily except Sunday. f—Flyer.

The Steubenville, East Liverpool & Beaver Valley Traction Co.
EAST LIVERPOOL, OHIO

Corrected to May 12th, 1926
(Subject to Change Without Notice)

THE STREAM LINE

CONNECTIONS

Columbus
Best connections with Pennsylvania Trains at Steubenville at 10:25 a.m.; 3:44 and 6:20 p.m.

Cleveland • Buffalo • Detroit
P. & L. E. R. R. at Beaver or Pennsylvania at Wellsville

Lisbon • Leetonia • Youngstown
Salem • Canton
Y. & O. Railway every hour at East Liverpool

Wheeling and down river points
Wheeling Traction Company every half hour at Steubenville

Pittsburgh
See detailed schedules on back of Time Table

The "Stream Line" Idea Has Been Emphasized on the Time-Tables and Other Literature of the Company

ment of 8.5 per cent. Sales of weekly passes rose from 50 to 94 following the advent of better service and personal solicitation for business.

Service between East Liverpool and Chester was improved on Jan. 10 by going from fifteen-minute to ten-minute headways. So far this line has not responded as well as the others.

Also on Jan. 10 a 30-minute headway local service was added for a fifteen-minute run over main-line track passing through Toronto. The five week-day earnings had already attained about 15 cents per mile by Feb. 1, and it should not be long before this new service becomes self-sustaining.

Without going into further detail it may be stated that these changes are producing increasing benefits. For example, the seasonal decline of traffic was postponed to such a degree that April held level with December, January and February.

Perhaps the most interesting story relates to the interurban operation. Formerly, the standard service consisted of hourly cars which used two hours 45 minutes for the 43 miles between Beaver and Steubenville. On Feb. 18, 1925, there was instituted a limited car making only twelve stops for two round trips a day. This cut the running time to one hour 55 minutes between terminals. When the "Ceramic" started on Jan. 10, 1926, the time was cut to one hour 40 minutes, and now that the remaining road improvements have been completed the run is expected to be made in one hour 30 minutes. Meanwhile the running time of the locals has been cut from two hours 45 minutes to two hours 18 minutes.

The prompt response of the public to this improvement in speed alone has not only accelerated the rehabilitation of existing interurban cars, but has led the management to make plans for running limiteds every two hours instead of twice a day.

Summarizing the foregoing changes from the financial viewpoint, the following comes to light:

Revenue in the first ten months of 1925 was 10 per cent under the same period of 1924.

November and December, 1925, the first months of better service, ran even with similar months of 1924.

January, 1926, ran 6.2 per cent ahead of January, 1925. Thus within three months a loss of 10 per cent has been changed to a gain of 6.2 per cent, an actual improvement of 16.2 per cent without the aid of materially better industrial conditions.

THE "CERAMIC" GETS THE CASH

The effect of the "Ceramic" on interurban revenues is worth separate examination. This car was placed on the line on Sunday, Jan. 10, of this year. As it is run eighteen hours a day instead of the twelve hours of the limited which preceded it, the following comparison has been reduced to an earnings-per-hour basis:

In the last eight days of the old car, the revenue per car-hour averaged $6.61 and per car-mile 43 cents; while the "Ceramic" from Jan. 10 to Jan. 31 averaged $11.42 per car-hour and 48 cents per car-mile. The relatively greater increase in revenue per car-hour is due to practical elimination of layovers.

The "Ceramic" would show still better on the bases of actual car-hours and car-miles if it were not being operated an additional six hours a day on leaner runs.

It is reasonable to assume that some of the "Ceramic" business was taken from other less attractive and slower cars. For all that, the net daily gain in interurban revenue is on the order of 9 per cent, comparing Jan. 2-9 against Jan. 10-31.

One of the significant facts about the operation of the "Ceramic" is not only the expected praise from the public for something faster, brighter and more comfortable, but the unexpected praise for the courtesy of the "Ceramic" crews. It would seem that finer cars make finer trainmen. The pride that the men feel in this rejuvenation is reflected in their bearing to the riding patrons.

To make the rank and file feel that jobs like the "Ceramic" are peculiarly their own, Mr. Wills did the unusual thing when the "Ceramic" made its trial run. Not a group of newspaper men and public officials were the first riders, but the very men whose craftsmanship had put the car together. The shopmen made the round trip between East Liverpool and Beaver, and next members of the office staff—including the volunteer embroiderers—had a ride to Steubenville.

It need hardly be mentioned that the advent of the

The East Liverpool Waiting Room. Attractive Electric Signs Are Used to Draw Business

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cream-colored "Ceramic" was a sensation to the public. Even after two weeks of operation, the cry "Attaboy" from the younger male generation standing along the highway gave evidence that people were still taking favorable notice. The finest motor coach could not have received a heartier reception; yet the "Ceramic" is just an eighteen-year car made over!

Publicity for the "Ceramic" was not merely local. The news was deemed interesting enough to get good outstanding problems. The second pamphlet dealt with state problems, while the third struck home with a study of the specific problems of the local railway.

Aside from this distribution of educational booklets, the canvasser has the advantage of being able to advise the people visited about increased service on their local routes, improved cars, faster service on the interurban, the advent of the "Ceramic," etc. The fact that the weekly pass gives so much possible value to a regular

Rides north from zone beginning at station named		56	257	218	476	598	3910 60	483 115	5823 674	2456 65	541	250	1004 61	1323 16	3528 104	3928 143	1309 18	1040 7	13627 174	Column B	Rides S. (A)	Rides N. (B)	(A+B) (C)
No. Zones Ridden		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
North End of Ride (Read horizontally) Beaver	Cash	56	176	91	261	315	1491	29	1161	144	2		1		24	18	2		205	A-Total of figures in this space horizontally	3976	56	4032
	com.																						
Sas. Alley	Cash	81	100	136	81	361	2	252	39	1				2	1	2	3	23			1084	257	1341
	com.																						
Vanport	Cash	27	52	28	99	28	61	28	1						13		5				329	218	547
	com.				59		65	37													174		174
Workmens	Cash	27	31	59	1	16	4	2													140	476	616
	com.																						
Industry	Cash	143	335	82	164	23	3				2	2			12						766	598	1364
	com.				1																1		1
Midland	Cash	1565	220	3175	473			6		20	9	2		88							5558	3910	9468
	com.	1	115	608	28							5									759	60	819
Smith's Ferry	Cash	121	369	46	19		10	14	2	18			7								605	483	1088
	com.																					115	115
State Line	Cash	**625	1159	191	63	218	103	454	459	28	22	1765									5087	5823	10910
	com.					5	13	24	1												44	674	718
Kountz	Cash	540	317	105	439	226	413	619	186	111	924										3880	2456	6336
	com.				56	2	27	20			12										117	65	182
Wellsville, S.	Cash	5	82	48	123	46	10	16	25	154											509	541	1050
	com.																						
Irondale	Cash		261	272	123	1102	33	27	201												1019	250	1269
	com.																						
Taggerts (N. limits of No. 12)	Cash	21	534	300	486	77	85	333													1836	1004	2840
	com.			46	101																147	61	208
Rocky Side (S. Limits of No. 12)	Cash	56	781	678	86	65	530														2196	1323	3519
	com.		7	21			16														44	16	60
Minors	Cash	*1361	771	404	241	1701															4480	3528	8008
	com.					23															23	104	127
Meyers St.	Cash.	755	438	196	3360																4769	3978	8627
	com.			7	55																62	143	205
Toronto S.	Cash	35	178	1957																	2170	1309	3479
	com.			68																	68	18	86
Country Club	Cash	87	1682																		1769	1040	2809
	com.																					7	7
City Limits	Cash	**660																			660	13627	14287
	com.																					174	174
Steuben. 6th.	Cash		Northwardly bound passengers																				
	com.																						
South end of ride read up diagonals	See note	1	2	Zone 3	riders → 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total No. of Rides			
Total No. of all or Multizone rides, (add vertically)	Cash com.	6165 1	7486 122	7768 750	6039 300	3180 30	2745 122	1779 81	2074 1	476	959 12	1769 5	8	90	37 13	20	10	23	205	40833 1437	40,833 1437	40,833 1437	

(A) Rides south from zone beginning at station named

(B) Rides north from zone ending at station named

(C) Total number rides originating or terminating in zone next south of station named

C = A+B

* Includes 1197-7¢ franchise rides in Toronto

** 7¢ Franchise ride

Note:- Example for reading detail traffic figures. From the zone of which Taggerts is the north limit, read horizontally that there are 21 1-zone, 534 2-zone, 300 3-zone, etc., riders in a southerly direction, and from the same zone of which Rocky Side is the south limit, read diagonally that there are 21 1-zone, 781 2-zone, 48 3-zone, etc., riders in the northerly direction.

Analysis of Traffic on the Steubenville, East Liverpool & Beaver Valley Traction Company for the Period Sept. 25-Oct. 1, 1925, Shows the Total Number of Patrons Between All Zones During the Week

notices in the Pittsburgh papers, which are read by many a possible through customer.

Perhaps the most thought-provoking item is the statement of a local automobile dealer to a "Ceramic" conductor that: "If that's the kind of service you're going to give, I'm going to use it myself to save time and money."

House-to-House Calls to Correct Service Difficulties

Shortly after arrival, Mr. Wills took the radical step of determining the desires of the public through house-to-house canvassing. He employs one well-educated woman now for this work and may add one or two later as the need arises.

The first job of this caller was to leave a pamphlet on electric railways nationally considered, giving some idea of the extent of the industry and a review of its rider and members of his family has also proved helpful to the canvasser because of her opportunity to appeal to the bargain instinct in humanity.

Following her canvass of Steubenville and East Liverpool homes this solicitor has begun to call on merchants and factory managers.

Through this canvasser the management is apprised as to why the public uses or does not use the service, and secures a good line on what improvements prospective riders desire in order to become customers. The novelty of having a railway come right up to their doors for patronage is most flattering to the public, and surely proves to them that the railway cannot be indifferent to their desires and that it cannot be making overmuch money at the fares and patronage prevailing.

The management also has secured liberal newspaper space for accounts of Mr. Wills' addresses before civic bodies, but in the last analysis it is the clerk and the

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workman rather than the auto-owning and auto-using merchant who must be won over, too. Hence public relations work of this intimate kind deserves the importance it is receiving on this property.

Fares Have Not Risen in Proportion to Costs

Like most other electric railways, this property has had "a sea of troubles" in seeking to secure fares that bore some livable relation to the depreciated dollar.

The first increase came at Chester in April, 1918, due to the good fortune, in this instance, that the East Liverpool-Chester route is subject to the Interstate Commerce Commission. The original through fare was 5 cents. It is now 10 cents to casuals, but semi-regular riders have practically a 7-cent fare through the purchase of fourteen tickets for $1, while the weekly pass patrons enjoy the pre-war rate of 5 cents or less through the purchase of a $1.25 pass and the doubling of their riding. A ride entirely within Chester may still be obtained for 5 cents cash.

In East Liverpool, the original 5-cent fare was increased in April, 1923, to 7 cents cash and four tickets for 25 cents. This fare covers a maximum unbroken ride of 6.67 miles along the main line between the State Line and Kountz. Transfer privileges are exchanged between the main line locals, Pleasant Heights, Grand View and River Road (bus) routes for 1 cent per transfer. Since the inauguration of the weekly pass July 6, 1925, $1 has been charged for separate passes for each of these four routes and $1.25 for a pass good on all of them. During March, 1926, the pass rate was cut to $1, thereby eliminating four varieties and immediately increasing the attractiveness of the pass idea to the public by some 50 per cent.

Over the Toronto stretch of main line, the original franchise fare of 5 cents and thirteen tickets for 50 cents was succeeded in April, 1924, by a 7-cent cash fare, but regular riders can enjoy a 5-cent fare by buying twenty tickets for $1.

In Steubenville, the local fare was increased from 5 cents cash and six tickets for 25 cents to 6 cents and twenty tickets for $1 early in 1922; and in May, 1923, to 7 cents cash and 6¼-cent ticket. Transfers are free. The $1 weekly pass used in Steubenville is available on the two local lines, but not on the interurban.

Local film managers have helped pass sales by special concessions to passholders, realizing that passholders may bring others.

Higher fares on the interurban railway have been even harder to secure because of the varying viewpoints of two state commissions (Pennsylvania and Ohio) and local insistence on old franchise stipulations. While the rate is 5 cents per zone, the lengths of zone vary from 0.88 mile to 6.67 miles for the eighteen zones in the 43 miles between Beaver and Steubenville.

It would hardly be desirable to go into the changes in zones made since pre-war days, except to observe that two zones were added through splitting up extra long zones. One such burden was an 11-mile zone between the Pennsylvania-Ohio state line and Wellsville. An idea of the scant relief so far obtained may be gained from the knowledge that the pre-war rate between Steubenville and Beaver was 85 cents, and it is now only 95 cents.

In spite of all this, the company is going ahead with a vastly improved service in the faith that the commissions and the public will do what is right.

In compiling data to show the origin and destination of every ride taking place on the interurban lines the company has developed an original method. The data sheet which is reproduced to accompany this article is typical of the system employed. Full information is given in this sheet as to rides in a southerly or northerly direction in any zone, the total number of rides originating and terminating in any zone, the length of ride taken from any zone (see example for reading detail traffic figures) and the actual number of rides of all classes from one zone to the total length of the system, including eighteen zones. It will be noted that the bulk of receipts are derived from rides up to and including eleven zones in length and that thereafter the number of rides taken is relatively small. Thus it has been possible for the company to rearrange its zoning system to increase the cash fares but to decrease the rates charged for the longer rides.

This has resulted in the establishment of a "leader" in the company's sales policy. In other words, high discount rates for long rides have been proffered to encourage more shopping in the larger towns, such as East Liverpool and Steubenville. This is a somewhat similar scheme to the practice adopted by many department stores of featuring one or more articles at especially attractive prices. The company stands to lose very little even though its regular patrons should avail themselves of this lower discount rate, for after all the receipts from the long-distance haulage constitute but a small share of the total gross income.

While the railway has made it a policy to co-operate with the merchants in the various communities served in the matter of stimulating interest in "Dollar Days" and other special occasion sales, the actual effect on receipts the year round from this sort of practice is not of a material character. No arrangement is entered into by the company unless the merchants' associations agree that it will be a permanent undertaking.

Changes in Upkeep Organization Get Individual Responsibility from Specialists

Greater specialization in upkeep has been introduced lately to assure better work and closer responsibility. There is now a signal and telephone specialist and a bridge specialist; also one welding and cutting specialist for each half of the system. These men are on a salary basis with no fixed hours. The amount of night and holiday leisure they enjoy is largely according to their skill in forestalling breakdowns.

The bridge specialist devotes his efforts to the inspection and upkeep of bridges, viaducts and related structures. No limit has been placed on his requirements for any materials needed to keep his structure both safe and presentable. It is appreciated that a rusty-looking bridge may be 100 per cent safe and yet look suspicious to the car rider.

The two utility men, who are welding and cutting specialists primarily, are each supplied with a Reo 2½-ton speed wagon for tools and materials. These men see that the work gangs are furnished necessary supplies, have tools properly ground or sharpened, etc. Their main work, however, is to supervise the track and return circuit conditions. To this end they are equipped with electric weld bond equipment and oxy-acetylene cutting torches. They are subject to call by gang foremen in case broken rails have to be cut off, missing bonds replaced, special work laid, new metal welded on to worn curves, or any other jobs calling for their specialized skill. On rainy days these men stay in the shops to make thermit compromise welds which are replacing bolted joints.

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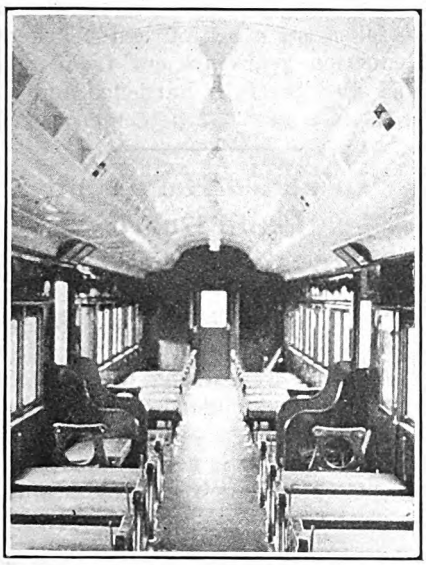
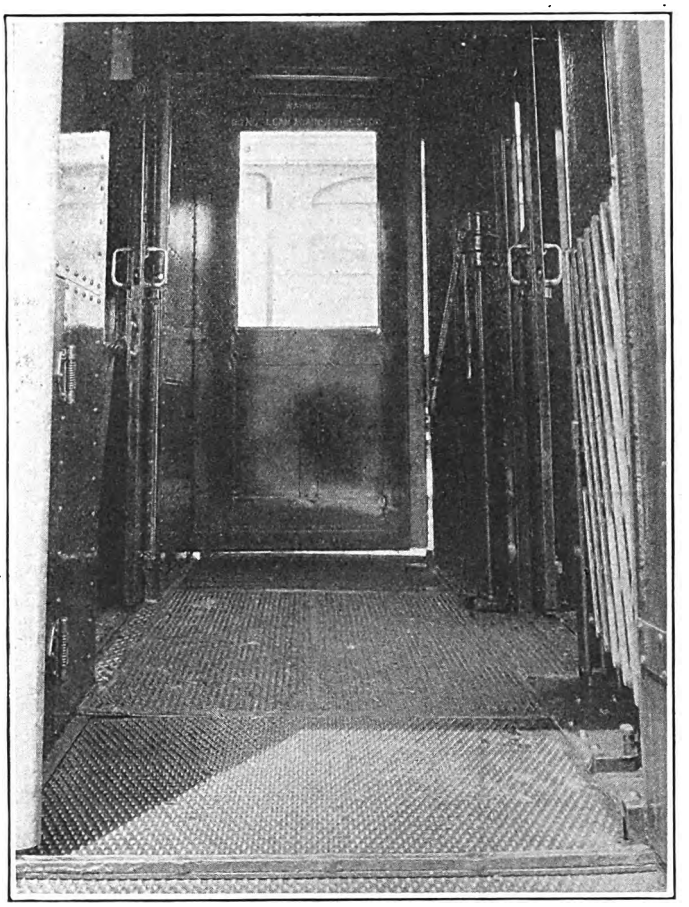
Maintaining Rapid Transit Cars



The Worn Aisle Is Filled in with Composition Flooring and Is Then Sprayed Red. New Type of Gas-Filled Lamps Are Installed

WHEN some of the cars of the New York, Westchester & Boston Railway which had been in service fifteen years required general repairs occasion was taken to make certain improvements and replace some of the equipment. The air-operated doors originally had a long-stroke type of door engine. This engine is now being replaced with the National Pneumatic Company's CS8 electric door engine, which is installed in the same location as the other one was; that is, back of the door pocket. This type of door engine uses Westinghouse magnet valves, which are standard for the control equipment used on the cars. This reduces the number of spare valves which it is necessary to carry in stock.

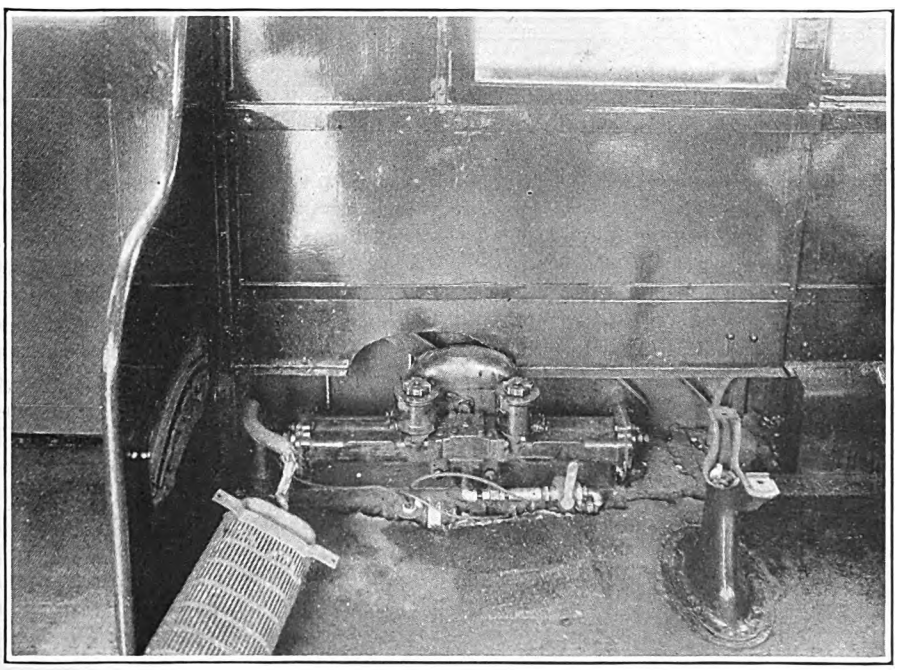
Some of the steel doors of these cars were found to be rusted through. These are being replaced at the same time that the door engines are installed. The platforms were originally provided with rubber mats, which lasted on an average of about six months. Some trouble was also experienced from slipping when the mats were wet. In order to do away with the rubber mats the platforms are now being provided with Kass safety treads. The officials on the railway expect that these will last from eight to ten years.



Safety Treads Do Away with the Necessity for Rubber Mats on Platforms. A New Steel Door Has Been Installed

These cars are provided with composition flooring and the aisles have become somewhat worn, so it is necessary to renew these. This is done by replacing with Flexolith. After installation the entire floor is sprayed with a red floor paint. Some trouble has been experienced in keeping curtains clean. Due to the pattern used, these presented an unattractive appearance. In order to provide more satisfactory looking curtains the old ones are now being dyed black.

Advantage has also been taken of this general overhauling to increase the lighting efficiency inside the cars. Originally the lights used were of 56-watt capacity and the S19 bulb was used. These are being replaced by a 60-watt type A21 gas-filled bulb.



A New Type of Door Engine Is Being Installed in the Door Pocket

Effective Illumination for Shop Benches

BRIGHT illumination on workmen's shop benches, but without annoyance from direct rays of the lamp, is provided by mounting fixtures with proper reflectors directly on the benches in the shops of the Department of Street Railways, Detroit, Mich. The support for the

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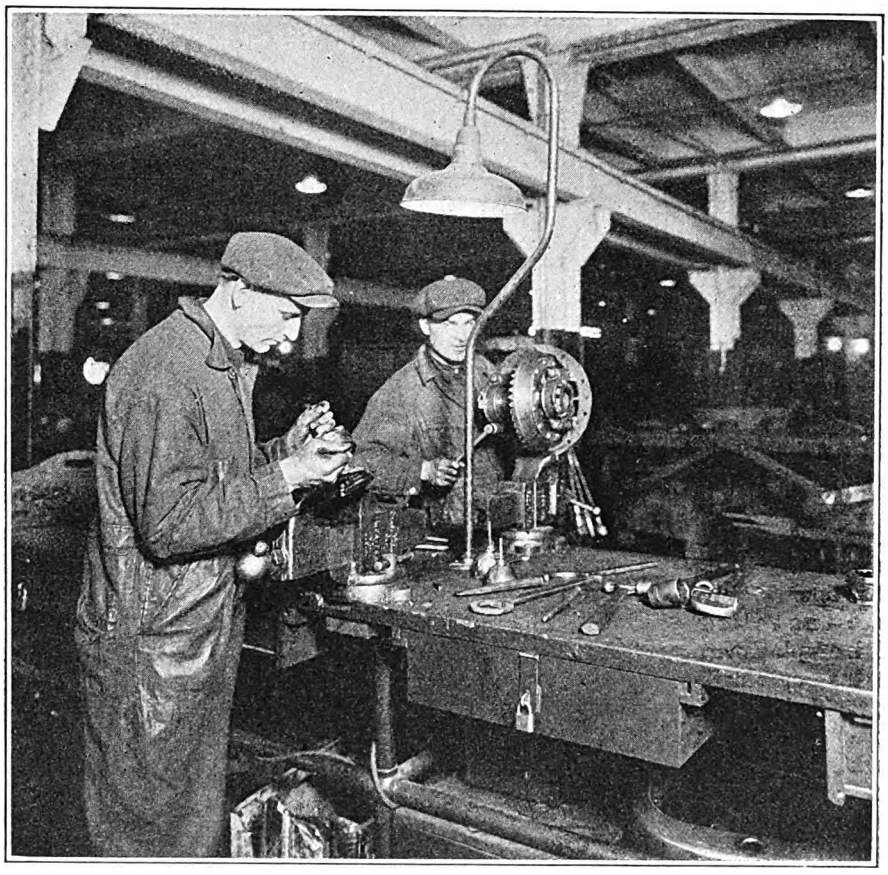


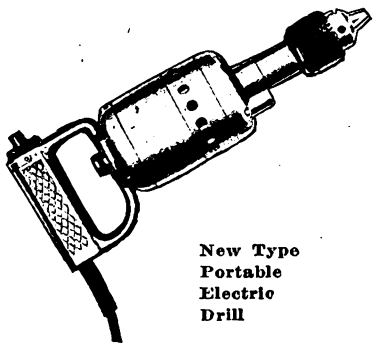
Efficient Bench Lighting as Provided in the Shops of the Department of Street Railways, Detroit

light and fixture consists of ¾-in. conduit, which is bent with easy turns, so that the wiring can be carried inside without difficulty. A standard pipe flange serves for fastening to the bench. The fixture is a Benjamin dome, No. 100, which is 15 in. in diameter, white enameled on the inside and green on the outside. A single 56-watt lamp is used.

New Equipment Available

Light-Weight, Center-Drive Electric Drill

AN EXCEPTIONALLY powerful portable electric drill built for continuous production work is being marketed by the Industrial Tool Corporation, New York, N. Y. Outstanding features of this tool are light weight and a center drive construction. This latter feature gives even balancing and results in more accurate work than similar type tools. This portable electric drill is furnished complete with a Jacobs three-jaw geared chuck and key for drill bits ranging in diameter from the smallest size to ⅜ in.



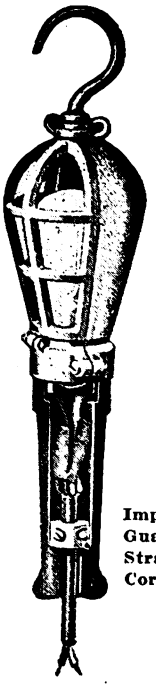
New Type Portable Electric Drill

The tool is also supplied with 10 ft. of portable cord and an attachment plug. The cord leads into a convenient switch handle so that it is out of the way of the operator. The construction includes helical gears, an aluminum housing and handle, oil and grease lubrication, extra large thrust bearings and an air-cooled universal motor. The motor housing is especially designed to dissipate heat by a large fan which draws off any that might arise through continuous use of the drill. The power factor of the motor is considerably in excess of that normally required with the largest drills.

The drill spindle is made up of special tool steel and the end-thrust is taken on a set of ball bearings. Reduction gears are cut from alloy tool steel carefully hardened and operate in a grease-type compartment.

Insulated Handle on Lamp Guard

IMPROVED construction of lamp guards made for use in electric railway shops, garages, etc., by the Crouse-Hinds Company, Syracuse, N. Y., provides a strong, light-weight unit. A handle added at the base is made of well-seasoned maple with Duco finish. This acts as an insulator between the wires and the workman's hand. A cord clamp rests against a shoulder in the handle and takes any strain from the wire.



Improved Lamp Guard Showing Strain Relief Cord Clamp

A lamp socket made of cold molded material is provided, which will not soften under the heat of the lamp. A few turns of a wing nut allow the hinged part of the guard to swing back, giving free access to the lamp. There are no detachable parts which might be lost when inserting or renewing a lamp, and when engaged all parts are securely locked together so that they cannot be disengaged accidentally.

The guards and half shades used in connection with these lamps are made of special cast aluminum alloy. This forms a rugged as well as a light-weight construction. The hook at the end of the guard is made of bronze and is arranged to swivel.

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Association News & Discussions

The Auditor—Pilot of the Boat*

BY CHARLES E. THOMPSON
Vice-President Chicago, North Shore & Milwaukee Railroad

IN THE great organizations which must be built up to operate a railroad property successfully, the auditor might be termed the intelligence officer. Upon him the operating men must rely for the information which tells them whether they are operating the property successfully or otherwise. He is like a signal on the track. From his books and accounts he can give the necessary information as to whether there is a clear track ahead, or whether the red signal must be hung out to call a stop.

An auditor, to fill his position efficiently, must be absolutely impartial. He has before him constantly a picture of the financial operations of his company and he must take the facts and figures as they are and supply the information necessary to the management from those facts and figures. It is his business to keep expenses within the revenues, and this he must do regardless of whether that course is pleasing to other officers or not. If he neglects that most important of all duties it is not difficult to see that sooner or later the company will get into serious financial trouble.

The auditor probably is the most unpopular officer in an organization. He frequently has pressure brought to bear upon him to let this, that or the other expenditure get by. He cannot afford to do it, even though his refusal may be unpopular. He is the watchdog of a company's finances, and watchdogs are given to growling, even though they may not bite. That accounts for the unpopularity of the auditor with some other officers in an organization. It isn't the fault of the auditor; it's the job.

There is a good deal of misconception in a large organization about the duties of the auditor. Some imagine him as a bookkeeper who looks after the books and accounts of a company. But an auditor is not a bookkeeper, or rather I might say he is much more than a bookkeeper. If he is only a bookkeeper he is not likely to be an efficient auditor. The bookkeeper can put certain facts and figures in his books and they may be absolutely accurate and not mean much. The auditor must take those facts and figures, analyze and interpret them to the operating chiefs. He is the pilot of the boat and must be able to see ahead and guard against running on hidden rocks or shoals. If he is on to his job and does his duty fearlessly and impartially he is quite likely to make some enemies.

You auditors and accountants have your fingers on the financial pulse of your companies, and sometimes I am inclined to think that you are apt to take too pessimistic a view of a situation. You are too apt at times to see only the cold figures, and because they do not look as rosy and as promising as you would like to see, you allow your vision to be contracted and obscured to future possibilities.

It is the business of the auditor to look ahead and anticipate, as well as to analyze a current situation. The electric railway industry in the last few years has proved itself to be one that has wonderful recuperative powers. It is true that within the last few years the industry has met some situations that looked rather gloomy to those who could see only the cold figures. To some it looked as if the sun never would shine again, but it did, in fact it never ceased to shine, although clouds may have obscured its light except to those who had strong vision.

I believe you men can see a brighter picture of our industry than you did at your last convention. I am quite sure you will be able to see a still brighter picture at your next gathering. Our industry as a whole is now facing the sharpest competition it ever has encountered. We should not feel discouraged over that situation. In fact, as I look at it, it is a sign of encouragement. It is a sure indication that our competitors do not look upon our industry as a dying one. No one cares to bother about a business that is headed toward oblivion. It is when it is headed in the opposite direction, when its business is increasing by leaps and bounds, that its competitors grow alarmed and go after it.

The present fierce competition which many of our companies are facing is a healthy sign. It is putting us to the test. It is waking us up and putting us on our toes to get new business, and I am just as confident of the future of the electric railway industry as I am that the sun will rise tomorrow morning.

*Abstract of address before the Central Electric Railway Accountants Association, July 23-24, 1926, Drake Hotel, Chicago, Ill.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Aug. 11 — Metropolitan Section A.E.R.A., annual outing, Pelham Bay Park, New York.

Aug. 12-13—Wisconsin Public Utility Association, Railway Section, La Crosse, Wis.

Sept. 17-18 — Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

Welding and Cutting Exposition

THE fall meeting of the American Welding Society will be held in Buffalo on Nov. 17, 18 and 19. An international welding and cutting exposition will be held in connection with this meeting and will open Tuesday afternoon, Nov. 16.

The technical sessions include railroad welding apparatus, welding science in the engineering curriculum of universities, and welding in a gaseous atmosphere. The entertainment includes a trip to Niagara Falls, a view of the Falls from the American side, with an inspection trip through the Niagara Falls power house, a buffet supper on the Canadian side and a special illumination of the Falls. There will be the usual annual fall banquet, which is expected to be an outstanding success, and a meeting of the American Bureau of Welding, the board of directors and the welding wire specifications committee. Further details will be announced in an early issue of the JOURNAL.

How to Get to Pelham Bay Park

DIRECTIONS for reaching Pelham Bay Park, where the Metropolitan Section, A.E.R.A., will hold its second annual outing, Wednesday, Aug. 11, are given in a folder recently distributed to members. This park is at the northeasterly end of the Borough of the Bronx, New York City. It is reached by the Pelham Bay branch of the Interborough Rapid Transit subway system, which connects with the Lexington Avenue express service of the same company at 125th Street. The Pelham Bay branch connects also with the Westchester Avenue and Tremont Avenue lines of the Third Avenue Railway system.

To reach the park by automobile from New York City the route follows the Grand Concourse to Fordham Road and thence to Pelham Parkway, which leads directly to Pelham Bay Park.

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The News of the Industry

Eastern Massachusetts Arbitration Begun

Men Are Presenting Their Side of Case for an Increase in Pay—13-Cent Advance Asked

All the terms of employment between the Eastern Massachusetts Street Railway, Boston, Mass., and its blue uniform men who are affiliated with the Amalgamated Association have been submitted to arbitration. Public hearings were started during the week ended July 31 before a special board.

The arbitrators are Judge John C. Leggat of the Middlesex Probate Court, chairman, and James H. Vahey representing the men and Fred A. Cummings the company. Mr. Vahey and Mr. Cummings have served together on previous arbitration boards.

The men ask for an increase in the basic rate of wages from 61 cents to 74 cents an hour, maximum. Their present rate is 55½ cents an hour for the first three months, 58½ for the next nine months and 61 cents an hour thereafter; they ask for an increase to 70 cents, 72 cents and 74 cents respectively. In addition to this they want the differential in favor of the one-man car operators increased from the present rate of 5 cents to 10 cents. This would make the maximum rate 84 cents an hour for about 96 per cent of the men.

The company's counter proposition is that the present basic rate be reduced to 56 cents with the one-man car differential unchanged.

Further, the employees ask that their work-day be reduced from the present nine hours in eleven to a new schedule of eight hours in ten. They also want the overtime pay increase to time-and-a-half, it now being time-and-a-quarter. The company proposes a continuation of the present practices.

The men also want seniority rights restored. These were abolished in 1918 by the War Labor Board. The men also want ten minutes at the beginning of the day and twenty minutes at the close to prepare and put up the cars. This is opposed by the company.

The company also proposes a reduction in the allowance for meals from the present limit of 75 cents to a new limit of 60 cents.

James H. Vahey serves both as arbitrator and lawyer for the men. He addressed the board at the opening of the hearings on July 26 to the effect that the Eastern Massachusetts Street Railway is virtually an "open shop" road in that its employees are organized under the Amalgamated merely for the purpose of collective bargaining, and for sick and death benefits and pensions. He presented the men's contention that the company should pay such wages as a family of husband, wife and three children needs to be able to live in health and reasonable comfort. In the pending case, however, he does not intend to offer evidence to support the proposition that such wages should be paid regardless of the financial condition of the company. This is an issue which has received much attention at former arbitration hearings. He cited the basic rates on some of the other roads, the Elevated paying 72½ with a 10-cent differential; Worcester and Springfield 68 cents with an 8-cent differential; New Bedford $1.24 an hour.

The first witness for the men was Arthur Sturgis, who has figured as wage expert for street railway employees in most of the arbitration hearings with which Mr. Vahey has had official connection. He showed by tables that at least since 1912 the scale of wages has been higher on the Boston Elevated than on the Eastern Massachusetts, and that the average difference for the whole period amounts to 6.79 cents. He presented another table which indicated that between Jan. 1 and June 1 of this year there have been 32 wage reductions and 420 wage increases throughout the country. In the twelve months ended June 1, 1926, there were 177 reductions and 847 wage increases. According to him the trend of wages has been steadily upward, and it has been even more marked during the first half of the present year. Another comparison made by Mr. Sturgis at the opening session contrasted the carmen's pay with that of the building trades mechanics, who, according to his statistics, receive $1.46 to $1.91 an hour.

Another Move in Kansas City Franchise Matter

Original Settlement Suggestion Has Been Withdrawn—Substitute Measure Appears in Interest of Successor Company to Kansas City Railways—Recent Moves Reviewed

ONE street railway franchise ordinance, extending the present grant for twelve years, passed out of existence in the City Council of Kansas City, Mo., on July 26. A similar extension to the Kansas City Public Service Company, with the added concession of a reduction in fares by selling fifteen tickets for $1, appeared immediately.

The new ordinance is in the form of an amendment to the Jost franchise granted in June, 1914, to the Kansas City Railways. It was referred to the Council as a committee of the whole and public hearings will be held at once.

Councilman A. N. Gossett introduced the amendment. He said it was done with the full knowledge and consent of the new owners of the company and that, if passed, it would be acceptable.

Briefly the ordinance which was voted down provided:

A $33,000,000 valuation.

A franchise to run 30 years.

The rate of fare based on service-at-cost, the maximum not to exceed 8 cents.

The elimination of the board of control and the five city members of the board of directors.

Beginning three years after the passage of the ordinance, the company to expend at least $2,000,000 annually for improvements.

Extensions to system to be authorized by ordinance and accepted by the company to pave and maintain the paving between its tracks.

The company to pay an annual rental of $16,800 for use of the Intercity Viaduct.

The new ordinance, introduced by Councilman Gossett, briefly provides:

A material reduction in fares for those who care to avail of it (fifteen tickets for $1, which is at the rate of 6⅔ cents a fare), with a provision not in the present franchise that the methods and places of sale of such tickets shall be made convenient to the public as the Council by ordinance may require.

That the owners shall operate one system, including general transfers for the legally two Kansas Cities — commercially one greater city.

That the company shall pave, and repair and maintain the paving, between and 18 in. outside of the tracks; this to be done speedily and as the Council may by ordinance require.

The city retains all the right it now has to apply for further reduction in rates and remedies to compel observance of other obligations and conditions of the franchise.

No fixed valuation.

The first franchise ordinance was opposed from the beginning. The new proposal will also be opposed by several members of the Council. Mayor Beach contends that he will favor no franchise ordinance until a low valuation has been set. The Mayor said:

Personally I do not think much of a new franchise at this time. I think the new company should take over the property and operate it for a time before asking anything of the city.

C. J. Bell, another Councilman, said:

I think something should be put in the ordinance that will absolutely fix the valuation, which, in my opinion, now is an exorbitant one.

Ira B. Burns, and at least one other member of the Council, concurred in this.

Terms of New Ordinance Explained

In presenting the new ordinance Mr. Gossett spoke of the necessity of a railway system and said an extension of time would enable the company to operate more economically and thereby would prove a benefit to the city in the possible reduction of fares in the future. He said the amendment provided no valuation, but bound the company to an agreement to operate under the new rates of fare, which he believed was

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more binding than a fixed valuation which the State Public Service Commission could change.

Judge Henry L. McCune, another Councilman, explained after the meeting that, under the new city charter, a franchise ordinance can be passed by a majority vote instead of two-thirds, as formerly required. Within ten days, however, a notice signed by 100 registered voters, giving notice that a petition is to be circulated calling for a referendum vote, will hold the ordinance up for 40 days. In the meantime, if a petition signed by 10 per cent of the persons voting for Mayor at the last city election is filed with the Council, the measure must be submitted to the people for a vote.

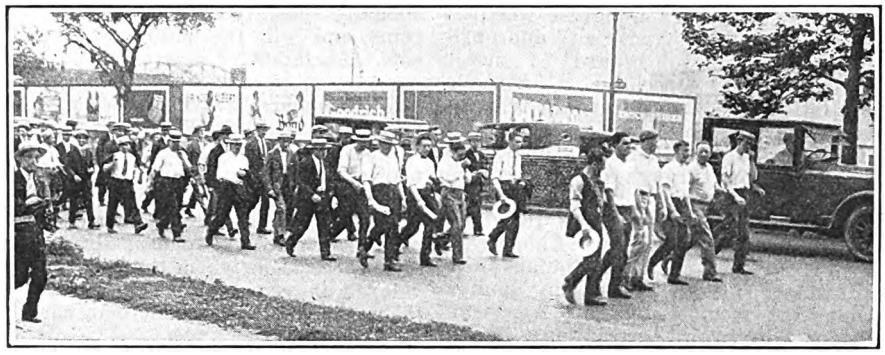
William G. Woolfolk, president of the Kansas City Public Service Corporation, the successor to the Kansas City Railways, has declared a new franchise or an extension is necessary if the new company is to be soundly refinanced. Mr. Woolfolk said:

> If we cannot get a longer term franchise we will be handicapped in financing the company. It is easier to get money on a long-term than on a short-term. The terms of financing, of course, will affect the operation of the company, and we are deeply interested in getting the company organized on a sound basis.

Strike Leaders at Indianapolis Guilty of Contempt

Jefferson Fade, former employee of the Indianapolis Street Railway, Indianapolis, Ind., was found guilty on July 29 of contempt of federal court. He is the eleventh person found guilty since operatives of the United States Department of Justice started their investigations in connection with union activities on the railway lines. The day previous John M. Parker and Robert B. Armstrong, vice-presidents of the Amalgamated Association and the organizers of that body in Indianapolis, were found guilty by the court after a trial which lasted virtually the entire day. Edgar Day, who was allowed a jury trial, also was found guilty. Judge Robert C. Baltzell was expected to sentence the entire eleven on the morning of July 30. In his few remarks during the trial of the two orzanizers he appeared particularly bitter in his statements concerning the general attitude of Parker. Parker is alleged to have made a speech at an organization meeting when the strike vote was called, after the issuance of the federal injunction, during which it is reported he said he had a whole bushel basket full of injunctions at home and had read more injunctions probably than Judge Baltzell himself, but none of them was worrying him. It is understood the attorneys will appeal the finding of the court. The entire eleven were in jail on July 30 awaiting sentence.

Judge Baltzell made it plain that he would stand for no violence on the part of strikers or sympathizers and would deal summarily with any violations of the injunction. He reiterated that the men had a right to organize and strike if they desired, but he would not stand for any vandalism. Only one case of serious disorder was reported this week to the police.



Strikers Follow Their Leaders to Interborough Headquarters

Strike on New York Subway "Declared Off"

Technically the strike of the motormen and switchmen on the subway division of the Interborough Rapid Transit Company, New York, did not end until Thursday night. Once before the strike had been declared off by the men, but when on July 23 the workers marched to the Interborough yards at Lenox Avenue and 147th Street and asked to be taken back in a body, the company remained firm in its determination to treat with the men only as individuals. Consequently, nothing was left to the strikers but to march away again.

That evening, after a mass meeting, a clash occurred between the men and a squad of special Headquarters detectives, in which several of the strikers were injured, one very seriously. The strikers claim that the police made a brutal and entirely unprovoked assault, and they have made many appeals for retribution, the latest being contained in a letter to Governor Smith, in which the Chief Executive of the state is asked to investigate the New York Police Department and punish the men responsible for Friday's "outrage." At the present writing these appeals have brought no results.

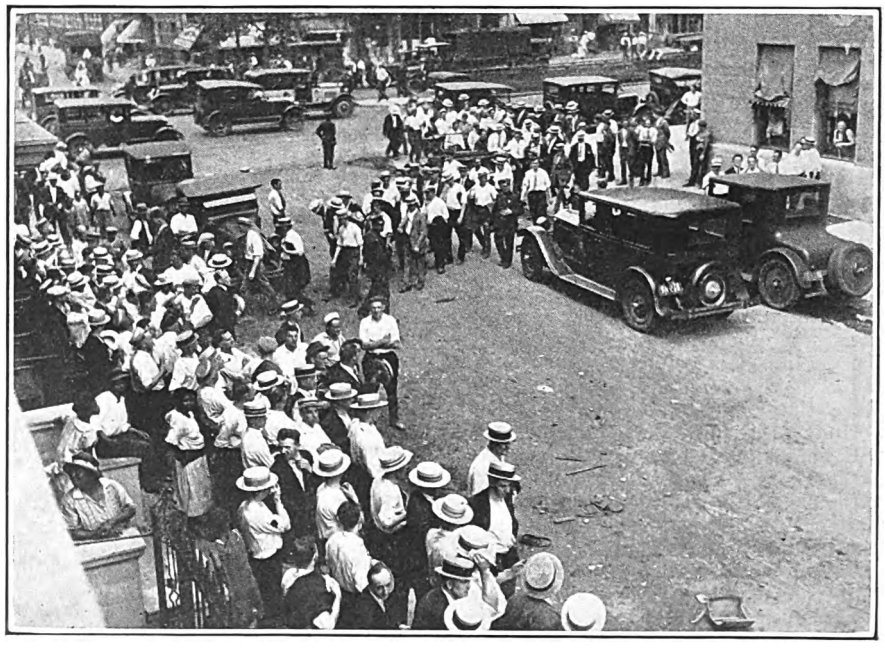
On July 27 Edward P. Lavin, leader of the strikers, issued a "call" to all employees of all transit companies for a general strike, to start Saturday, July 31. The fact that this summons met with very little response was the final blow to the strikers, for on Friday, July 30, it was officially announced that the strike was over. The company has agreed to take back all the men except the three leaders, concerning whom a special conference will be held.

Service on the Interborough was practically back to normal long before the men condescended to take public cognizance of the fact by formally declaring the strike at an end.

First I.C.C. Bus Hearing Held

The bus was hailed as an increasingly necessary supplement to the electric and steam railways, on the one hand, and condemned as an unregulated nuisance on the other, when the rail carriers, both electric and steam, had the first inning on July 27 at the opening in Chicago of the Interstate Commerce Commission's series of hearings to obtain data from which it may decide what position to take regarding the regulation of buses.

In his opening statement Commissioner John J. Esch, who presided, said that the purpose of this hearing



Men Wait in Vain to Be Taken Back en Masse

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was "to lay before Congress the possible advisability of wise and appropriate legislation in regard to motor vehicles, and especially a uniform legislation like that governing the rail carriers, with the added necessity of avoiding some mistakes made in that direction through our experience there."

Among the first witnesses from the electric railway field were Charles L. Henry, receiver of the Indianapolis & Cincinnati Traction Company and a committee member of the American Electric Railway Association; G. K. Jeffries, general superintendent of the Terre Haute, Indianapolis & Eastern Traction Company, and J. W. Welsh, secretary of the A.E.R.A. Charles Chase, president of the Gary Railways and also of the Shore Line Motor Coach Company, said he believed there is a genuine demand for transportation by bus and that the railways should have the first chance to provide it. The chief offenders in cutting railroad revenue were the privately owned automobiles and not buses, according to P. S. Eustis, passenger traffic manager of the Chicago, Burlington & Quincy Railroad.

The rail men were given the first day of the three days which the Chicago hearing was scheduled to cover. The plans called for presentation of testimony by the motor transportation industry on the second and by the public on the third. The same schedule will be followed in each of the twelve other regional hearings. The matter will be concluded with a national hearing in Washington starting on Sept. 29.

One-Man Car Now in Public Favor in Milwaukee

After experiencing vigorous opposition on the part of the public to any plans to introduce one-man cars on its lines, the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., seems to have won over the public to the merits of the one-man car as an essential part of its transportation system.

This transition was strikingly exemplified at the hearing recently before the Railroad Commission to consider the proposal of the company for the partial operation of one-man cars on the Wells-Downer line, which runs through the east side "Gold Coast" district as well as the better class residential district on the west side. The hearing, called to give any objectors an opportunity to present their views, was marked by the absence of objection or complaint against the proposed plan. In consequence it is expected the commission will issue an order in favor of the company, which plans to place these cars in service on Oct. 1.

Under the new arrangement, which will make it possible for the company to increase the standard of service without additional cost, twenty one-man cars are to be added in place of some of the two-man cars now in use. Two-man cars taken off are to be rebuilt and converted into one-man cars.

The success of the company's one-man car policy is attributed largely to the constructive manner in which the company endeavored gradually to overcome and win the public over to its side. An intensive newspaper advertising campaign consisting of good-will advertisements bearing the personal signature of S. B. Way, president, introduction and use of more modern and attractive one-man cars, short educational talks on the one-man car by trained conductors who boarded one-man cars at crowded points, were among the ideas which the company developed in removing the antipathy of the public toward the one-man cars.

Men on Public Service Answered

On July 28 the employees of the Public Service Railway, Newark, N. J., were informed that not only will the companies be unable to comply with the demand for increased wages but that financial conditions require that the men accept a wage reduction. This answer was given by M. R. Boylan, who said he had studied with particular care and attention the draft of a wage agreement setting forth terms and conditions of employment, offered for the acceptance of Public Service Railway, Public Service Railroad and Public Service Transportation Company. Mr. Boylan said in part:

The agreement provides for trainmen a flat increase in wages of 15 cents an hour; for other employees standardization of rates and an increase of 25 per cent, and, for all, changes in working conditions which would, if made effective, add further to the payrolls of the companies.

A conservative estimate of the aggregate cost of putting in effect the changes stipulated, on the basis of present operations, is more than $3,000,000 a year.

Consideration of the affairs of the companies, their revenues, operating expenses and prospects of additional revenue make it clear that no part of the additional charge involved can be assumed.

As explained in a communication addressed to the members of your association on June 1, 1926, the increase in wages provided by the agreement which went into effect Oct. 1, 1923, resulted for the thirty-month period ending April 1, 1926, in the failure of Public Service Railway and Public Service Railroad to earn operating expenses and fixed charges by a total amount of $1,797,744, and in the failure of Public Service Transportation Company to earn operating expenses by $1,736,473. The total deficit, exclusive of the fixed charges of the transportation company, therefore, amounted for the period to $3,534,217.

It is important to consider that this large deficit accrued in the face of all possible economies, and in spite of the fact that the combined system is being operated more efficiently than ever before in its history.

Economical and efficient operation has improved the financial condition of the companies, yet for the twelve months ending June 30, 1926, railway and railroad companies failed to earn operating expenses and fixed charges by $146,349, and transportation companies by $179,564.

In the face of these conditions, to increase the expenses by the more than $3,000,000 required to meet the terms of the wage agreement submitted by your board, or by any other sum of money, would be to incur an obligation which the companies have no ways of meeting and would result in disaster ruinous to all interested—public, employees and company.

The wage increase of Oct. 1, 1923, was granted in the belief that the additional expenses involved could be absorbed through economies in operation. Experience has proved, however, that such savings were insufficient for this purpose, that there is no possibility of effecting further economies in any substantial amount, and that a return to the wages in effect before Oct. 1, 1923, is necessary.

Careful consideration of all conditions affecting wages has been given by Public Service companies. The results were embodied in my communication of June 1. For the reasons therein cited, we are compelled to stand upon the conclusions as to the terms of the new agreement contained in that communication, and I am accordingly returning to your board the form submitted to me July 22, 1926.

William Wepner, chairman of the joint conference board of the Amalgamated Association at Newark, N. J., had previously informed Mr. Boylan that the wage proposal made by the company had been submitted to the nine locals, composed of employees of the companies affected, and that as a result of their deliberations a form of agreement had been drawn up which embodied the ideas of the board and the members of the association as to the rate of pay and working conditions which should be adopted.

This proposal by the men called for an increase over present rates of pay and certain changes in working conditions which are considered to be in the interest of the men. Mr. Wepner said the men are "in no position to dispute the statement as to company finances, but they believe that the wages and conditions they ask for are reasonable and should be accepted."

Jitneys in Detroit Die Hard

After winning a fourth respite the jitneys were still operating in the streets of Detroit, Mich., on July 21 while their battle was being fought in the Circuit Court. The hearing on a motion by the city for the dissolution of the injunction granted the jitney drivers a week previous was postponed to July 21, but Judge Dingeman warned that no further postponement would be granted.

As a result of a writ of error, ordering the jitney case to the United States Supreme Court, jitneys are permitted to continue using Detroit streets. Representatives of the drivers' associations say city officials have adopted a policy of harassing jitney drivers by giving them tickets for every conceivable kind of traffic violation.

Word was received in Detroit on July 26 that Chief Justice Bird of the Michigan Supreme Court had signed a restraining order placing the status of the jitneys back on the plane established by the injunction issued by Judge Hunt in December, 1923, forbidding the city to eject the jitneys.

The attorney for the jitney men obtained the U. S. Supreme Court writ on the basis that the state court's ruling violated constitutional rights contained in the Fifth and Fourteenth Constitutional Amendments, one relating to the rights of property and the other concerning class legislation. It was Attorney Barnard's contention that ejection of the jitneys under the present ordinance constituted class legislation inasmuch as buses are permitted to operate.

The latest order of the Michigan Supreme Court restrains any further interference with the operation of the jitneys pending final determination of the federal court appeal. The order also makes void all actions now in court, including the decision which was to have been rendered by Circuit Judge Dingeman

The moves are coming thick and fast and the status of the case has changed rapidly, but the city is apparently determined that the jitneys must go.

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Newspaper Co-operation in Cincinnati

"Enquirer" Says that with the Public's Co-operation Local Service Can Be Greatly Improved

Cincinnati's street car service can be made the equal of that of any other city in the country. This is the proud proclamation of the Cincinnati *Enquirer*, but that paper sees that result attainable only through co-operation between the railway company and the people.

In this respect the *Enquirer* indorsed heartily remarks made recently by Hudson Biery, director of public relations of the Cincinnati Street Railway, in an address before the Co-operation Club. Under the heading "The Sovereign Rider," Mr. Biery was quoted to this effect:

> The car rider of Cincinnati controls the street railway. He has the right to see that the service is efficiently managed, to see that it is self-sustaining and that a reasonable rate of fare is maintained. Everything in connection with the street railway, he said, is controlled by the city; that it is really the car riders' railway.
>
> Destructive competition, which reduces street railway earnings and increases the rate of fare, is your problem.

And then, in a remarkable example of what a newspaper can do toward extending co-operation in connection with a transportation problem, the *Enquirer* said:

> This is true. The public can demand, exact, control, compel. Most important, it can co-operate with the street car company. The street car company desires this co-operation. An intelligent understanding of the entire situation with reference to the management and conduct of street car service, by the citizens, will go far toward insuring satisfactory service and satisfactory and equitable fare rates.
>
> The management, stockholders and employees of the company are as surely public servants as are officials elected to conduct the affairs of the city, state and nation. They work for wages. They are the representatives of the people. The city government is their high superior, and the citizen car rider is soverign over all.
>
> Cincinnati's street car service, through co-operation between the car company and the people, can be made the equal of any in the country.

So much for the indorsement of the newspaper. Mr. Biery said many things other than those that have been quoted that are of interest. Here are some of them:

> The street railway return on investment has been limited by the city, the capitalization has been definitely fixed by the city, the rate of fare automatically goes up or down with the cost of the service, and our whole operation is controlled by the city. It is really the car riders' railway. Even if you do not ride the cars you have a direct interest in adequate transportation and the elimination of traffic congestion.
>
> Destructive competition, which reduces street railway earnings and increases the rate of fare, is your problem. It is up to you to see that the street car rider gets a square deal wherever and whenever the interests of his transportation system are involved. We are not asking for help or sympathy; we are only asking the citizens for an intelligent understanding of the whole situation, and in bringing about this understanding organizations like yours can be of great help.
>
> The new department of public relations, which I have the honor to direct, is the car rider's department within the company, and tries to view his problem from his standpoint. We are trying to acquaint him with his rights and help him get the service he wants. Part of our job is to "sell" to the people of Cincinnati their own transportation system and the new franchise. The new franchise is simply a working contract protecting the interests of the street car riders against the rest of the city at large. The management, the employees and the stockholders under the service-at-cost plan are the workmen for providing the service. They are allowed wages just as the policeman and the fireman, and in both cases your representative, the city government, is boss.
>
> We expect to use many methods in bringing these facts home to the public. We are not trying to "press agent" the street railway, but when the newspapers want the facts we see that they get them. All of the papers are very fair about this. We are not going to talk a lot about improvements in the service until the improvements are made, but we are going to talk about the new franchise as the foundation for what can be done. When the people realize what they have in this new franchise we won't have to advertise the street railway. The car riders will do it themselves.

Wage Arbitration at Memphis Concluded

Final arguments in the wage arbitration between the Memphis Street Railway, Memphis, Tenn., and the carmen's union were submitted before the board of arbitrators on Saturday morning, July 24. While the time of the probable receipt of the decision cannot be forecast, reasonable haste is expected, inasmuch as the scale determined upon will be effective as of April 1, 1926.

E. W. Ford, vice-president of the railway, represented the company in stating its case. Judge D. B. Puryear argued the claims of the carmen.

On March 31, 1926, the contract between the company and trainmen expired. Negotiations between the two developed a new contract effective April 1, on which all points were agreed except a new wage scale. This point was submitted to arbitration with the understanding that the award made should become effective on April 1, along with other terms of the contract.

The wage scale under the former contract, in force for about two years, provided pay of 45 cents, 50 cents and 55 cents an hour for men employed one year, two years and three years or more, respectively. Approximately 74 per cent of the men, company records show, receive the maximum of the scale.

In the new contract the union asked for a scale increasing the former one about 12½ cents an hour. The company opposed the increase.

The members of the board of arbitrators are ex-Gov. M. R. Patterson, judge of the Circuit Court; Lovick P. Miles, attorney, representing the company, and A. B. Galloway, attorney, representing the union.

Charges of Mayor of Buffalo Answered

Following the hearing by the New York State Public Service Commission on the complaint of Mayor Frank X. Schwab, Buffalo, against the use of one-man cars by the International Railway, alleged inadequate service and the failure of the company to comply with the order of the commission to make repairs to its tracks, Bernard J. Yungbluth, president of the International, asked the state board to investigate the company's needs for more revenue to make improvements.

Mr. Yungbluth's statement says that the city's case alleging inadequate service and dangerous trolley operation "has collapsed so utterly as not to warrant a reply," and adds that the company is compelled to request an increase in fares because of the city's insistence that it spent more money for track repairs and other improvements to its system in Buffalo. The company asks the commission to close its case upon the evidence offered by the city and says that taking of additional testimony would be merely a waste of time.

Frank C. Perkins, commissioner of public affairs, has asked for an investigation into the expenses of the International Railway from 1919 to 1925. He says the claim set up by Mitten Management, Inc., which operates the local traction system and the company's interurban lines and buses, that it is without funds to proceed with necessary improvements ordered by the commission and is in need of a higher fare, is not based on fact.

Bondholders' Committee Pretends to See Receivership Ahead

Foreclosure and a receivership impend for the Chicago Surface Lines. This was the forecast made in a letter sent out on July 22 to the holders of first mortgage bonds of the Chicago Railways by the protective committee.

The letter indicates that the committee is convinced that a receivership is inevitable upon expiration of the franchises next February. The 10,000 bondholders are urged to unite in depositing their securities with the committee in order to hasten foreclosure proceedings and reorganization plans at that time. The committee intimated that it held scant hope for a successful agreement being reached with the city for a new franchise before the expiration of the present term.

A somewhat more encouraging development in the solution of the city's transportation problems was indicated on July 23, when definite promise of the co-operation of surface and elevated lines officials was obtained by Mayor William E. Dever in a secret conference with Samuel Insull, chairman of the Rapid Transit Board; Henry A. Blair, president of the Chicago Surface Lines; Britton I. Budd, president of the Rapid Transit Company, and various bankers representing Surface Lines security holders.

Just what took place at the meeting could not be ascertained, but every one involved appeared to be satisfied with the results. The chief point of difference between the several factions at the present time is over the question of enabling legislation. The company officials have previously expressed the belief that it is futile for the City Council to continue with the work of framing a new traction ordinance until some sort of enabling legislation is obtained from the Legislature, especially pertaining to the "home rule" and unified operation features of the draft. The city opposes this program, but agrees with the companies that a franchise period longer than twenty years is desirable.

The railway officials and bankers are expected to confer among themselves within the next few days to find a suitable method for working with the city. They will then be asked to sit with the local transportation committee of the City Council in negotiating a new franchise.

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Rochester Lines' Gain Continues with 8-Cent Fare

Continued gain in revenues of the New York State Railways, Rochester Lines, under an 8-cent fare is shown in the report of Railways Commissioner Charles R. Barnes to the Common Council for the quarter ended April 30.

The fare determining balance account deficit dropped from $311,655 to $249,305, but is still more than $400,000 from the point where a lower fare would be possible under the service-at-cost contract.

Fares in Rochester were increased 1 cent on Jan. 1. The report just made is the only one showing operations for a complete quarter under the increased fare as the previous report gave figures only for January under the new rate.

The report for the quarter ended April 30 showed a surplus of $71,511 from trolley operations and a deficit of $9,151 from bus and trackless trolley operations, making a net surplus of $62,359. Total number of passengers carried was 23,654,426.

Where Commissioner Barnes' report showed a deficit from bus operation, James F. Hamilton, president of the company, declared that the report charged transfer passengers as total loss as far as the buses were concerned, and if a credit were made the buses and trackless trolleys would show a surplus.

Date Advanced for Electrification in New York City

Extensions of time under the law passed in 1921 requiring electrification of railroads in New York City have been granted by the Public Service Commission to the New York Central Railroad, Long Island Railroad and the Bush Terminal Company. The petition of the New York Dock Company, which operates the Fulton, Baltic and Atlantic terminals in Brooklyn, was denied. In denying its application Chairman Prendergast commented as follows:

"There has been no effort to comply with the requirements of the statutes nor is there any promise that if an extension of time should be granted there would be a future attempt at compliance, all of which indicate the finding that sufficient reasons do not exist for the extension under the present circumstances."

The extensions granted the New York Central apply independently to the various divisions, some running to 1927 and others to July 1, 1930. These extensions were given without prejudice to further extensions on application filed on or before the dates set by the present action.

In the case of the Long Island Railroad, extensions were made until Jan. 1, 1931, to complete electrification. The company submitted evidence to show that it has a definite $3,000,000 program for the current year and like programs for subsequent years, the total cost for electrification being estimated at $13,000,000.

The Bush Terminal Company, operating piers and terminals on the Brooklyn waterfront between Second Avenue and 31st Street, the Pier Head line and 39th Street, and tracks on 41st Street and First Avenue, principally on private property, also received an extension until Jan. 1, 1931. This company plans to install certain temporary overhead power construction to test the feasibility of handling cars from floats by means of electric locomotives.

First I. C. Electric Train Run July 21

As a sequel to many years of agitation and preparation, the first electric train in the Illinois Central Railroad's suburban passenger service started from the Randolph Street terminal in Chicago at 10:25 a.m. on July 21, 70 years to the day from the date commuters service was started on this line.

The pioneer electric train consisted of four cars, two motor cars and two trailers, and was filled with regular passengers and a large delegation of railroad officials and newspaper men.

For the time being only three electric trains a day will be operated in each direction between Randolph Street and Sixty-seventh Street. This schedule will gradually be extended, however, until it embraces all the regular suburban routes. Before Sept. 1 it is probable that the last steam locomotive will have been withdrawn from commuters' service, according to J. J. Pelley, vice-president in charge of operations. The old steam schedules will be adhered to until that time.

All of the 260 new cars have been delivered and tested.

On Aug. 7, the date complete electric operation will be started on the South Chicago branch, 116 south side civic and business organizations will join in a mammoth celebration. A tableau depicting the progress of transportation will be held in Grant Park stadium. Covered wagons, high bicycles, hansom cabs, surreys, stanhopes and even the Indian "travois" will be included in the display.

Both Factions Submit Chicago Wage Dispute to Arbitration

Elevated trainmen, taking the initiative in opening negotiations for the higher wages which have been asked by both surface lines and elevated employees in Chicago, agreed at a conference with Rapid Transit officials on July 23 to draw up an arbitration policy, but indicated that they are willing to arbitrate only the request for a wage increase of 5 cents an hour and insurance provisions. The company contended that its counter-proposal of a reduction of 5 cents an hour in wages and changes in working rules should receive equal consideration in the hearings.

At the close, on July 22, of the second conference within the last two weeks between operatives and executives of the Chicago Surface Lines, it was announced that no conclusion had been reached. Demands similar to those made by the elevated men have been presented by the Surface Lines' employees. The company has answered with a proposal for a reduction of 5 cents an hour. The date for a third meeting has not yet been fixed.

Two Cincinnati Arbitrators Chosen

Appointment of arbitrators to fix the wages of employees of the Cincinnati Street Railway, Cincinnati, Ohio, for the next two years has been announced. Attorney James H. Vahey, Boston, is the choice of the employees, through their organization, the Amalgamated Association. The arbitrator to represent the company is Walter A. Knight, Cincinnati attorney. These two will select a third arbitrator. The employees are still working under the terms of the two-year agreement which expired on June 30. The maximum wages under that agreement were 53 cents an hour for conductors and motormen of two-men cars, 60 cents for one-man car operators and 57 cents for bus drivers. The men asked for an increase of 12 cents an hour and the railway offered an increase of 1 cent an hour every six months for two years. No agreement was reached and the matter went to arbitration.

Fort Dodge Equipment Dismantled

Local railway service in Fort Dodge, Iowa, is a thing of the past. C. G. Crooks, president of the Fort Dodge, Des Moines & Southern, announced that dismantling of the city's idle railway equipment would be started at once.

As previously stated in the ELECTRIC RAILWAY JOURNAL, the street car service was discontinued Nov. 14, 1925, due to failure to meet operating expenses. Tracks and overhead were left intact, however, and since then have been standing idle. Buses will take the place of the cars.

The local railway has been in operation under the direction of the Fort Dodge, Des Moines & Southern road for the past twenty years. For ten years prior to that it was operated by local residents.

The system was started in 1896 by local capital and flourished for many years despite the fact that there was only one car in operation, running over a stretch of twelve blocks.

Baltimore Considers Rerouting Cars

The Maryland Public Service Commission has set Aug. 3 as the date for holding the first of a series of public hearings to consider the rerouting of street cars of the United Railways & Electric Company, Baltimore. The changes in routes were recommended by the Baltimore Traffic Survey Commission. The survey body divided the lines which it recommended changed into six groups, the first of which will be considered at the opening hearing. The lines involved in this group are Gilmor Street-Guilford Avenue, Linden Avenue, York and Frederick Roads, Towson and Catonsville, Wilkins Avenue, Back and Middle Rivers, Sparrows Point and Bay Shore and Federal Street-Washington Boulevard. Individuals and organizations interested in the proposed changes will be permitted to express their views at the hearings, which will be announced by notices in all the cars.

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Fare Hearings in New York State Postponed

To allow the city authorities further time for checking up the New York State Railways' statements, Public Service Commissioner Lunn on July 23 adjourned from July 27 to Aug. 3 at Albany the pending hearing on the petition of the railway for increased fares in the city of Rome.

The hearing on the application for an increase of fares of the United Traction Company, Albany, in the Capitol district cities has been adjourned from July 27 to Aug. 10.

News Notes

Fare Hearing Deferred.—The hearing on the application of the Fresno Traction Company, Fresno, Cal., for an increase in its fares was postponed by the California Railroad Commission from June 1 to Sept. 28. The company previously had alleged that it had an operating loss of $4,056 during 1925 as the result of its first year's operation under its resettlement franchise.

Rate Increase Suspended.—The 15 per cent increase in passenger commutation rates proposed in a petition filed with the Illinois Commerce Commission on June 15 by the Chicago, Aurora & Elgin Railroad, Aurora, Ill., and referred to in ELECTRIC RAILWAY JOURNAL for June 26, has been suspended until Nov. 12. In the meantime arguments will be heard by the commission for the new tariff, which, if allowed, would approximate that now in force on several steam lines that serve the same suburban territory.

Fare Suit Up on Appeal.—The suit of Daniel J. Furey to compel the Philadelphia Rapid Transit Company, Philadelphia, Pa., to pay the city $57,900,000, alleged to have been collected in excess fares since the abandonment of the 5-cent fare some years ago has reached the Supreme Court. The petitioner claims the company has an obligation to charge only a 5-cent fare under its contract with the city entered into in 1907. The suit is a taxpayer's action. The case was dismissed by the United States District Court recently.

Conference on New Franchise in Wheeling.—After approving the report of the franchise committee the City Council of Wheeling, W. Va., recently authorized the members of the committee to confer with officials of the Wheeling Traction Company in an effort to have one general franchise drawn up. The franchise will relieve the company of all street paving obligations other than the maintenance of the base.

Parking Prohibited on Main Thoroughfare. — The St. Louis Board of Aldermen passed a bill on June 25 forbidding all parking of automobiles and other vehicles on Grand Boulevard, the chief north and south thoroughfare between Laclede Avenue and Page Boulevard. The measure now goes to Mayor Miller for his signature. The elimination of parking on this street will greatly relieve traffic congestion and result in a speeding up of the Grand Boulevard street cars.

Higher Fares Asked in Michigan.—Through the proposal of W. J. Hodgkins, vice-president and general manager, the Lake Superior District Power Company has presented to the City Commission of Ironwood, Mich., a plan whereby the city is to join the company in petitioning the Michigan Public Utilities Commission for higher fares and relief from paving costs. In his communication to the city, Mr. Hodgkins warns that railway service will no longer be furnished in Ironwood if the city should refuse this request. The company recently submitted a proposal to the people of Ironwood to increase its fares from 5 to 8 cents and at the general election on June 24 the proposal failed by nearly 300 votes to receive the necessary two-thirds approval required under the city charter.

City Service Needs One-Man Cars.—The practice which the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has been following in accepting passengers for transportation between points within Watertown on its interurban cars has been discontinued and one-man car service, operating on a half-hour schedule, has been installed instead to meet the demand for city service. A 5-cent fare is charged. The cars used on the new rapid transit line between Milwaukee and Watertown are so arranged that it is impossible to operate them from either end. Consequently they are unsatisfactory for city service.

Railway Co-operates in Freight Movement.—The Springfield Street Railway, Springfield, Mass., is co-operating with the Freight Container Service Company, a newly formed subsidiary of the D. S. Woodberry Company, in a plan by which the Freight Container service is employed for the moving of freight to and from the trolley terminals, the same service being given at the Boston end, making a door-to-door service. Another departure from the trolley freight system hitherto in vogue is that the system involves the use of flat cars, each equipped with rails for five steel-and-wood containers, built for quick loading and unloading at terminals. Rates are so fixed as to compete with the motor trucks.

South Shore Line Extends New Service.—The completion of the second step in the rehabilitation program of the Chicago, South Shore & South Bend Railroad was accomplished on July 20, when the railroad's new steel motor passenger cars were placed in service between Michigan City and Gary. The next step will be the operation of the new cars from Kensington to South Bend within a week or ten days and the final step, the operation through to Randolph Street, Chicago, will be carried out early in August.

Baltimore Company Buys Private Line.—Negotiations are under way by which the United Railways & Electric Company, Baltimore, Md., will acquire a privately owned electric line which operates to Franklintown, Hillsdale, Windsor Heights and several other small communities. The line is owned by the Lorraine Cemetery Railway and is slightly more than 1 mile in length. It crosses the boundary of the city, but only a small part of it is outside the city limits. In the past the line has been operated by the United under a lease. Because it was a privately owned line and went out of the city it was necessary to charge an additional fare, making a double fare for the patrons to reach the downtown section of Baltimore. As soon as it is taken over, however, a one-fare system will be put into effect.

Insurance for Five Hundred Men.—The Chicago, Aurora & Elgin Railroad has entered into an agreement with its employees whereby each has an opportunity of taking out life insurance, together with dismemberment indemnity, on the group insurance plan. The contract has been placed with the Sun Life Insurance Company of Canada through its Chicago, Ill., offices. The policy total of $500,000 covers approximately 500 employees of the railroad.

Half Fare for Boston Children.—The Boston Elevated Railway, Boston, Mass., announces that in July and August, and until Sept. 6, it will carry children under fourteen at half fare, or 5 cents, over all the lines.

Kankakee Line Granted Fare Increase.—A permanent order authorizing the Kankakee Electric Railway, Kankakee, Ill., to increase its cash rates from the 6-cent basis on which it has been operatnig for many years, to 7 cents was issued recently by the Illinois Commerce Commission. The company is further allowed to sell eight tickets for 50 cents. Shortly after applying to the commission several months ago, the company sought to adopt the new schedule, but an order from the commission suspended the 7-cent fare before it had been long in force. The permanent order was entered later.

Paving Charges May Be Modified.—The Board of Aldermen of Pittsfield, Mass., voted on June 14 to abate paving assessments, amounting to $43.000, charged to the Berkshire Street Railway in 1919 and 1921.

For the Sightseer.—The 1926 edition of the booklet "Vancouver, as seen by means of the British Columbia Electric Railway Lines" is off the press. It contains full details of sightseeing trips about the city and up the Fraser Valley by railway and motor coach. Copies are mailed gratis on request.

Suggests Street Improvement. — A suggestion that the tracks on Olive Street in St. Louis, Mo., when that thoroughfare is widened from 60 to 100 ft. between Twelfth Boulevard and Channing Avenue be placed in a neutral zone from which other vehicles would be prohibited has been made to Director of Streets and Sewers Brooks by officials of the St. Louis Public Service Company, which will soon take over the United Railways. It was further suggested that if this is done the number of car stops between Grand Boulevard and Twelfth Boulevard be reduced from 21 to eight. It is estimated that this plan will cut the running time, will result in greater safety through segregation of vehicular traffic, a saving to the car rider of the cost of paving between the tracks, reduction in car noises and increase in comfort.

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Recent Bus Developments

Railway's Rights Protected in Massachusetts

Certificates for three bus lines have been granted to the Service Bus Company of Revere, Mass., by the Public Utilities Commissioners. The line from Revere Beach to North Revere, passing over part of Park Avenue, has been operated for a time under temporary certificate, and Alphonso Roberto, head of the Service Bus lines, has run free buses on this route while waiting the decision of the commission. The other routes are from Point of Pines to Orient Heights, and from Revere Beach to Glendale Square, Everett. Because of protests by the Eastern Massachusetts Street Railway, all three permits carry definite limitations as to what part of the routes are open for receiving and discharging passengers.

Albany-Schenectady Service Sanctioned Over Railway Protest

The Public Service Commission on July 23 granted to William G. Schultze a certificate for the operation of a bus line between the Plaza in Albany, via Central Avenue, the Wolf, Wolf-Shaker and Consaul roads to Schenectady with a terminal at the Erie Boulevard in that city. Mr. Schultze cannot carry passengers in Albany in competition with the United Traction Company or in Schenectady in competition with the Schenectady Railway. His petition for operation was opposed by the Schenectady Railway and the New York Central Railroad.

Trackless Trolley to Go at Petersburg

The City Council of Petersburg, Va., has requested the Virginia Electric & Power Company to extend its Halifax Street car line to Butterworth's bridge. If the company complies, the entire length of Halifax Street will be covered by the car line.

The removal of the trackless trolley on Sycamore Street, Petersburg, extending to Wilcox Lake, is also proposed. The use of buses is suggested from Walnut Hill through Colonial Heights. This would give better service than is had at present, especially to those living in Colonial Heights.

Removal of the only "trollibus" system operating in Virginia would mean the end of an interesting experiment. About five years ago the trollibus was demonstrated for a week in Richmond. During that period several thousand persons rode free in the vehicle, which operated from Robinson Street west for a distance of several blocks. The Virginia Railway & Power Company, now the Virginia Electric & Power Company, applied for the establishment of several trollibus routes, but the proposal was not looked upon with favor by the city. Petersburg, near by, was, however, in need of additional transit facilities and a system of trackless trolleys was installed there by a company separately organized but understood to be under the auspices of the Virginia Electric & Power Company.

More Talk of Independent Motor Bus Service in Des Moines

Officers of the Capital City Motor Coach Company, Des Moines, Ia., have announced positively that they will apply to the City Council for permission to operate a bus system in Des Moines. They have indicated that their proposal would be put up to the Council by Aug. 1.

As a forerunner of the announcement they brought a large Fageol bus to Des Moines and hauled councilmen over the routes which they propose to establish. They also promised 10-cent fares and a special weekly ticket good for an unlimited number of rides. The service the officers of the company say it is proposed to install would compete with the railway lines of the Des Moines City Railway.

Observations on One Year's Bus Operation in Kansas City

The first anniversary of the starting of bus service by the Kansas City Railways in Kansas City, Mo., was celebrated on July 20. The Leeds route was the first to be placed in operation. All of the other routes were started on schedule within the next three months in the following order: Blue Valley Route, Aug. 19; South Troost Route, Aug. 19; Northeast Route, Aug. 19; 39th Street Route, Sept. 21; Warwick Route, Oct. 19; Armour-Paseo Route, Oct. 20; Linwood-Benton Route, Nov. 4; Country Club Express, Nov. 4. The Argentine bus line in Kansas City, Kan., was placed in service a year ago last January.

Since the first bus started on its schedule a year ago the combined bus routes in Kansas City show a deficite of $206,474, inclusive of the interest of the investment. The total earnings of all routes to July 20 was $462,465.

Despite the difficulties of bus operation in Kansas City the company is believed to be operating as cheaply as any bus line in other cities. In probably no other city are grades found as severe as those in Kansas City. No line there has a grade less than 5 per cent, while some of the grades are as great as 13 per cent.

From observation and by comparing the railway receipts with the receipts of a similar period last year it would seem that about 60 per cent of the revenue of the buses represents that much loss to the railway lines.

Since May 1, however, the ten bus lines of the Kansas City Railways have shown a big increase in patronage, according to Senator Francis M. Wilson, one of the receivers. Use of the buses as chartered cars for parties, picnics and drives over the boulevards has increased, too.

Demands for buses by large parties usually come at night after the rush hours. It is a profitable section of the transportation business, and the receivers have exerted much effort toward attaining it.

Conventions, societies, clubs and other organizations have found it convenient to use buses for special trips. And this demand is growing rapidly as more organizations become familiar with the custom. The receivers frequently are called on to furnish buses to meet trains at the Union Station to give brief visitors a view of Kansas City by groups.

The charge is $7.50 an hour for single-deck buses, with special arrangements where intervals of waiting are desired.

Excursions by Bus Prove Popular

Last month the traffic department of the Interstate Public Service Company, Indianapolis, Ind., put into operation a number of personally conducted buses carrying summer excursionists to various points of scenic interest in Indiana. As indicated previously in the ELECTRIC RAILWAY JOURNAL the first trip was made from Indianapolis to Brown County, which is famed throughout the country for its rugged scenery and primitive background. The Interstate is using for these excursions some of its new de luxe buses. On June 20 the second excursion was run from Indianapolis to the Shades of Death, a beautiful spot in eastern Indiana. Similar excursions were scheduled for July 11 from Indianapolis to the noted Turkey Run, State Park in Parke County, and on July 25 to McCormick's Creek Canyon, another park which the state is beautifying. On Aug. 8 the Interstate will run one of the bus excursions to Clifty Falls, near Madison.

Rights of Blue Goose Line Expanded

The Blue Goose Motor Coach Line, subsidiary of the East St. Louis & Suburban Railway, and operation between St. Louis, Mo., and Belleville, Ill., has been authorized by the Illinois Commerce Commission to do an intrastate as well as interstate business between its terminals. The new arrangement went into effect on Sunday, July 18.

Heretofore the buses were not permitted to make any stops to pick up passengers along the route. Originally the line was run in opposition to the East St. Louis & Suburban Railway, which opposed all efforts to obtain a certificate of convenience and necessity from the state commission and required the bus company to confine its operations to a strictly interstate business.

The new route of the buses is from St. Louis via the Eads Bridge to Broadway, East St. Louis, east to Main Street, north to Missouri Avenue, east to Eighteenth Street, north to Illinois Avenue, east to 26th Street, north to State Street and thence east on State Street to Belleville. The Belleville terminal is on Court House Square.

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Co-ordinated Service for Menominee

An attempt will be made by the Menominee & Marinette Light & Traction Company to sell the people of Marinette and Menominee, Mich., on the numerous advantages of co-ordinated railway and bus service, in line with its policy to bring its transportation system up to the highest degree of efficiency. To do this, a 21-passenger bus has been purchased for use on an experimental basis on various lines in Marinette and Menominee. The company expects in this way to learn under actual conditions the value of using buses with street cars in the Twin Cities. Bus fares will be the same as on the street cars with transfer privileges to both lines. On the sentiment of patrons will depend future action by the company with respect to its efforts to improve its service.

Additional Buses in Omaha.—The Omaha & Council Bluffs Street Railway, Omaha, Neb., has added three buses to its present fleet. Each seats 21 passengers, a capacity which Manager Leussler finds to be most flexible and economical. So far the company has been using buses as feeders to reach out for new business in sections of the city now being developed.

Another Bus Line for Tampa.—The Tampa Electric Company, Tampa, Fla., recently received permission from the City Commission to operate a bus line from down-town Tampa to the new Uceta shops. Buses will run every twenty minutes during the heavy traffic hours and every half hour during the rest of the day.

Milwaukee to Have Bus Stop Signs.—In compliance with an ordinance recently passed by the Common Council affecting city operation of buses, the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has agreed to install about 546 "Bus Stop" signs at all corners where the company buses halt to receive or discharge passengers. These metal signs will be mounted on 8-ft. steel posts. The lettering is in chrome yellow on a coach green background.

Unconvinced About Substitution.—A survey recently made at Staunton, Va., of conditions affecting bus service there has left the Shenandoah Traction Company unconvinced of the desirability of replacing or supplementing its trolley system with buses. The City Council, on the other hand, has expressed approval of the establishment of a bus system at Staunton. It has been determined to offer the railway the first chance at the franchise for bus service, in order to protect it from competition.

Extension of Kansas City Line.—With the paving on Troost Avenue from 63d Street to the city limits at 79th Street practically completed, the Kansas City Railways, Kansas City, Mo., will extend its Troost Avenue bus service to the southern city limits about Aug. 1. The line is now operating from 63d Street, where the paving now ends, to 55th Street, connecting with the South Troost car line at that point.

Financial and Corporate

Financial Status Sound

Toronto Transportation Commission Reports Decrease in Passenger Revenue Not Serious

The gross income of the Toronto Transportation Commission, Toronto, Canada, which operates the local railway and bus lines there, for the year ended Dec. 31, 1925, was $11,626,659, or a decrease of $83,037 compared with 1924. This fact was disclosed in the annual statement of the commission. The surplus as of Dec. 31, 1925, after making certain adjustments and adding the surplus for the year 1925, was $310,314.

The revenue account shows that the decrease in passenger traffic which was experienced in 1924 continued during most of 1925. The decrease in the number of revenue passengers carried in 1925, compared with the number in 1924, was 4,423,773, the number in 1925 being 180,779,925. This decrease is attributed mainly to the continuance of quiet business conditions and, secondarily, to the increasing use of private automobiles. The report states, however, that there is some encouragement to be derived from the fact that the monthly losses were much less severe in the summer of 1925 and were practically eliminated in the latter months of the year.

COMPARATIVE STATEMENT OF EARNINGS OF TORONTO TRANSPORTATION COMMISSION

Income:	1925	1924
Passenger earnings:		
Railway and bus transportation	$11,157,893	$11,422,689
Motor coach transportation	132,008	.....
Income from sundry other sources	336,757	287,005
Gross income	$11,626,658	$11,709,695
Expenditure:		
Cost of electric current, including operation and maintenance of substations	$1,108,942	$1,108,889
Expenses of operation, maintenance, repairs, administration and taxes, including accrued charges	6,183,356	6,679,674
Expenses of operation:		
Motor coaches	95,271	.....
Total expenditure	$7,387,570	$7,788,563
Net income available for fixed charges	$4,239,087	$3,921,131
Fixed charges:		
Interest, less interest on idle funds	$2,207,819	$2,242,237
Reserves on capital account:		
Redemption of debenture debt	873,883	491,148
Reserve for replacements	909,352	794,550
Reserves on operating account:		
Reserve for unredeemed tickets	.....	18,000
Reserve for workmen's compensation and public liability	126,968	240,000
Reserve for contingencies	50,000	30,000
Reserve for doubtful debts	13,000	16,008
Organization expenses	.....	.....
Total fixed charges and reserves	$4,181,024	$3,831,944
Net income carried to surplus	$58,063	$89,187

The expenses of operation of the commission for the year 1925, including the cost of electric current, maintenance, repairs, administration and taxes, but exclusive of the expenses of operation of the motor coach services, amounted to $7,292,298. This total compares with $7,788,564 in 1924, or a reduction in operating expenses of nearly $500,000.

The necessity for operating economies, according to the statement, is obvious from a glance at the revenue table. Compared with 1924, not only was there a decrease of $264,796 in the passenger earnings in 1925, but there was an increase of $348,318 in the debt charges, that is the interest and sinking fund payments on the outstanding debentures. These large annual increases in debt charges, which have been due to sinking fund payments becoming effective gradually, will not continue beyond 1926.

The net income of the commission available for fixed charges and surplus was $4,239,087, after deducting operating expenses. The report says that the "amounts appropriated from this sum for operating reserves are all reasonable and are the minimum that should be set aside to protect the investment." It was necessary to increase the appropriation for the reserve for replacements because of additions to the property and particularly because of the additional capital invested in motor coaches.

The amount appropriated for the reserve for workmen's compensation and public liability has been reduced from $240,000 in 1924 to $126,968 in 1925. The record of accidents on the system has been such as to justify this reduction. From Sept. 1, 1921, when the commission assumed control of the system, to the date of the report, the street cars, buses and coaches of the commission have traveled 126,500,000 miles and carried 1,320,000,000 passengers, and not one passenger has been fatally injured.

The commission was successful in still further increasing its earnings from other sources, the income amounting to nearly $50,000 more than for the year 1924. A new source of earnings was also developed during the year with the start of special motor coach transportation. This service includes sightseeing trips, the rental or chartering of motor coaches to private parties, coach transportation to the racetracks and to the Canadian National Exhibition, transportation of school children and a regular scheduled service to the "Hill" district, all of which is conducted as a separate enterprise and distinct from the street railway and bus system. The expenses of operation of motor coaches totaled $95,271 and this sum included all organization and development expenses in connection with starting this branch of the transportation service.

The total earnings from motor coaches were sufficient to pay all oper-

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ating expenses and fully to meet all fixed charges on the capital invested in motor coaches, the garage and other equipment used in this service and return a small surplus. From May, when operation started, to December the earnings were $132,008.

General Manager Harvey, in his report, makes the distinction between the motor bus and motor coach services operated by the commission. Motor buses are operated as a part of the universal fare transportation system, with free transfers issued between the street cars and the buses, the latter being painted the same color as the street cars. The motor coaches are better-equipped vehicles and are painted a distinctive gray. They are operated in special transportation services for which special rates are charged. He states that the chartered coach business has been entirely satisfactory. The volume of business secured greatly exceeded that expected. The financial results of the motor coach services as a whole were satisfactory, "notwithstanding the Hill coach route experiment."

Track extensions built in 1925 were 7.931 miles and track removed 2.901 miles, so that net addition to trackage in 1925 was 5.030 miles. Several important constructions were included in this mileage. The only important addition to the buildings of the commission was the construction of a garage on the Davenport Road frontage of the Hillcrest property. No passenger street cars or electric service cars were secured in 1925. During the past year 21 coaches were added to the service.

In conclusion, Mr. Harvey states that an examination of the balance sheet and other financial statements indicate clearly that the financial condition of the commission is fundamentally sound. The year's decrease in passenger revenue, though disappointing, is not of serious consequence. Traffic has been increasing for the past few months and there are indications of improvement in general business conditions.

He refers to the sound field of usefulness for the bus in interurban transportation, where its use has increased rapidly in the Toronto district. In his opinion the situation in respect to traffic congestion has not altered during the past year except that such congestion has increased, to the further inconvenience and expense of the vast majority of the users of the roadway allowance. The congestion is particularly acute in the downtown district. The commission intends to try to secure the co-operation of large employers and owners of amusement places toward improving the service by adopting "staggered hours."

Community Traction Loss $20,000 in June

A deficit of $20,199, resulted from operation of the Community Traction Company, Toledo, Ohio, during June. Although there was a decrease in passenger business as compared with the previous month a slight gain was shown over the same month last year. Revenue passengers for June totaled 3,912,600, or an average of 130,420 a day. Passenger revenue was $274,569, or an increase of $4,279 over the same month in 1925. Loss of revenue from interurban track rentals and additional car mileage resulted in slightly higher operating ratio and a lower net result. The operating ratio in June, 1926, was 74.54 per cent, compared with 71.66 per cent for the similar month last year.

Well-Known Engineer Made Receiver of Minnesota Interurban

In connection with a suit to foreclose the bonds of the Minneapolis, Anoka & Cuyuna Range Railway in the District Court of the United States, Judge John B. Sandborn has issued an order appointing Edward P. Burch, Minneapolis, receiver for the road, to take effect immediately. The railway runs between Minneapolis and Anoka, 18 miles. It is engaged very largely in freight service. There are also eight passenger trains a day between the two cities.

The road and equipment have a book value of $672,000, against which there are $380,000 of mortgage bonds. The capital stock is owned very largely by the Bratnober family of Minneapolis and St. Paul.

Revenues have decreased from about $156,000 in 1920 to about $94,000 in 1925, due largely to a decrease in the passenger transportation. The carload freight business, hauled by 50-ton electric locomotives, has increased.

The receiver will not make important changes in operation, but he has under consideration the lease of flat cars to increase the freight service and the overhauling of cars to attract passenger traffic.

Mr. Burch has maintained an engineering office in Minneapolis for 25 years, and during the last five years has been valuation engineer and a director of the Minneapolis, Northfield & Southern Railway. He was electrical engineer for the Twin City Rapid Transit Company's system during its initial construction period.

Conspectus of Indexes for July, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War	
				H.	L.
Street Railway Fares* 1913 = 4.84	July 1926 **7.36**	June 1926 **7.37**	July 1925 **7.27**	June 1926 **7.37**	May 1923 **6.88**
Electric Railway Materials* 1913 = 100	July 1926 **154.1**	June 1926 **154.4**	July 1925 **152.6**	Sept. 1920 **247.5**	Oct. 1924 **148.5**
Electric Railway Wages* 1913 = 100	July 1926 **225.7**	June 1926 **225.5**	July 1925 **222.5**	Sept. 1920 **232.0**	March 1923 **206.8**
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	July 1926 **203.2**	June 1926 **201.9**	July 1925 **200.1**	July 1920 **256.4**	May 1922 **167.4**
Eng. News-Record Construction Cost (General) 1913 = 100	July 1926 **207.8**	June 1926 **204.8**	July 1925 **204.6**	June 1920 **273.8**	Mar. 1922 **162.0**
U. S. Bur. Lab. Stat. Wholesale Commodities 1913 = 100	June 1926 **152.3**	May 1926 **151.7**	June 1925 **157.4**	May 1920 **246.7**	Jan. 1922 **138.3**
Bradstreet Wholesale Commodities 1913 = 9.21	July 1 1926 **12.74**	June 1 1926 **12.80**	July 1 1925 **13.85**	Feb. 1 1920 **20.87**	June 1 1921 **10.62**
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	June 1926 **159.7**	May 1926 **161.1**	June 1925 **155.0**	July 1920 **219.2**	Mar. 1922 **138.7**
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	June 1926 **167.0**	May 1926 **167.8**	June 1925 **166.9**	July 1920 **204.5**	Aug. 1922 **154.5**
Steel Unfilled Orders (Million Tons) 1913 = 5.91	June 30 1926 **3.479**	May 31 1926 **3.649**	June 30 1925 **3.710**	July 31 1920 **11.118**	July 31 1924 **3.187**
Bank Clearings Outside N. Y. City (Billions)	June 1926 **18.93**	May 1926 **18.17**	June 1925 **18.36**	Oct. 1925 **20.47**	Feb. 1922 **10.65**
Business Failures Number	June 1926 **1571**	May 1926 **1610**	June 1925 **1.37**	Jan. 1924 **2231**	Aug. 1925 **1353**
Liabilities (Millions)	**9.34**	**36.**	**31.61**	**122.95**	**27.22**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads. Previously the wage index applied to 144 railways. The change is due to dropping some roads where the number of trainmen has been reduced to a total of less than 100.

Income of Brooklyn City Road Holds Up Well

The Brooklyn City Railroad, Brooklyn, N. Y., reports a net income for the twelve months ended June 30 of $1,422,736, compared with $1,432,308 for the same period last year. The preliminary income statement follows:

	—Twelve Months Ended— June 30, 1926	June 30, 1925
Passenger revenue	$11,399,374	$11,363,281
Other revenue	371,399	402,339
Operating expenses and taxes	9,731,812	9,826,870
Income deductions	616,225	506,442
Net corporate income	1,422,736	1,432,308

Disposal of $120,000 in Interest Puzzles San Francisco Municipal

More than $120,000 in interest has been earned by the San Francisco Municipal Railway, San Francisco, Cal., from funds deposited in banks during the past ten years, and the money has been credited to the municipality's general fund instead of the railroad operating revenue fund. This fact is stated in a report made to the Board of Public Works by Fred Boeken, superintendent of the city lines. Mr. Boeken contended

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that the money earned by the city road should be deposited to the credit of the utility and will do much to reduce the so-called "book deficit." President Timothy A. Reardon of the Board of Works stated that the Board of Supervisors will be asked to enact legislation providing for the change in financing.

Details of California Financing Announced

During the twelve months ended June 30, 1926, the California Railroad Commission passed upon applications filed by public utilities and common carriers operating in California involving the issue of $271,024,507 of stock, bonds, notes and equipment trust certificates, as compared with $197,412,807 for the preceding twelve-month period ended June 30, 1925, the increase amounting to $73,611,699.

The securities passed upon during the two periods were disposed of as follows:

	Year Ended June 30, 1925	Year Ended June 30, 1926
Granted	$175,795,119	$262,463,149
Denied	19,900,400	274,960
Dismissed	1,717,288	8 286,398
Total	$197,412,807	$271,024,507

The securities were authorized to be issued by the various classes of utilities and carriers as follows:

Class	Year Ended June 30, 1925	Year Ended June 30, 1926
Steam railroads	$4 023,150	$658,000
Electric railways	3 515,496	4,362,461
Gas and elec. companies	116 684,856	241,314,100
Water companies	7 339,346	5,046,782
Telephone and telegraph companies	41 982,306	1,947,913
Warehousemen	668,700	1,259,320
Carriers by water	193,000	2,891,000
Automotive carriers	1 388,264	4,983,572
Totals	$175,795,119	$262,463,149

Providence Merger Plans Maturing

The tentative plan for a merger of the Narragansett Electric Lighting Company and the United Electric Railways, Providence, R. I., under the charter of the United Electric Power Company as provided for at the last session of the General Assembly involves the formation of a new Rhode Island corporation and the purchase of the assets of Narragansett Electric by the United Electric Power Company. The new corporation would act as a holding company for the United Electric Railways and United Electric Power. The United Electric Power Company may purchase the properties of the Narragansett Electric.

Receiver Named for Michigan Interurban

The Grand Rapids Trust Company, Grand Rapids, Mich., was appointed receiver of the Grand Rapids, Grand Haven & Muskegon Railway on July 29 by Federal Judge Clarence W. Sessions. This action is the result of a petition of the Guaranty Trust Company, New York, trustee, alleging that the interurban has failed to pay the principal of $1,500,000 on a bond issued due on July 1, 1926, and $75,000 bond interest due on Jan. 1, 1926.

The Grand Rapids, Grand Haven & Muskegon Railway was constructed by Westinghouse, Church, Kerr & Company, New York. It was placed in service in 1902. The United Light & Railways Company acquired the property in 1912 and in 1925 it passed into control of the present owners, among them some of the officers of the company. According to a bill in the federal court the deficit in 1924 was $20,000, in 1925 $80,000 and for the first six months of this year $30,000.

Road at Hornell Sold Under Foreclosure

After 30 years of operation the Hornell Traction Company, Hornell, N. Y., has suspended service on its city and Hornell-Canisteo lines. On July 15 the railway was sold in a mortgage foreclosure action to Raymond E. Page, receiver, who held the mortgage and is the promoter of the bus lines. He bid $14,600 and thereby became sole owner. The mortgage was for $150,000.

The rails will be torn up and junked and the rolling stock sold.

Buses started operation immediately, both in the city and on the Hornell-Canisteo line. Practically the same schedule as maintained by the street cars was put in operation. Fifteen-minute service will be given in the city and half-hour service to Canisteo, a nearby suburb. The city buses are of 29-passenger capacity and the interurbans carry 35 fares.

Declaration of Abandonment at Chautauqua Approved

How is Chautauqua going to solve its transit problem this summer with an influx of 40,000 or 50,000 institute students swelling the usual population of about 1,000 people? The solution probably lies in the hope that with the inheritance of the Chautauqua Traction Company's transportation routes, the West Ridge Transportation Company and the Jamestown Street Railway will, with the aid of the Board of Education and the institute officials, be able to find a way out of the difficulty and avert serious congestion. Buses of the West Ridge company have been carrying the 144 school children living in this area, since the school board signed a contract with the company on March 15.

For 23 years the Chautauqua Traction Company has been meeting the situation and serving the increased carriage of passengers of the summer months in an adequate way. But on March 22, as mentioned in ELECTRIC RAILWAY JOURNAL for April 3, a petition for the declaration of abandonment of service for 22 miles of trackage between the towns of Mayville and Ashville was approved by the Public Service Commission. Reasons for the dissolution as approved by the commission are presented in the accompanying table and a brief résumé of the traction company's unfortunate financial history. The losses incurred are shown by comparison of the statements for years from 1919 to 1925. This statement does not take into consideration interest on fixed charges or return on the capital invested.

Year	Operating Revenues	Operating Expenses	Taxes	Loss
1919	$154,647	$158,906	$10,716	$14,974
1920	182,132	197,742	11,330	26,939
1921	212,120	214,669	13,891	16,440
1922	180,361	187,701	15,113	22,454
1923	151,681	198,224	16,648	63,190
1924	150,802	181,761	17,701	48,660
1925	115,076	147,064	17,395	49,383

"From the time of its incorporation in 1904 to 1918 the Chautauqua Traction Company earned its operating expenses. Since 1909, however, it failed to earn its operating expenses, taxes and fixed charges. Except in the summer months, the traffic has not been sufficient to warrant continued operation. With the improved highways and the increased use of automobiles, discontinuance of the line seemed inevitable," was the opinion of the commission. The rather free use of passes was also taken into consideration.

However great the need, a company cannot operate without sufficient funds. The case having been weighed carefully, with particular consideration given to the facts stated, the Public Service Commission has approved the declaration of abandonment.

Market Street Reports $448,464 Net Earnings for Six Months

The Market Street Railway, San Francisco, Cal., reports net earnings of $448,464 for the six months ended June 30, 1926. The statement follows:

Operating revenues	$4,882,501
Operating expenses	3,688,114
Net revenue	1,194,387
Taxes	305,000
Operating income	889,387
Non-operating income	28,440
Gross income	917 827
Deductions	469,362
*Net income	$448,464

*Prior to deducting federal income tax.

Applies to Abandon Amsterdam Line.—A further hearing was held on July 13 before the Public Service Commission in Albany on the application of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., to abandon a portion of its railway in Amsterdam. At the hearing the petitioner presented proof showing the amount of traffic over the section of the line proposed to be abandoned and the revenues from the line for a period of years. The abandonment was opposed by the corporation counsel of Amsterdam. Decision by the commission was reserved.

Profit for Oklahoma Railway in June.—Receivers of the Oklahoma Railway, Oklahoma City, Okla., announce that receipts for June wiped out the deficit faced by that company for more than a year. As the summer months usually prove the dullest period of the year the receivers are much encouraged and June figures are believed to justify the hope that the coming fall and winter receipts will show the company permanently out of the "red." The increased business is believed to result from decreased use of private automobiles by citizens.

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Personal Items

S. H. Serena Now with Staten Island Lines

Samuel H. Serena has been appointed general superintendent of the Richmond Light & Railroad Company, also the New Jersey & Staten Island Ferry Company at Staten Island, New York. This property is controlled by the J. G. White Management Corporation, New York.

Mr. Serena entered electric railway work in May, 1899, as a trainman with the New York & Queens County Railway, Long Island City, advancing to inspector, dispatcher and chief dispatcher. In December, 1907, the year the Public Service Commission was created in New York State, he became connected with the commission in the transit bureau.

There Mr. Serena remained until Aug. 1, 1909, when he was appointed superintendent of transportation of the New York & Queens County Railway. This system, one of the large ones in Greater New York, serves most of the Borough of Queens and operates 300 cars daily. While he was superintendent of the Queens lines Mr. Serena and Charles S. Banghart, now vice-president and general manager of the Staten Island Edison Corporation, the Richmond Light & Railroad Company and the Staten Island and New Jersey Ferry Company, operated the first cars through the Queensboro tunnel and also over the Queensboro Bridge. Mr. Banghart, who at the time was general superintendent of the Queens Lines, acted as motorman and Mr. Serena as conductor when city, borough and railway officials made the first inspection trips.

Mr. Serena became superintendent of railways with the East Penn Electric Company on Jan. 15, 1923, with headquarters at Pottsville, Pa., operating interurban and city lines in the anthracite coal regions. This property was controlled by the J. G. White Company until early last year, when it was sold to the Pennsylvania Power & Light Company.

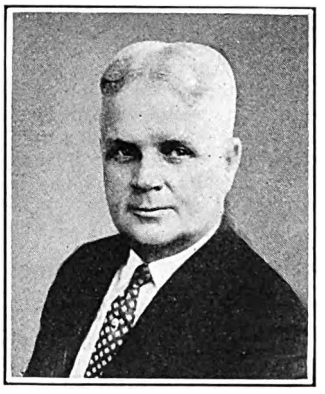
George Wood has been made an assistant secretary of the New York Transit Commission effective Aug. 1. At the present time Mr. Wood is a reporter and political correspondent on the New York *World*. He has been a newspaper man since 1908. In 1906 Mr. Wood was confidential secretary to William J. Conners, chairman of the Democratic state committee. The following year he became associated with Lieut.-Gov. Lewis Stuyvesant Chanler, as confidential messenger. He went to the New York *Herald* as correspondent in 1908 and served until 1913. Representative Woodson R. Oglesby, Democrat, of the Bronx-Westchester district, named Mr. Wood as his secretary in 1913, and he served in this capacity until 1915, when he went with the *Evening Sun*. Mr. Wood was with the American Expeditionary Forces during the period of the World War. At the conclusion of his service in the army he became Albany correspondent of the *Globe*. Later he joined the staff of the *World*.

New Aurora Manager

J. W. Gunderson, Recently Appointed Operating Head of Illinois Road, Rose from Ranks

From conductor to general manager in 25 years is the record friends of John W. Gunderson point to in congratulating the Elgin division superintendent of the Aurora, Elgin & Fox River Electric Company, Aurora, Ill., upon his appointment as general manager of the traction system.

Mr. Gunderson's appointment, made by B. E. Walsh, operating vice-president of the organization managing the traction, gas and electric light and power interests of Col. Ira C. Copley of Aurora, was announced by John F. Egolf, Aurora, general manager of the company, who resigned recently to accept a position as assistant to the vice-president of the Chicago Rapid Transit Company. Mr. Gunderson will retain his residence in Elgin, but his offices will be in Aurora.



J. W. Gunderson

In October, 1901, Mr. Gunderson entered railway work during the construction of the Elgin third-rail line. Subsequently he worked as a conductor on the third-rail, then dispatcher and, lastly, Wells Street yardmaster. On April 1, 1906, he went to Elgin as division superintendent of the local traction system and for the past twenty years, until his elevation to the general managership, he has held that position. During his work in Elgin the Park Street line and the Wing Park link were constructed and the headways on the various street lines were cut.

Sixteen of the intimate friends of Mr. Gunderson and Mr. Egolf fêted the two officials recently with a chicken dinner and informal program at the Addison Inn. Impromptu remarks complimentary to both guests were delivered by all present, with Edward N. Herbster acting as master of ceremonies.

In his new position Mr. Gunderson will be over more than 400 employees of the Fox River Valley Traction system, besides having general charge of the various departments of the company, including the auditing, shops, maintenance, operation, and service. The traction system includes 67 miles of street and interurban railway lines in Elgin, Aurora, and between the two points, also the Elgin-Carpentersville line and the Aurora-Yorkville line.

Mason B. Starring has resigned the presidency of Market Street Railway, San Francisco, Cal. No successor has been appointed. Halford Erickson and William Abbott have been elected to the board and have been named vice-presidents, in addition to Mr. Erickson becoming general counsel and Mr. Abbott secretary.

Obituary

H. C. Moser

Herbert C. Moser, general manager of the Chicago Motor Coach Company and formerly superintendent of transportation of the Fifth Avenue Coach Company, New York, died at Johns Hopkins Hospital, Baltimore, on July 23. Mr. Moser had not been in the best of health for some time and went to Baltimore to have a complete diagnosis and survey made. The direct cause of death is understood to have been heart trouble.

The passing of Mr. Moser removes a man who has been identified with both rail and bus operations throughout his entire career. He entered the employ of the old Metropolitan Street Railway system of New York City in the late '90s as a register boy on the Fourteenth Street crosstown line. He later became chief clerk in the office of Mr. Delaney, general superintendent of transportation. He was in the electric railway field for about fifteen years before joining the Fifth Avenue Coach Company in 1912 as superintendent of transportation. He continued with that company until March, 1923, when he left to take charge of the transportation department of the then recently organized Chicago Motor Coach Company. His elevation to the rank of general manager of the latter company followed soon afterward.

Entering the field of bus operation at its virtual inception as he did, Mr. Moser became a widely recognized authority on this form of transportation. He is credited with having prepared the first bus operating time-table in this country.

Thomas F. Keefe, division manager for the Wisconsin Light & Power Company at Beloit, died suddenly on July 5 after an attack of heart disease. Mr. Keefe was 50 years of age. He had been manager of the Beloit plant for a year.

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"Don't Wait for Passengers," Says John G. Barry—"Go After Them"

Vice-President of General Electric Company Presents a Convincing Analysis of the Electric Railway Outlook and Suggests Practical Ways to Improve the Business

AN INTERVIEW

By Charles Gordon

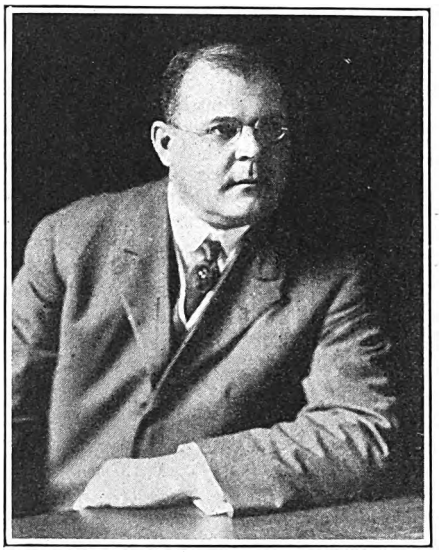
"ONLY a few steps are necessary to put street car operation on a profitable basis and to improve its position as a transportation tool. Better looking cars of light weight and equipped with modern apparatus can at one time be made the means of attracting increased patronage and reducing operating and maintenance costs. If in addition these cars are manned by men who have been adequately trained in the idea of selling their service to their patrons, as have the men on Mr. Budd's line between Chicago and Milwaukee, there is little need for concern about the future of electric railway transportation.

"In the smaller cities automobile competition can be met by an increased number of small, attractive, lightweight cars operated by one man, in place of old and heavy equipment, which in addition to its high operating and maintenance cost is awkward looking and unattractive to passengers."

This, briefly, was the view of the electric railway situation expressed to me by J. G. Barry, vice-president in charge of sales of the General Electric Company. I talked with him in his office in Schenectady, and although he carries the responsibility for directing the sales activity of this huge organization, he was unhurried and willing to discuss at length the condition of the industry through which he has risen literally from the ranks to his present position of responsibility. Although I knew that even as I questioned him many matters of importance were awaiting his attention, I found him willing to discuss the transportation situation at length and apparently glad to listen to my views as well as to express his own.

One Who Gets Things Done

Right there seems to lie one of the secrets of Barry's success. He is one of those rare individuals who never seem to be hurried. He always seems to have time to dig to the bottom of a subject—and incidentally he doesn't lose any time or mince any words in getting there. Along with that rare quality goes another. Throughout the enormous organization of which he is a part he has a reputation for getting things done! That apparent ability to pick up any job turned over to him and see it through to completion accounts in a large measure for his steady rise from a modest job in the production department of the Lynn works in 1890 to his present position of vice-president in charge of sales.



J. G. Barry

Mr. Barry talked on the basis of a long and intimate acquaintance with the electric railway industry. By far the greatest part of his time with the General Electric has been spent in the railway department. Two years after he joined the company, at the age of 20 in 1890, he was transferred to the railway department in the Boston office. From that time until he was made a vice-president in 1922 his primary interest was in the electric railways. By 1897 he had become assistant manager of that department and ten years later, in 1907, he became manager. For another period of ten years he continued his railway activity and then in 1917, in addition to maintaining his direct interest in the railway department, he was made general sales manager of the company. It was not until he became a vice-president in 1922 that he relinquished active supervision of railway development.

Back in his early days with the production department at Lynn Mr. Barry's chief duty was to look after the repair of armatures and other motor parts that were sent in by operating railway companies. In those days the railways were just in the process of changing to electric propulsion and had not become equipped to make their own repairs. For that reason "burned out" armatures were sent back to the manufacturer for such work. This old s.r.g. equipment kept John Barry busy, and besides initiating him into the electric railway business, gave him a contact with the work of maintenance forces which he has never forgotten.

Although he approached the general subject of our discussion from a manufacturing and merchandising standpoint, he nevertheless quickly reflected that early familiarity and experience with the maintenance man's viewpoint and problems. I asked Mr. Barry about financing replacements of old-fashioned, heavy and obsolete equipment.

"In most cases the equipment trust method offers the means of acquiring new equipment, and the opportunities for savings in operation and maintenance make it possible on many properties to finance new cars by this method on terms that practically enable them to pay for themselves out of the savings effected.

"Right here, however, the railways can do a great deal to reduce the cost of new equipment. There has been a tendency to over-refinement by operating companies in specifying special requirements, sometimes in comparatively minor details of equipment design or dimensions. Of course the manufacturers have tried to meet such demands on the part of their customers. In some cases, even after standards have been adopted by official committees of engineers working through the American Electric Railway Engineering Association, individual companies have frequently insisted on certain changes, sometimes comparatively minor in their nature. The result invariably has been seriously to increase the cost and price, to say nothing of the delays in deliveries that have resulted.

Cause of Waste Not Realized

"Sometimes the operating man does not quite realize the serious consequences of seemingly minor changes in the design or the dimensions of a motor part to meet his particular ideas of good practice. Detailed engineering instructions must be prepared by the manufacturer to cover the change from his standard design. Drawings must then be changed, and frequently special patterns or dies have to be made. All this must be absorbed in the manufacturing cost, if the manufacturer is to stay in business.

"What about reducing the number of sizes and types of cars and motors that must be manufactured at present," I asked.

"There again you have a condition that increases the cost and therefore the price of cars and parts," replied Mr. Barry promptly. "Consequently, the net result is to make more difficult the problem of providing modern equip-

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ment, since the cost is higher than it would be if the number of types or sizes manufactured could be reduced. We believe that the large number of different types, sizes and varieties of cars, trucks and electrical equipment now desired by operating companies could be substantially reduced if careful attention were given to the elimination of special demands in such equipment, so as to permit manufacture on a quantity production basis."

At this point Mr. Barry warmed up to his subject and questions on my part were unnecessary. His thoughts were expressed in that simple, straight from the shoulder manner that is characteristic of the man. I interrupted once or twice to make sure I had grasped his point. But as he continued to express his ideas I was impressed by the directness with which he probed to the heart of the electric railway situation, pointing out how and why we have fallen behind the stream of industrial progress which goes steadily forward.

Industry May Profit by Example

Mr. Barry is not a railway operator, but he knows marketing and he knows selling. He knows how to adapt a product to the demands of customers, and that is just what the electric railway industry must learn. Railway operating executives are manufacturers of transportation and they must sell their product to the traveling public. Until only recently that was unnecessary, since there was no other choice, and the primary objective was to furnish transportation to those who came for it. Since electric railways have awakened to the need for selling their service, some operators have experienced considerable difficulty in acquiring a true sales viewpoint, including appreciation of the importance of adapting the product to make it salable.

As I listened to Mr. Barry I wished that every electric railway operator might have the opportunity of hearing so simple and direct an analysis of the industry's merchandising shortcomings. I visualized a comparison between an antiquated electric railway and an out-of-date merchant—a merchant who at one time enjoyed a monopoly of his product, but who with the coming of competition contents himself with an appeal to his former customers to patronize the old reliable dealer, instead of revamping his stock in trade, sprucing up his store and then going after the business on a modern basis.

"There is nothing fundamentally the matter with the street car," said Mr. Barry. "It is encountering competition of a high quality product at a much higher price, and has not been adapted to meet the new conditions. Most of the trouble due to falling off of passengers has been due, first, to the novelty of the automobile and, second, to the failure on the part of operators to improve the character of their service to meet the higher standard of popular transportation demand. This has moved forward along with the general advance in the standard of living. Although the electric railways are giving more transportation than ever before for a given cost, and are still the most economical and efficient agency for moving large numbers of people between their homes and places of business, they encounter a popular taste in transportation that has grown beyond the character of service which they give with existing equipment.

"Today's transportation problem is not exclusive with the street car. There is no question involved of the relative advantages of cars and buses. That is working itself out rapidly to the point where the proper place of the bus is becoming better understood. The problem is as acute in the case of steam railroads as it is in purely local transportation. The struggle is not between any two forms of common-carrier vehicles, but is between all common-carrier agencies and the individually owned automobile. The question at issue is whether various forms of common-carrier transportation can be made sufficiently attractive to compete with the much higher cost of the more convenient and flexible private car.

"I feel strongly that adequate rehabilitation of electric railways and intensive merchandising of their service will put them on an attractive earning basis. The results accomplished by the Insull properties in the Chicago district are ample testimony to the effectiveness of this procedure. A greater uniformity in the size and type of equipment requirements would result in lower cost, better delivery and accelerated development by manufacturers. I feel confident that the electric railway industry has passed the peak of its troubles and is definitely headed toward improvement. Traffic congestion and parking difficulties are limiting the advantages of the automobile. It now remains only for electric railways to take advantage of the situation by forging ahead on a program of improving their equipment and service with a view toward winning patronage and rates of fare adequate to put their operations on a profitable basis."

Important Consolidation of Effort in European Distribution

Offices of the American Locomotive Company, the American Car & Foundry Company and the Railway Steel Spring Company in the leading capitals of Europe have been consolidated, according to F. F. Fitzpatrick, president of the American Locomotive Company, who recently returned from a tour of the Continent. The move is expected to bring about the increased efficiency and economy held to be necessary for the proper European distribution of American manufactured products.

Commenting upon the need for efficiency in European distribution of American goods, Mr. Fitzpatrick said:

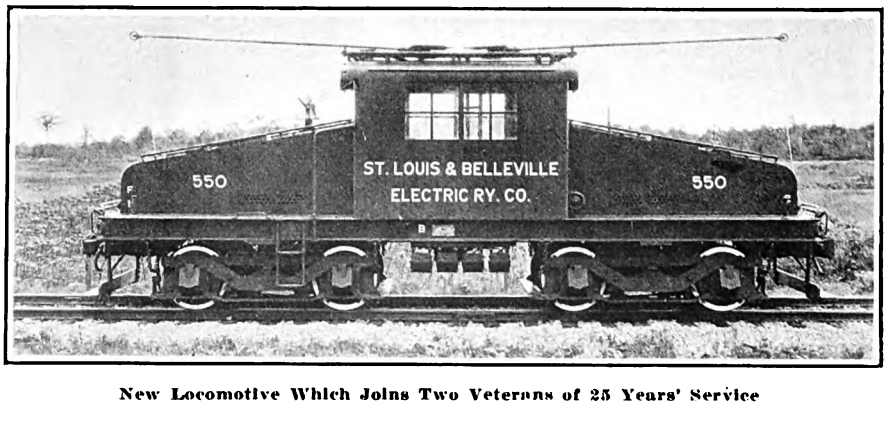
> If American industry is to compete seriously in the European market the utmost economy in operation is essential. Under the leadership of W. H. Woodin, president of the American Car & Foundry Company and also chairman of the board of directors of the American Locomotive Company, the three companies have been brought into the closest co-operation.

Twenty-fifth Anniversary of Electric Locomotives

In order to handle its rapidly increasing traffic, the St. Louis & Belleville Electric Railway has obtained a new 80-ton electric locomotive to assist two similar 50-ton locomotives which have rounded out a quarter century of service. The railway operates an electric line between Belleville and East St. Louis, the principal commodity being coal. Since February, 1925, it has been hauling all the coal used in the superpower plant at Cahokia, on the east bank of the Mississippi at East St. Louis.

The new locomotive is the swivel-truck type, of General Electric manufacture. It is equipped with four GE-69 railway motors and type M control. The equipment is housed under sloping cabs at each end, and power is taken through pole trolleys. The motors are geared for a maximum speed of 33 m.p.h., with a continuous rating of 16,300 lb. tractive effort when operating at 16.7 m.p.h.

The shipment of this locomotive recalls the fact that two General Electric locomotives on this railway recently celebrated their 25th anniversary, having been placed in service early in 1901. Although the service has been exceptionally severe, they are still functioning successfully, the repairs during the entire period being limited to the installation of new CP-30 compressors, new trolley bases and lightning arresters. The original GE-55 motors and type L3 controllers are still giving good service. Records previous to 1910 are not available, but for the sixteen years since then, 1910 to 1925 inclusive, the accounts show a total of more than 15,500,000 tons of coal handled at a total maintenance cost of $37,700 for the two locomotives. This is an average of approximately $1,180 per locomotive per year over the entire period.



New Locomotive Which Joins Two Veterans of 25 Years' Service

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Copper Buying Is Active—No Trace of Panic Seen

Level-headed observers are practically agreed that nothing more serious than a possible temporary shortage of certain copper shapes confronts the copper industry at the present moment. During the past two weeks there has been a certain amount of scarehead agitation over the alleged possibility that prices would ascend to unwarranted heights as a result of serious shortages of stocks at the refineries. It is true that prices continue to increase in strength, but not to any extent which would justify the predictions made by certain of the trading gentry.

Readers of the *Wall Street Journal* were recently advised, in an article entitled "Copper Industry Faces Shortage," to contract for their requirements as far ahead as they can foresee them. The writer then continued with the statement that this policy would inevitably result in higher prices for the metal. *Engineering and Mining Journal*, in the issue for July 24, pointed out that any such stampede on the part of copper buyers would only result in hoisting the prices to a point from which it would have to take a severe tumble, with harm to all concerned with the copper industry. It then went on to state: "Consumption is going to increase steadily and production will be increased to meet it; that the price level of copper will improve moderately is not unlikely. It is to be hoped that this comes about in orderly fashion."

Present indications are that the tendencies toward a disastrous rise in prices have failed to develop into anything more tangible. Buying is active, but is based upon sound economic needs, rather than upon a panicky fear that the supply of raw material and of finished shapes is endangered.

Head of Westinghouse International Is Honored

A signal honor was accorded to Loyall A. Osborne, president of the Westinghouse Electric International Company, recently when he was elected chairman of the National Industrial Conference Board at the tenth annual meeting of that organization in New York City. In accepting this office Mr. Osborne assumed the chairmanship of the body whose members are the delegates of 27 national and state industrial organizations and four government departments, comprising more than 50,000 manufacturing concerns employing a total of more than 7,000,000 men and women. The board maintains a large staff of economists, statisticians and engineers who are continually investigating domestic and foreign problems of economic-industrial interest, and since its organization in 1916 has issued 115 research and 45 special reports and many monographs on subjects of timely and practical interest. Mr. Osborne succeeds Frederick P. Fish, of Fish, Richardson & Neave, Boston, Mass., as chairman of the conference board.

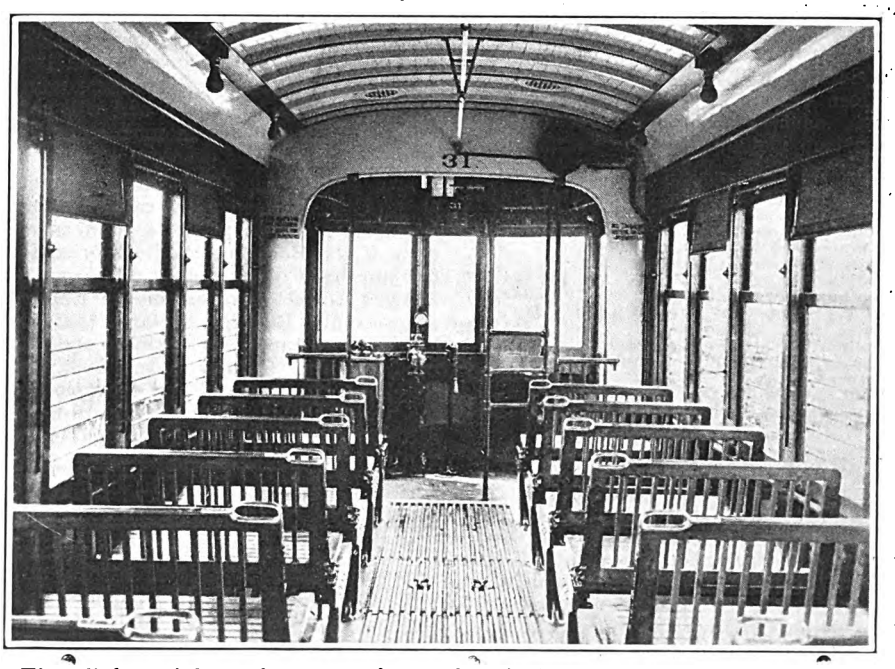
Motor Transportation in Industry and Public Service Discussed

Statements by 23 prominent executives in various industries and in municipal governments are contained in the 1926 roll call number of the "Albatross," dealing with the use and importance of motor transportation in major fields of business, industry, and public service. Such men as T. F. Arkwright, president Georgia Railway & Power Company; Edward Dana, general manager Boston Elevated; H. F. Fritch, president Boston & Maine Transportation Company; James J. Walker, Mayor of New York City, and Adrian Hughes, Jr., director of bus transportation United Railways & Electric Company, Baltimore, Md., are included in the list of contributors. The "Albatross" is the official news organ of the White Company, Cleveland, Ohio.

Thermit Patents Sustained

Decision was recently rendered by the United States District Court of New Jersey, Judge Bodine presiding, in the case of the Goldschmidt Thermit Company, a subsidiary of the Metal & Thermit Corporation of New York, versus the Alumino-Thermic Corporation of Roselle Park, N. J., Hugh G. Spilsbury and Henry J. Barnes, manufacturers of a material called "Feralite" for aluminothermic welding. The suit involved three patents covering essential features of aluminothermic welding. All three patents were sustained in the broadest terms and found to be infringed. The court has stated

Five Safety Cars for Mobile



Five light-weight safety cars have just been built for the Mobile Light & Railroad Company, Mobile, Ala., by the American Car Company, St. Louis, Mo. The cars are designed for double-end operation. Wood spindle backs are provided for the seats. Specifications follow:

Type of car	Single-truck, double-end, one-man Birney Safety
Seating capacity	33 passengers
Length over all	29 ft. 9 in.
Truck wheelbase	8 ft. 6 in.
Width over all	8 ft. 3 in.
Height, rail to trolley base	10 ft. 4 in.
Body	All steel
Interior trim	Natural Mexican mahogany
Headlining	Carline finish
Roof	Arch
Air brakes	General Electric
Axles	Brill
Bumpers	Channel iron
Car signal system	Faraday
Car trimmings	Polished brass
Center and side bearings	Brill
Compressors	CP-27
Control	K-63
Curtain fixtures	Curtain Supply
Curtain material	Pantasote
Destination signs	Hunter Illuminated
Door operating mechanism	American Car
Fare boxes	Johnson type D.M.-4
Fenders	H B wheelguards
Finish	Pratt & Lambert Vitralite
Gears and pinions	General Electric
Hand brakes	American Car Co.'s standard drop brake handle and staff
Headlights	Ohio Brass "Imperial Gold Ray"
Journal bearings	Plain
Journal boxes	Brill
Lightning arresters	General Electric
Motors	Two GE-265, inside hung
Registers	International R-5, double acting, air operated
Safety devices	Safety Car Devices Co.
Sanders	Electric Service Supply Company
Sash fixtures	O. M. Edwards Co.
Seats	American Car Co. "Waylo"
Seating material	Wood with spindle back
Springs	Brill
Step treads	Feralun
Trolley catchers	Earll No. 10
Trolley base	General Electric
Trolley wheels	General Electric
Trucks	Brill 79-E-2
Ventilators	Brill exhaust type
Wheels	Rolled steel, 26 in.

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that a decree for an injunction and accounting may issue.

One of the patents sued on covers the aluminothermic mixture, or welding material; another covers the welding process involving preheating as a step, and the third covers the insert rail weld, whether having a loose insert or one made by cutting back the web and base. This latter practice is commonly known as "undercutting."

Advices from the Alumino-Thermic Corporation indicate that it may appeal the decision awarded by Judge Bodine. The course to be pursued will be determined following final decision by the court in the matter of the possible decree for an injunction and accounting.

General Electric Earnings for First Six Months of 1926

The General Electric Company's net sales billed for the first six months of the current year, ended June 30, 1926, totaled $147,450,868 and the profit available for dividends on the common stock and surplus is $19,000,392.

This announcement, which indicates net earnings equivalent to about $2.63 per share on the 7,211,481 shares of new no par value stock, was made by President Gerard Swope in accordance with a new plan of the company for reporting earnings quarterly to the stockholders, in addition to the statement of orders received which has heretofore been sent stockholders every three months. The statement of earnings for the six months follows:

Net sales billed	$147,450,868
Less: Cost of sales billed, including operating, maintenance and depreciation costs, reserves and provisions for all taxes	131,191,461
Net income from sales	16,259,407
Sundry income less interest paid and sundry charges	3,811,516
Profit available for dividends	20,070,923
Less cash dividends on special stock	1,070,531
Profit available for dividends on common stock and surplus	19,000,392

Railway Men Get Insight Into Fire-Fighting Problems

More than 100 members of the Railway Fire Protection Association and others interested in fire protection were entertained at a practical demonstration given in Utica, N. Y., recently by the Foamite-Childs Corporation of that city. From the first simple demonstration until the final intricate one the interest of spectators was maintained at a high point. All tests were arranged with the principal idea of showing the best ways to fight typical railway and oil fires. In addition to the steam railroad men present, a number of electric railway representatives were on hand to witness the demonstration, as the problem of adequate fire protection on the two types of properties have many points in common.

A particularly convincing experiment was that dealing with fighting a fire in a box car. An especially constructed box-like structure was filled with open paint cans, over which gasoline was poured. The "car" was then touched off and allowed to burn furiously for some minutes before a Foamite portable machine was directed against it. The effect was immediately apparent and in a few seconds the blaze was completely extinguished.

Others of the demonstrations included methods of fighting acetylene gas combustion fire, hot tar flashes, fighting fire at 40 deg. below zero with the "All Weather" 2½-gal. extinguisher, automatic methods of extinguishing dangerous fires in oil tanks, and utilizing water lines in connection with the new Firefoam powdered chemical to extinguish certain types of large oil fires where other forms of foam equipment could not be readily employed.

A number of interesting discussions on the subject of fire fighting were given by various officials of the Foamite-Childs Corporation. W. J. Childs, president of the corporation, welcomed the guests in the morning and outlined the purpose of the sessions. A complete inspection of the Foamite-Childs plant was also made while the railway men were in Utica.

Rolling Stock

Interstate Street Railway, Attleboro, Mass., has ordered two light-weight, double-truck cars from the Wason Manufacturing Company, Springfield, Mass. These cars will be suitable for either interurban or city operation and are adapted to both one-man and two-man operation. They will possess many unique features of design and will constitute the last word in modern equipment.

San Francisco, Cal.—City Engineer M. M. O'Shaughnessy has received a request from Timothy A. Reardon, president of the Board of Public Works, for the purchase of six buses at a cost of $54,000, to be operated on the Embarcadero. Mr. Reardon declares that the buses are proprietary articles and can be purchased without bids. Delay in purchase of the buses and operation of the line has caused much criticism to be directed at the Board of Public Works.

Trade Notes

Victor Oxy-Acetylene Equipment Company, manufacturer of cutting and welding equipment, has opened an Eastern factory branch and distribution center at 418-420 South Fourth Street, St. Louis, Mo., with A. W. Henry in charge as manager. St. Louis was selected as the most advantageous point to serve the territory between the Rocky Mountains and the Atlantic Coast. The company's main plant and general offices are in San Francisco, and it has been in business fifteen years. A distinct feature of its equipment is that city gas can be used for the cutting torches.

J. M. Mahoney has recently become associated with the American Brown Boveri Electric Corporation, New York, N. Y. He has been active for more than 30 years in railway and control work and is the holder of many important patents dating from 1900 relating to apparatus for railway braking, railway control, fuse, switch and circuit breaker equipment. He has had both operating and manufacturing experience along the above lines and has been active in the work of the Standards Committee of the American Institute of Electrical Engineers, with particular reference to switch and circuit breaker standards. Mr. Mahoney has read papers before the American Institute of Electrical Engineers, National Electric Light Association, Association of Iron and Steel Electrical Engineers, and other technical societies. He is a member of many technical societies and has made many contributions to the technical press from time to time.

Metal, Coal and Material Prices

Metals—New York	July 27, 1926
Copper, electrolytic, cents per lb	14.375
Copper wire, cents per lb	16.00
Lead, cents per lb	8.775
Zinc, cents per lb	7.85
Tin, Straits, cents per lb	63.75
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.625
Somerset mine run, Boston, net tons	1.875
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.825
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.50
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	12.6
White lead in oil (100-lb. keg), N. Y., cents per lb	15.50
Turpentine (bbl. lots), N. Y., per gal	$0.94

New Advertising Literature

Dunn Painting Machine Company, San Francisco, Cal., has issued new descriptive matter covering several important improvements to the Dunn painting machine and it will be pleased to mail copies to any railways interested in painting machine work.

Morse Twist Drill & Machine Company, New Bedford, Mass., has issued a circular describing the features of spiral fluted expansion reamer No. 717, which has just been placed on the market. This tool has been developed as an improvement upon the straight fluted type which was formerly Morse standard. It is especially adapted for reaming piston pin holes and is easily adjustable to a few thousandths oversize.

Ohmer Fare Register Company, Dayton, Ohio, has published another pamphlet in its series of historical addresses on method of fare collection. The latest addition is a reprint of an address delivered by John F. Ohmer before the Central Electric Railway Association at Toledo, May 26, 1908, entitled "Tickets as a Fare Medium for Street and Interurban Railway Traffic." At the time this address was presented, the method of collecting fares on interurban railways varied greatly, and some methods were very crude. The talk by Mr. Ohmer emphasized the need, both for the company and the conductor, of making a definite record for each value collected by the conductor for the company. This plan, he said, would mean that the work of fare collection could be carried out in a businesslike way, equally fair to the conductor and to the employer, thus removing causes for suspicion.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

AUG 12 1926

Volume 68 New York, Saturday, August 7, 1926 *Number* 6

Giving Real Trolley Service a Chance

THE good citizens of upper Westchester County, which is immediately north of New York City, rubbed their eyes when they read that the Westchester Street Railroad, a New Haven subsidiary, had not gone to the junk dealer on July 19, but had been bought for continued operation by the Union Railroad, a subsidiary of the Third Avenue Railway system of New York City. Thereby hangs a tale.

Way back in 1909, when the New York, New Haven & Hartford Railroad was acquiring every electric railway in sight, it purchased for approximately a million dollars a system which has now been knocked down by the auctioneer's hammer at $70,000 for some 20 miles of track. The territory served comprises a number of New York suburbs of high-grade character.

In recent years the equipment has been allowed to deteriorate to such a degree that it is no exaggeration to say that the public was unwilling, if not afraid, to use the trolley. Confirmation of this is suggested by the fact that the new owners found they had to deal with a track that had spread an extra inch! Hand in hand with this shabby property went an inequitable system of fares with a dime charge over a distance short enough for many persons to walk.

It is not for us to say whether or not this condition was avoidable under the circumstances. The blunt fact is that the public not only stayed away, but came to the conclusion that the cure-all lay in the use of motor buses. In line with this sentiment, the receiver of the Westchester Street Railroad organized the County Transportation Company to build up a county-wide bus system. His intention was to scrap the trolley and use buses both on the former trolley routes and on many new ones. However, this intention could hardly have been carried out within the immediate future because of the great rivalry for bus franchises and the absence of a central county authority which could deal with the matter as a whole.

So confident was the public that the trolley was doomed to go that the Mayor of White Plains, the largest community affected, expressed considerable astonishment on learning that the Third Avenue Railway management had not bought the lines just to enter the junk business. The management explained that opposition to the kind of trolley service lately provided was natural enough, but from what it knew of the relative cost of up-to-date operation with both car and with bus it wanted to make a trial of real trolley service first.

The new management is surely entitled to a little patience on the part of the Westchester public. Any visitor to Manhattan and Bronx Boroughs cannot help note the excellent appearance of this company's rolling stock. In the lower Westchester towns of Yonkers, Mount Vernon, Pelham, New Rochelle, etc., where the same management has had control for years, the company's cross-seat, convertible car was a real contribution to the art when others deemed the longitudinal-seat car good enough for New Yorkers. Residents in territory hitherto served by this company have no reason to think the trolley passé. The same feeling is likely to come to upper Westchester in the near future.

Political Entanglements Are Dangerous

NATION-WIDE publicity is being given to the inquiry, by a committee of which Senator Reed is chairman, into the conduct of the senatorial campaign in Illinois last spring. The principal contestants for the Republican nomination were Frank L. Smith, chairman of the Illinois Commerce Commission, and William B. McKinley, chairman of the board of the Illinois Power & Light Company. Mr. Smith has filled his recent office creditably. Mr. McKinley has served his constituency well over a long period of years. But on their face, some of the facts now being brought out have an ugly appearance. That utility men contributed liberally to the campaign funds of both candidates was probably well known long ago. The extent of these contributions is perhaps the new thing.

It costs money, lots of it, to canvass a state, and funds are sought far and wide. It would, of course, be jumping at conclusions for the public to assume that the utilities had anything more to gain by the election of either one of these candidates than did the others who contributed to their funds. As further facts are brought out it will probably be disclosed that the pressure for funds was equally persistent in all quarters. Still it will be the utilities, undoubtedly, that will feel most the public reaction to the so-called disclosures, given a tinge in the daily papers that they really do not deserve. That, of course, is particularly unfortunate, because long and continuous efforts toward better public relations are just beginning to bring about results.

The excuse may or may not be tenable that the utility executives did only what others did. But they are not in the same position before the public as are those in other business enterprises. Although they are subject to the same pressure for campaign contributions as are others, the necessarily monopolistic character of their operations and their dependence on regulation by public officials place them in a particularly unfavorable light in newspaper headlines.

Utilities have lost more than they have ever gained in the past by political activity. They must be held above even the possibility of popular suspicion, for in the confidence and the good will of the public itself, rather than that of administrative or regulatory officials, lies the security of their future. Upon the utilities themselves rests the responsibility for assuming the initiative in avoiding the entanglements of political campaigns.

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Violators of Strike Injunction Sentenced to Jail

SERIOUS consequences have followed the Amalgamated Association officials who are held by a United States District Judge, sitting at Indianapolis, to have ignored the terms of a strike injunction issued against them. These officials are in jail. One of them is alleged to have boasted that he knew more about injunctions than did the court. This wasn't all he said. But he did say enough for the court to characterize the criticism as contemptuous. The pleading in extenuation of his act and the precautions he thought he took did the Amalgamated man no good. The court had no idea of dealing leniently with the violators. So a jail sentence was imposed. As the court so aptly said, for it to have imposed a fine would merely have been to fix a fee at which its command might be flaunted.

What is believed to be a correct account of the proceedings is published elsewhere in this issue. It makes the case against the organizers plain. There is no need to go over the facts in connection with the strike. They have been reported from week to week in the JOURNAL since the inception of the trouble. One thing does, however, stand out. Considerable vandalism has attended the conduct of the strike. No matter from what source these acts have emanated, their existence is a fact. For them there can be no excuse. That is how the court has felt about it. It has acted to preserve the peace. The boast of one of the convicted men was reported to have been that he had a bushel basket full of injunctions at home and that an injunction didn't bother him.

As for the strike, it appears to have petered out. The company apparently experienced little difficulty in filling the places of the men who went out. Moreover, those who did go out are now clamoring to be taken back. So the double lesson is brought home to the strikers that disrespect of the law is a serious thing and that vandalism, even as a resort of the desperate, always hurts most those who indulge in it.

Competition with Private Car Should Be Objective of Bus

DISCUSSIONS of the field for the bus and the street car have occupied much of the attention of transportation men in the past few years. But study of the extent to which buses may be substituted for private automobiles may well occupy their attention in the future. All forms of common-carrier agencies have finally realized that they have less concern with the development of each form of vehicle than they have with the common competitor of all public agencies, namely, the privately owned car.

Progress is now being made in developing street cars to the point where they may be expected to attract many present automobile riders. In this program the railway has a large price factor in its favor. Relief from traffic and parking worries is no small element of advantage in the service the railway has to offer.

But the street car must remain the poor man's vehicle. Minimum possible fare consistent with adequate service will continue an important consideration. There will, therefore, be many who insist on greater luxury and more exclusiveness in their travel accommodations. These will be reluctant to ride with the masses regardless of cost, convenience or even comfort. It is in offering a common-carrier service to such people that the bus seems to have its greatest possibilities. The nearer such bus service can be made to approach the speed and exclusiveness of the private car, the greater will be the total number of automobile riders that can be attracted. There is a wide margin of cost to work in, while traffic congestion and parking difficulties favor successful development of such service. Instead of being relegated to operation only in small cities, this type of bus service seems to offer greatest opportunities for development in large, congested communities.

There has been too much tendency in bus design and operation to think in terms of street car capacities, street car service and street car fares. The nearer buses can be made to approach the desirable features of the individual car, the larger will be the number of private car users who will patronize them. It is significant that buses in tour service, which to a considerable extent has been pleasure service and approaches nearest to private car facilities, have proved most remunerative to their operators.

Spokesman for Retail Merchants Discovers a Plot

CONSPIRACY by the transportation interests to cripple the private automobile as a means of passenger conveyance within cities is what William J. Pedrick, vice-president and general manager of the Fifth Avenue Association, New York City, calls the recent agitation for elimination of parking. The prosperity of the retail merchants depends very largely upon private automobile trade, he says, and in support of this contention he refers to a nation-wide survey made by the Department of Commerce showing a widespread belief in the importance of this vehicle in the general transportation scheme.

Because the retail merchants of Fifth Avenue, and some of those replying to the questionnaire of the Department of Commerce, honestly think that their prosperity depends upon automobile trade, it does not necessarily follow that they are correct. Wherever actual counts have been made to determine the means of transportation used in reaching retail stores it has been found that a large majority of the customers use public transportation vehicles. A count made at the entrances of several well-known Fifth Avenue stores during a busy shopping hour showed only 414 customers using private automobiles or taxicabs out of a total of 12,473. Among 15,229 persons interviewed at four large Chicago department stores only 1,680 came by automobile. In Cleveland a poll was recently made of 22 of the largest stores and showed 19,551 private automobile passengers out of a total of 85,657 shoppers. In Los Angeles a similar count indicated 2,058 coming by automobile out of 20,117 customers.

Experienced transportation men are sufficiently familiar with these facts, but they have not yet been brought home to the merchants. The latter insist that private motor cars be allowed to park for long periods on even the busiest thoroughfares. Inevitably congestion results. Increasing hesitancy to fight their way in this congestion is shown by the residents of outlying districts. They are doing more and more of their shopping locally. Therein lies the real danger to the big city stores. The most effective way to convince the retail merchants that they attach exaggerated importance to the private automobile trade is to have them make actual surveys of the means of transportation used by their customers. The subject is of vital importance to them as well as to transportation companies. Agita-

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tion looking to the relief of traffic congestion is in the public interest. It is only when private interest is placed ahead of the public's need that collective activity is subject to criticism. In that respect the retail merchants do not have a particularly enviable record. This question of traffic and parking should be settled on the basis of facts, not opinions.

Confusion in the Air and Confusion on the Highways

MUCH depends on whose ox is gored. Mr. Average Citizen has turned a deaf ear to the arguments that the free-for-all competition permitted under the interstate bus decisions of the United States Supreme Court was producing chaos in the local transportation industry. Now comes the ruling of the Attorney-General that the Secretary of Commerce has no authority to exercise regulatory control over radio broadcasting activities. Six months ago Mr. Average Citizen cared not one whit whether any real effort was made to co-ordinate and regulate the various transportation elements. Today, however, his own ox is in danger of being gored. His enjoyment of his favorite jazz orchestra may be rudely shattered by the too close paralleling of wave lengths on the part of rival broadcasting stations. The transportation problem is his, even as the radio difficulties, but he must be brought to realize his stewardship. He must be convinced that lack of regulation and unnecessary duplication of service will prove even more harmful to his general wellbeing than the present lack of control in the industry upon which he relies so much for entertainment.

Earnest Work of Southern Properties Equipment Men Productive of Pronounced Savings

TANGIBLE results in the way of reduced maintenance expense can be traced directly to the two meetings a year of the Association of Southern Properties Equipment Men. The last meeting, held in Chattanooga July 28-30, completes four and a half years of activity by this organization, participated in by some fourteen properties in the Southern states.

In preparation for the semi-annual meeting the key figures of each property were charted in their relative order and merit from reports made monthly to the president. Of course, there are a high and low, but no excuses are offered. The men meet with their cards on the table face up. The low men check their results with each other and the high men are just as keen to learn how to notch their showing up still higher.

That this frank comparison of practices is more than worth while is shown by the steady increase in mileage per pull-in as reported on many of the properties, and the ever decreasing cost of maintenance. The improvement is brought about to some extent by the friendly rivalry between properties. But the most important factor in stimulating progress is the exchange of experience at the semi-annual meetings.

One day of the meeting is devoted to the presentation of papers giving actual experience with methods or materials. No time is wasted in preliminaries or idle words. Some of the papers abstracted elsewhere are reproduced almost in full and their brevity and concise statement of facts will be readily observed by the reader. Approval or disapproval of materials or methods is stated frankly.

A second day of the meeting in Chattanooga was devoted to a discussion of some 50 questions compiled during the previous six months. Each question was discussed by delegates from each property represented. Little doubt was left in the listeners' minds as to the conclusions of each property regarding a given item of practice.

On the third day the men visit the shop of the property acting as host to the delegates. Then methods used can be observed at first hand. The whole program tends toward the production of concrete improvement in maintenance methods. An examination of the charts indicates the substantial value of this kind of an association.

Another similar group of maintenance men makes up the Central Electric Railway Master Mechanics Association, which soon after its organization quickly brought about the design of a standard freight car for the network of properties in the C.E.R.A. territory. The need for such a standard had been felt for many years. Properties in other sections of the country might well inquire closely into the work done by these associations of men charged with maintenance responsibility.

Inflexible Franchise Terms Based on Former Lack of Control

OSCAR L. POND, in an article published elsewhere in this issue, points out some of the fundamental advantages of indeterminate franchises and calls particular attention to the obsolescence of the old contract form of fixed term franchise under modern conditions of commission regulation.

The contract form of franchise was developed before the growth of regulation. Under those conditions the terms of the franchise itself offered the community its only adequate protection against excessive rates and inadequate service. It was obviously the duty of public officials to write into such franchises the maximum number of specific provisions regarding the conditions and terms of the grant. Since a franchise of this kind was an instrument to protect the community's interest over a long period of time, as well as to give the utility the right to place its rails in the public streets, these documents fairly bristle with detailed specifications and requirements. Changed conditions and progress of the art made many of the inflexible provisions of such franchises serious obstacles to transportation improvement and development.

One of the most important advantages of modern regulation lies in the fact that it permits franchises to be made more general and flexible in their provisions. The interests of the community, now adequately protected by commissions charged with authority to supervise both service and rates, no longer require elaborate specifications and detailed safeguards within the franchise itself. Thus the modifications required by changing conditions may be met as they arise.

There is still a tendency in some instances to load franchises with many of the inflexible provisions common in pre-regulation days. But those communities which have recognized the need for franchise flexibility are beginning to reap the reward in the form of transportation development and improved service. As Mr. Pond so convincingly points out, the terminable form of grant permits such flexibility and at the same time insures continuity of progress and improvement.

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Northern Texas Traction Operates the "Pioneer Locals"

Interurban Equipment Rebuilt for One-Man Operation Is Outstanding in Appearance and Comfort—Cars Are Named After Five of the Most Distinguished Citizens and Characters in Texas History

INSTANT public approval and enthusiastic reception met the inauguration of the "Pioneer Locals," the new de luxe one-man interurban equipment recently placed in operation on the Cleburne Division of the Northern Texas Traction Company. This company has again demonstrated its faith in electric railway transportation and in the policy of furnishing the public with attractive and comfortable cars, with frequent, fast and safe service, as a means of securing more riders and more revenue and holding the present business.

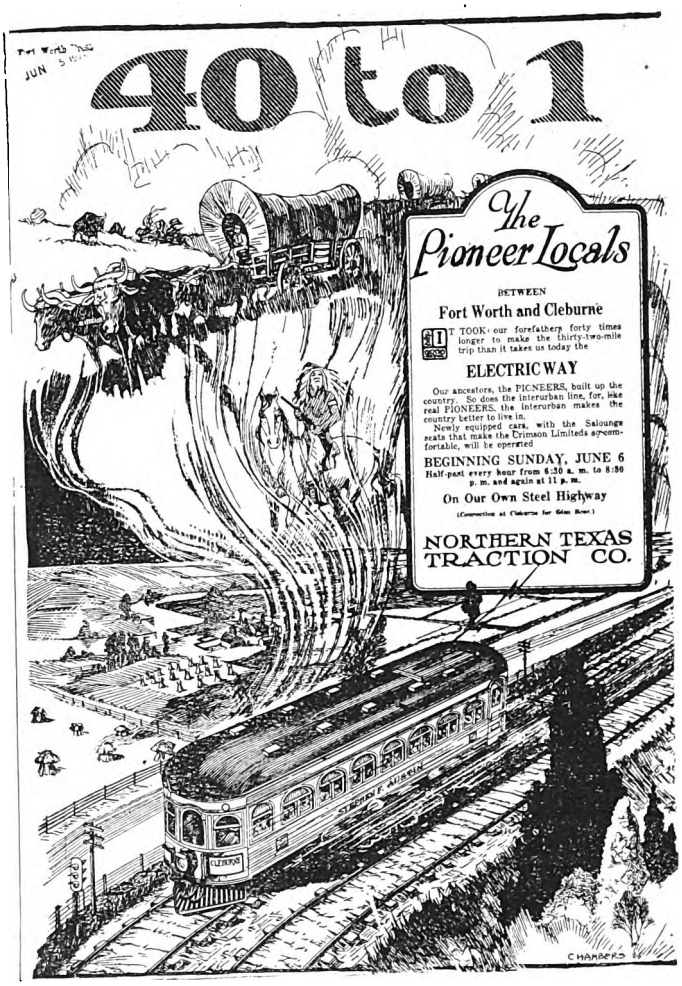
Last year the company rebuilt all the interurban equipment on the Dallas Division running in limited service and developed the "Crimson Limiteds," with their brilliant color scheme, individual chairs, observation sections and other improvements and refinements in comfort for passengers. More recently it has completely rebuilt all equipment used on the Cleburne Division and developed what are called the "Pioneer Locals." These cars have been changed over to enable them to be operated by one man, thereby effecting a saving of $12,000 per year in operating costs, which is the total cost of rebuilding five of these cars.

The exterior color scheme of maroon on the body below the window and cream above the windows and panels, with gold striping and lettering, and the inside colors of gray for walls and baseboard, with cream ceilings, presents a car that instantly demands attention and appreciation. The inside of the car is furnished with individual air cushion chairs, similar to the ones used on the "Crimson Limiteds" in the observation section, while the front portion is fitted with blue-gray Kemi-Suede, with back and head rest covers. The floor is covered with extra-heavy green cork linoleum. All inside metal fixtures, such as hat hooks, light sockets, seat handholds, cuspidors, water cooler faucet, etc., are nickel-plated. All the iron stanchions and piping are painted with aluminum paint. The rear end of the car has a small awning that both improves the appearance and keeps the sun out of the observation section.

The cars are named after five of the most distinguished and outstanding characters in Texas history, whence the name "Pioneer Local" is derived. The name is placed on each side of the car in gold lettering on a black background. A picture of the man for whom the car is named is placed over the bulkhead of each car, in an attractive frame 18 in. high and 15 in. wide.

Several days previous to the inauguration of this service "teaser ads" appeared in Fort Worth and Cleburne papers, with wording such as "Pioneers Are Friends of Your City," "Remember the Pioneers, They Made Texas," etc. These ads caused quite a lot of speculation as to what they had reference to. On Saturday, the day previous to starting the new service, a half-page ad was run in local papers in both Fort Worth and Cleburne. This, and other advertising done, gave the cars a good send-off and had the public thinking and talking about them.

This line is 32 miles long, and Cleburne, the southern terminus, has a population of 15,000. An hourly service is maintained out of both Fort Worth and Cleburne



Striking Advertisement Used by the Northern Texas Traction Company at the Inauguration of the "Pioneer Locals" Service

What Can the Pioneers Do for You?	The Pioneers Are Coming Back	P-i-o-n-e-e-r-s Are Friends of Your City

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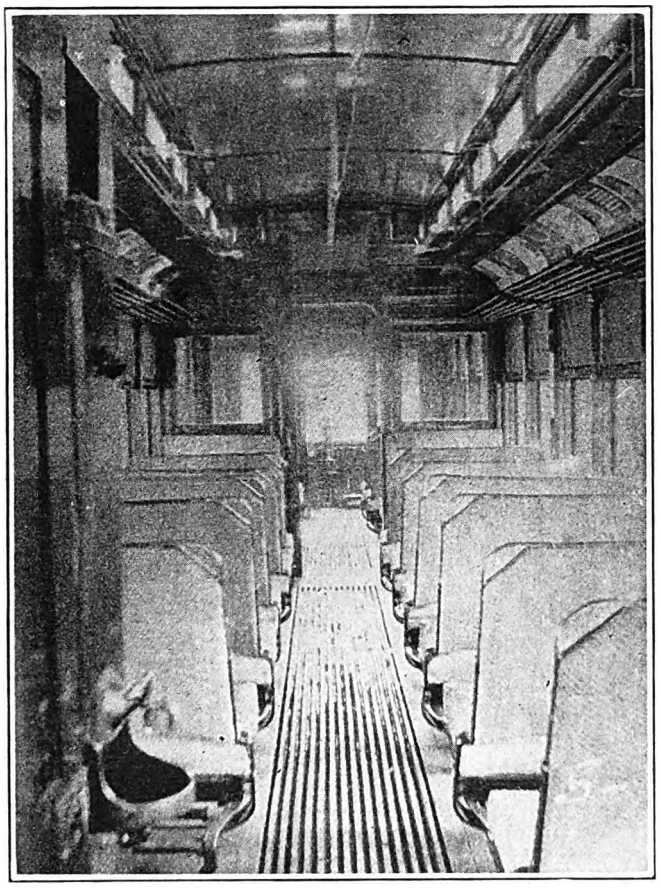


Bell Cord, Baggage Racks, Ventilator Operating Rods, Etc., Cluttered Up the Interior of the Old Car

from 6:30 a.m. until 8:30 p.m. The last car leaves Fort Worth at 11 p.m. and Cleburne at 10:30 p.m. Extra short stop service is furnished morning and evening operating as far as Burleson.

As yet these cars have not been on a sufficient length of time to tell what the result will be on increasing earnings, but it is the confident opinion, based on the many favorable expressions so far received and results from a similar experiment on the Dallas Division and city lines, that a material increase in gross may be expected.

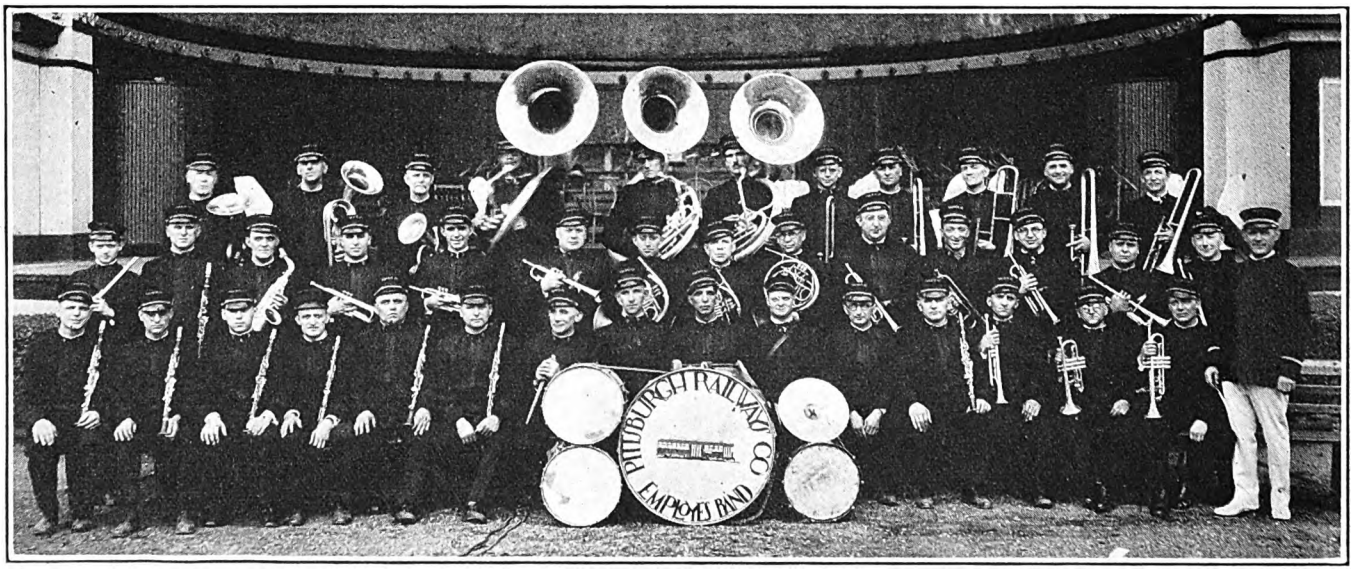
Threefold Problem of Electric Railway Safety

SAFETY on electric railways has a threefold nature. This is because of measures necessary to safeguard employees, passengers and the general public, according to an article by John W. Oliver, safety engineer Chicago, North Shore & Milwaukee Railroad, in the July issue of *National Safety News*. In this article Mr. Oliver tells about the safety organization on this railroad with its system for training men in safety methods, obtaining ideas for improvements in the direction of safety and bringing safety before the public. The author emphasizes particularly the great advantage of teaching safety to children and points out that many talks to young listeners are very much over their heads. He says that when he visits a kindergarten group, he does not stand before the class and attempt an oration. He usually sits on the floor with the children and plays with them. At the same time he tells some little story about safety or how the children should conduct themselves on the street, in the playground and at home.

Pittsburgh Railways Has a Big Brass Band

LISTENING to the big brass band of the Pittsburgh Railways is a real treat. The band, composed solely of employees from the several departments of the company, was organized in September, 1925. Since then it has appeared at several company functions, such as new carhouse openings and evening entertainments of the company's employees. The band has also played before outside organizations, such as the Joint Safety Meeting and the Civic Club of Allegheny County Flower Show.

Only the leader, Alois Hyabak, is an outside musician, and he has been eminently successful in organizing the 40 members. Employee members are compensated by the company for all lost time attending rehearsals, and when they play for outside engagements they receive regular musicians' rates. The company has high hopes that this band will develop into one of the best, and it is already an important factor in the company's publicity and public relations work.



Pittsburgh Railways 40-Piece Band Is Composed Solely of Company Employees Except the Director. The Men Have Trained Diligently Since the Organization of the Band in September, 1925

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Advantages of the Indeterminate Permit

Experience Shows that It Is Equally Desirable for Utility and Public and Far Superior to the Fixed Term Franchise—Legal Decisions Have Clarified Its Status During Recent Years

*By Oscar L. Pond, LL.B., Ph.D.**
Attorney, Indianapolis, Ind.

THE principle of the continuous franchise or indeterminate permit is of the greatest importance in our modern system of commission control of public utilities. The franchise or permit, under which the public utility serves the public, is the basis of the relation and determines fundamentally the rights and duties of all interested parties. The nature of the service, the conditions under which it is given and its extent or the period of its duration are all fixed and determined by the franchise. As the franchise is the foundation of commission control, the principle established by the use of the indeterminate permit makes for uniformity in practice and places all utilities under the same method of control and on a common plane of regulation.[1] The National Association of Railway and Utilities Commissioners in its 34th annual convention resolved that the principle of the indeterminate permit is economic and sound and recommended its adoption in each state.

Prior to the establishment of our modern public utility commissions, franchises in most states were granted for fixed and definite periods as the only means then available of controlling public utilities, including their rates and service. As the acceptance of such a franchise by the public utility constituted a contract, the privilege of occupying the streets and other public places for the purpose of rendering the service and the rates and other conditions of service were generally provided by the terms of the franchise. During the period fixed by the franchise, these conditions could not be modified, eliminated or supplemented to meet new conditions or changed relations, which are constantly arising in the fields of industry and finance with new inventions and improved methods of business.[2]

Under this old plan of granting franchises for a limited time or a definite period, on the expiration of the term, the franchise rights terminated the contractual relation created by it, so that neither party could be compelled to renew it nor required to furnish or accept service thereafter. The right of the utility, which had furnished the service, to remove its equipment was clear and unquestioned, although its exercise involved an extravagant waste of property due to its depreciation on such removal, as well as the consequent expense of repairing and repaving the streets. Under such conditions, plant and going-concern values were reduced to mere junk, or whatever the tangible property would bring after being dismantled and removed from the field of service.

At the same time the service was interrupted or discontinued and the consumer suffered the consequences. As all this inconvenience and loss of service and investment must be borne by the consumer, because it is necessarily charged to the cost of service by the utility rendering it, the interest of the public as well as the utility naturally demands that it be avoided by the continued use of the plant, which can be most surely and advantageously secured under the continuous franchise that is sometimes aptly described as the indeterminate permit.

Investment Conserved by Continuous Franchise

The necessity and advantage of conserving these investments by some form of uninterrupted franchise, and the practical effect of a failure to do so under the old form of granting these rights for fixed periods, is very well illustrated in the case of Denver *vs.* New York Trust Company,[3] which decided that on the expiration of the twenty-year period of the franchise all rights to the use of the streets terminated, and although the municipality might have renewed the franchise or purchased the plant, it was not obliged to do so, for as the court said: "In the absence of some stipulation to that end, the city would be under no obligation to purchase or renew, nor would it be entitled to do either."

In Detroit *vs.* Detroit United Railway Company[4] the Supreme Court of Michigan held that the contractual relations between a municipality and a street railway to which it had granted a franchise terminated upon the expiration of the franchise period, and that all rights of the company to occupy the streets and to maintain and operate its street railway system thereon ceased, so that the city had the absolute and unquestioned right at any time thereafter to compel the company to vacate the streets and to remove its property therefrom. This decision was upheld by the Supreme Court of the United States.[5]

By virtue of the continuous franchise or indeterminate permit, the utility secures the right to operate exclusively and continuously under the regulation and control of the commission so long as the service is sufficient and satisfactory, and subject at all times to rate regulations and adjustments to meet changing condi-

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*Dr. Pond has been a practicing attorney in Indianapolis for the past 25 years and has specialized in corporation law. His book, "Public Utilities," published by the Bobbs-Merrill Company, has passed through two editions and is frequently cited by courts and commissions in public utility cases.—EDS.

[1] LaCrosse *vs.* LaCrosse Gas & Electric Light Company, 145 Wis. 408; 130 N. W. 530. Winfield *vs.* Public Service Commission, 187 Ind. 53; 118 N.E. 531; P.U.R. 1918 B 747.

[2] Pond, Public Utilities, 3rd. Ed., Sec. 120 et seq. and cases cited.

[3] 229 U. S. 123; 57 L. Ed. 1101.

[4] 172 Mich. 136; 137 N. W. 645.

[5] 229 U. S. 39; 57 L. Ed. 1056; Pond, Public Utilities, 3rd. Ed., Sec. 449 and 473 to 478.

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tions.[6] This plan obviates needless controversies which are expensive and tend to impair the service, the credit of the utility and the value of its securities, and which ultimately result in higher rates and interrupted and unsatisfactory service, as has frequently occurred on the expiration of fixed-term franchises.[7]

Continuing franchise rights are essential to the best results which can only be obtained under a policy of constant and consistent regulation of a continuous, sustained service, based on permanent investments and on a scale of operating costs which are in the interest of economy and efficiency. This plan serves and protects the interests of all parties concerned. The consumer secures adequate and satisfactory service at fair and uniform rates; the utility can obtain the most favorable terms of financing, and is justified in making extensions and improvements promptly and permanently, and in keeping the plant in a high state of efficiency at all times; and the investment can only be terminated by the policy of municipal ownership at the fair value of the property, actually used and useful for the service of the public.[8] The expense and political activity which formerly too often attended the securing or renewing of franchises are entirely eliminated by the permanency of the indeterminate permit.

Regulated and uninterrupted service during good behavior, when given exclusively by a single utility, is to be preferred to the regulation which competition cannot give, and to franchise regulations for fixed periods of duration under the former practice which obtained before the establishment of our present plan of commission control. The service which is now afforded under this more modern plan of control is, of course, always subject to the reserved right of the commission to grant similar permits to others where convenience and necessity may require and justify it, and subject also to the right of the municipality to purchase the plant.[9] In this way, investments and service are not periodically disturbed by the interruptions of service and the fluctuations in the values of securities, consequent on the expiration of franchises; and the financial policy of amortizing the investment over the franchise period, which was formerly attempted, is now entirely obviated.[10]

With the right to serve continuing indefinitely and being exclusive, at least so long as the service is satisfactory and sufficient, investments in plant and equipment are made permanently and much more substantially and on better terms, and are maintained at a higher level of efficiency because they are recognized as being permanent and secure. This has the effect of stabilizing investments for the investor as well as for the utility, which in turn effects economies for the benefit of all interested parties, including the consumer.[11]

Elastic Regulation Permitted

Regulation under this plan is the most elastic possible, for it is currently available at all times because the permit may be revoked for cause or terminated by municipal ownership if found necessary, in contrast to the arbitrary and fixed franchise, which precludes the fullest control during its term and tends to unsettle the relations of all parties at its termination. The plan provides an uninterrupted service and conserves the necessary investments under continuous regulation and control; and in this way avoids arbitrarily discontinuing or disturbing necessary service and investments to the loss and inconvenience of all parties, which frequently arose under the former plan of granting franchises for fixed periods.[12]

Under this later form of franchise, the indeterminate permit, the public utility commission determines in the first instance whether public convenience and necessity demand the utility service when such a company proposes to install its plant and furnish its service, and only after a determination of this question in the affirmative and the granting of the permit by the commission may the plant be installed and the service furnished. This plan avoids needless competition by the legalizing of a monopoly of service. The condition or consideration, however, for the granting of such a permit and exclusive service privilege is that the utility securing it shall be constantly and completely under the regulation and control of the state through its public utility commission and that the utility shall furnish adequate and satisfactory service at reasonable rates.[13]

Public utilities, operating under the indeterminate permit, are in the best position to render continuous service at uniformly economical rates, and to sustain their investments and maintain their credit to advantage, because their service is uninterrupted and exclusive. Under this plan, the utility is protected against competition and a possible loss of its plant investments, which might occur on the expiration or forfeiture of its franchise when granted for a fixed period, in the event of a failure to secure a renewal of its franchise or the sale of its plant as a going concern.[14]

Legally Sound and Economically Advantageous

Experience shows that under this plan, so long as proper service is given at reasonable rates, competition is seldom, if ever, encountered and municipal ownership, which is always available legally, is unnecessary and practically unknown in fact. The plan has become popular in practice and wherever adopted it seems to be equally satisfactory to all concerned. It is sound legally and economically and has demonstrated its advantages in practice far beyond any other established system for the regulation and control of public utilities. While its acceptance has of necessity been voluntary, in each case it has been received with favor, and practical experience has demonstrated its advantages and justified its permanent establishment as the best and most advanced method of commission control. It is generally regarded as an integral and essential feature of the later and most advanced systems for the regulation and control of public utilities; and it is certainly one of the most fundamental and valuable features now available for this purpose, and constitutes the most

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[6]Evansville Street Railways Company, In Re, P.U.R. 1918 D 685. Gary & Interurban Railroad Company, In Re, P.U.R. 1918 A 88.

[7]Calumet Service Company *vs.* Chilton, 148 Wis. 334; 135 N.W. 131.

[8]Citizens Gas Company, In Re, P.U.R. 1922 B 440.

[9]Brookville *vs.* Brookville Electric Company, P.U.R. 1922 D 1. Oshkosh Water Works Company *vs.* Railroad Commission, 161 Wis. 122; 152 N.W. 859; L.R.A. 1916 F 592; P.U.R. 1915 D 336.

[10]Connell *vs.* Kaukauna, 164 Wis. 471; 159 N.W. 927; 160 N.W. 1035; An. Cas. 1918 A 247.

[11]Fresno Traction Company, In Re, P.U.R. 1922 E 341.

[12]Los Angeles Railway Company, In Re, P.U.R. 1922 A 66.

[13]Arkansas Light & Power Company, In Re, P.U.R. 1920 D 775. Farmers & Merchants Co-operative Telephone Company *vs.* Boswell Telephone Company, 187 Ind. 371; 119 N.E. 513; P.U.R. 1918 E. 172.

[14]Appleton Water Works Company, In Re, 6 W.R.C. 97.

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unique and comprehensive method known for realizing to the fullest extent the advantages of commission control of public utilities.[15]

The courts have recognized this principle as being legally sound and economically advantageous ever since its establishment in practice. Its practical effect is very well indicated in the leading case of State ex rel. Kenosha Gas & Electric Company *vs.* Kenosha Electric Railway Company,[16] decided in 1911, in which the court defined the purpose and effect of the indeterminate permit as follows: "The public utility law in form in unmistakable terms disabled the city of Kenosha from making such a grant as that in question after respondent's indeterminate permit took effect. . . . The intent was to give the holder of an indeterminate permit, within the scope thereof, a monopoly so long as the convenience and necessities of the public should be reasonably satisfied, yet to secure to the public the benefit of the monopoly in excess of a fair return upon the investment, under proper administration, by insuring to the consumers the best practicable service at the lowest practicable cost and to that end prohibit, conditionally, the granting of just such franchises as the one challenged in this case."

One of the best arguments for public utility commissions and the indeterminate permit, as an integral feature of this plan of control, is furnished in the case of Calumet Service Company *vs.* Chilton,[17] decided in 1912, where the court says: "The findings are to the effect that only the privilege feature of the old franchise survived the surrender for its equivalent emanating directly from the state; that all the conditions and limitations of the old and all contract features between the city and the owners of the privilege inherent in the grant were extinguished by the surrender and superseded by the 'conditions and limitations' of the public utility law. . . . In other words, the idea is that the grantee, under state control, and subject to prescribed limitations and supervision, shall have a 'monopoly,' as it has been several times called by the railroad commission, in its administrative work and by this court, within the field covered by the privilege, as to rendering the particular public utility service, whether directly or indirectly, to or for the public.

"We should say, in passing, that the term 'monopoly' as thus used is to be taken in the sense of a mere exclusive privilege granted for a consideration equivalent; monopoly only in the sense that the field of activity is reserved to the grantee—the mere element of exclusiveness. . . . The evident intention of the Legislature, expressed in unambiguous language, when read in the light of the situation dealt with, was . . . to substitute a new situation, all looking to unity in practical effect of a multitude of diverse units corresponding to the many outstanding franchises, and others in prospect, harmonizing them by making them referable to a single standard, to wit, the public utility law, and to a single control, to wit, control by the trained, impartial state commission, so as to effect the one supreme purpose, i.e., the best service practicable at reasonable cost to consumers in all cases and as near a uniform rate for service as varying circumstances and conditions would permit—a condition as near the ideal probably as could be attained."

Such is the chief purpose and effect of the indeterminate permit as defined by the court in its practical application, and such is the opinion of the Supreme Court of Wisconsin where this plan of control has been in constant use since 1907. During all that time, however, the commission has never found it necessary to authorize the operation of a competing utility in any city, although competition is made available at all times for the protection of the public interests and to supply the public needs at any time that the existing utility fails to serve the public adequately and at reasonable rates.

Better Service Possible

This plan in granting an exclusive privilege to serve a given community during good behavior, or so long as the service is satisfactory and sufficient, guarantees the public the best possible service at the lowest practicable cost, as fixed and determined by the impartial commission of trained experts of the state whose findings are based on wide experience and uniform practice in regulating the same or similar forms of franchise rights. Under this form of a continuing franchise, investments are secure in their right to a fair return during good behavior and to a fair price for the plant on its purchase by the municipality on such terms and conditions as the commission finds just and right.[18]

In relieving the utility of the risk of competition and of the possible loss of its investment on the expiration or forfeiture of its franchise, its investments are conserved and can be financed to better purpose, and this operates to the advantage of all parties. By requiring uniform rates and discontinuing discriminations in the form of free service, which commonly prevailed under the old franchises, the utility can serve the public better and at lower rates and also finance its operations to better advantage. This plan provides continuous regulation and control of rates and service and avoids the bargaining for franchises and the constant uncertainty and continued interruption of service and policies commonly prevailing under fixed-term franchises. It also lodges the control in the hands of an experienced, disinterested commission of trained experts representing the entire state.[19] It makes for uniformity in the regulation of rates as well as standards of service and promotes a spirit of co-operation between the utility and the public because of the uniformity of rates, service and treatment as a continuous policy.[20]

The public interests are not conserved, nor can those of the utility be, by the policy of the fixed-term franchise, which serves as a constant reminder that on the expiration of the franchise, for any or for no reason, the utility may be denied the right to continue to serve advantageously or at all, and be thus required to dispose of its plant and equipment as junk or at any price obtainable by a trespasser or one having no further right to use it as designed. Such a risk is wholly unjustifiable and may be avoided by the policy of a continuous franchise in the interest of all parties, and in this way capital can be secured to the best advantage because of the permanency and security of its investment. Service to the public is assured, which can be made adequate and continuous and at the lowest possible cost to the advantage of all parties. Such cannot

[15] Calumet Service Company *vs.* Chilton, 148 Wis. 334; 135 N.W. 131.
[16] 145 Wis. 337; 129 N.W. 600.
[17] 148 Wis. 334; 135 N. W. 131.
[18] Waukesha Gas & Electric Company *vs.* Wisconsin Railroad Commission, 181 Wis. 281; 194 N.W. 846; P.U.R. 1923 E 634.
[19] Fort Smith Light & Traction Company, In Re, P.U.R. 1920C 418. Indiana Fuel & Light Company, In Re, P.U.R. 1918 B 762.
[20] Washburn *vs.* Washburn Water Works Company, 6 W.R.C. 74.

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be the case where competition exists or threatens and where the entire plant investment is subject to the risk of a discontinued service on the expiration of a fixed-period franchise.[21]

Under the indeterminate permit, the owners or the investors in the public utility plant are assured of a reasonable return on their investment and the continuance of their business on such terms, so long as its service proves adequate, without the risk and interference of competition, and subject only to the right of the municipality to purchase the plant at its just value so far as it is used and useful for the convenience of the public and on such terms and conditions as may be determined by the commission.[22] Those who have observed the practical effect of this continuous franchise plan of regulation in the form of indeterminate permits are generally agreed on its desirability from the standpoint of the utility and the investor in its securities as well as the patron and the public at large. It bids fair to become universal in practice as its advantages are demonstrated and its merits discovered.[23]

Effect of Acceptance of Indeterminate Permit

The acceptance of an indeterminate permit in lieu of an existing franchise for a fixed period is of necessity voluntary, for as the Supreme Court of the United States held in the case of Superior Water, Light & Power Company *vs.* Superior:[24] "The integrity of contracts—matter of high public concern—is guaranteed against action like that here disclosed by Section 10, Article I of the Federal Constitution: 'No state shall . . . pass any . . . law impairing the obligation of contracts.' It was beyond the competency of the Legislature to substitute an indeterminate permit for rights acquired under a very clear contract."

Nor can the state after the granting of an indeterminate permit subject the holder thereof to additional burdens or obligations inconsistent therewith.[25] The utility cannot be required to render free service or to discriminate in its rates, because this would be in violation of its contract after the granting of such a permit, although the old franchise so provided. As the court held in Greensburg Water Company *vs.* Lewis,[26] "On June 30, 1917, appellant accepted the proposal of the state by surrendering its franchise in accordance with the provisions of the act. By this acceptance the minds of the parties met and agreed on the terms of the proposal embodied in the act, and a contract was thereby concluded between the state and the appellant whereby all the terms, conditions and provisions of the existing franchise agreement were abrogated and rescinded. The state was a party to the franchise agreement which the city of Greensburg made with appellant, acting for the state under delegated authority. Later the state, acting directly through its Legislature in making the proposal and through its Public Service Commission, on which it had conferred express authority in the premises, entered into a contract with appellant by the terms of which such franchise agreement was abrogated and rescinded in toto as to both parties. By the italicised part of the act quoted (Acts 1919, P. 709) the state attempted to violate the obligations of a contract made with appellant by the force of which the franchise contract had been abrogated in all its terms as to both parties. The act attempts to revivify and re-establish some of the terms of the abrogated contract which were burdensome on appellant and to enforce such terms against appellant without its consent. That part of the act, if enforced, would clearly impair the obligations of contracts, and for the reason stated it must be held to be void as in conflict with the sections of the Constitution heretofore quoted."

In sustaining this same principle and denying validity to an ordinance which attempted to require the utility to pave between and alongside its tracks the commission in the case of Indianapolis Street Railway versus Indianapolis[27] said: "To determine this question [of the liability to pave between tracks], we must ascertain the effect of the surrender by the petitioner of its franchises with the city of Indianapolis and the acceptance of the indeterminate permit as provided by law in lieu of the franchises so surrendered. . . . The state having thus induced the petitioner to surrender its franchises and having entered into a new contract whereby the petitioner was relieved from its paving obligations, under the requirement of the franchises surrendered, it would seem unjust, unreasonable and inconsistent to permit the city as the agent of the state, without consideration or petitioner's consent, to reimpose the burdens from which petitioner had been relieved."

Results Mutually Advantageous

That the advantages of the indetermine permit are fully recognized and enjoyed in California is indicated in the case of Los Angeles Railway,[28] where the California commission says: "The best solution, from the point of view of both the city and the company, would seem to be the acceptance by both parties of a form of so-called indeterminate resettlement franchise. Such a franchise can be drawn to protect properly all parties and interests. . . . In the absence of an adequate franchise, the further street car development must lag and service must suffer."

And in the Fresno Traction case[29] this same commission says: "This commission has on several occasions expressed its opinion of the desirability, from the standpoint of the public, of exchanging obsolete and undesirable term franchises for more desirable and more modern indeterminate franchises. . . . From the standpoint of the company's bondholders, the franchise exchange is a desirable step and one tending to enhance the value of the security."

In re Davis,[30] the commission of Minnesota refused to issue an indeterminate permit to a proposed competing company to operate in the same field with an existing company holding such a permit, because public convenience and necessity did not justify or demand such competitive service.

In Fort Smith Light & Traction Company,[31] the

[21] Appleton *vs.* Appleton Water Works Company, 5 W.R.C. 215.
[22] Brookville *vs.* Brookville Electric Company, In Re, P.U.R. 1922 D 1. Cashton Light & Power Company, In Re, 3 W.R.C. 67.
[23] Farmers & Merchants Co-operative Telephone Company *vs.* Boswell Telephone Company, 187 Ind. 371; 119 N.E. 513; P.U.R. 1918 E 172.
[24] 263 U. S. 125; 68 L. Ed. 204.
[25] Indianapolis Street Railway Company *vs.* Indianapolis, P.U.R. 1922 E 545.
[26] 189 Ind. 439; 128 N.E. 103; P.U.R. 1921 A 96. On June 1, 1926, the Indiana Supreme Court in Chicago, Lake Shore & South Bend Railway *vs.* Guilfoyle fully sustained its former decisions on the effect of the acceptance of an indeterminate permit and extended this effect to include a total abrogation of the former franchise provisions.

[27] P.U.R. 1922 E 545.
[28] P.U.R. 1922 A 66.
[29] P.U.R. 1922 E 341.
[30] P.U.R. 1918 F 406.
[31] P.U.R. 1920 C. 418.

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commission of Arkansas in sustaining this policy said: "The chancellor also held that the obligations of the contract are not impaired by the surrender of the franchise as provided in Section 15 of said act." The Supreme Court of this same state in the case of Arkansas Natural Gas Company *vs.* Norton Company[32] decided in 1924, said: "Section 15 of this act provides, in effect, that contracts, franchise and leases may be restored to utilities operating under indeterminate permits upon application made by such public utility corporation in the manner provided in the act."

This case defines the rule prohibiting discrimination by public utilities and serves as an excellent illustration of the advantages of uniformity in rates and standards of service, which is more fully and easily secured by virtue of the indeterminate permit. Under this system of control all franchise agreements are made on the same plan and for like periods, which tend to simplify the regulation and to secure uniformity and continuity in the operation of public utilities and places their investments on a secure and permanent basis, which permits of an improved, sustained service at a reduced cost.

Co-operation to Relieve Street Congestion in Philadelphia

EFFORTS are being made by the Philadelphia Rapid Transit Company, in co-operation with the Philadelphia Department of Public Safety, toward the alleviation of traffic congestion in that city. The Sesqui-Centennial Exposition in the Quaker City has brought with it a severe strain on the city's traffic facilities, with Broad Street, the main traffic artery to the exposition grounds, bearing the brunt of the congestion. This street, with its southern end terminating at the exposition gates, carries a great percentage of the north and south traffic.

Practically all the outside motorists and many of those living in the city use this thoroughfare and on certain days Broad Street has been choked with cars and buses. The resulting traffic jam taxed the ingenuity of the police to the utmost.

Fearing the condition would become chronic, the city, at the instigation of the Mayor and the Department of Public Safety, has, with the co-operation of the Philadelphia Rapid Transit Company's traffic engineers, formulated a plan which will relieve congestion in the center of the city. Motorists are encouraged to make use of numerous wide and well paved streets which parallel Broad Street or run at a slight angle with it, and which at the present time are often neglected by the outside motorist.

Metal arrows bearing the inscription "To Sesqui" have been placed on poles along the designated routes. The city police are distributing 100,000 pamphlets with maps to all incoming motorists, describing these routes, and the automobile clubs of the city are distributing thousands more. Every effort will be made to divert traffic along the routes as planned.

Such measures permit a steady flow of traffic and enable the motorist to make better time than by the use of Broad Street. Incidentally the occasion cited offers a splendid example of the opportunities which exist for co-operation between a municipality and its public utility.

[32] 165 Ark. 172; 263 S.W. 775; P.U.R. 1924 E 675.

Advertising Campaign Stimulated

Fort Smith Light & Traction Company Conducts Contest for a Name or Slogan to Head Its Advertising Space in Local Press

WHEN the railway management at Fort Smith, Ark., was confronted recently with the proverbial query "What's in a name?" its response was "Community Progress." Under this name through the newspaper medium the Fort Smith Light & Traction Company is appearing twice each week with items of community interest linked up with the utility service.

The preparation for the railway's newspaper début under the name of "Community Progress" was started early in the present year when a public relations department was organized under the management of R. C. Coffy. In addition to the usual functions looking toward the promotion of good will the department also has charge of the advertising of the company. In the past this advertising was handled from the Oklahoma City office, but it was decided that not only would the type of advertising be changed but that the material would have more local interest if produced by some one in closer touch with the particular territory.

A space of 30 in., two columns, was being used in Fort Smith, and the plan was to use this space as a tabloid newspaper running local items written so that the company's business would be brought into it. The first problem was a name for the tabloid, and it was decided to offer a prize for the best name suggested by the public or the employees.

The first "ad" was inserted on March 9, with the heading "Five Dollars for a Name." The 30-in. space was used twice weekly until March 31, copy being changed each issue. In order that those submitting names might have some assistance or ideas of what was wanted in the form of a name, the company wrote several "Locals" as samples of what the column would contain. In the space it was also brought out that the service rendered was threefold—gas, electricity and railway. This hint brought out many coined and group words which carried out the three-service idea.

The results were very encouraging and surprising. In all 374 names were sent in without any indication of levity, sarcasm or "smart aleckism." Rather did the company receive many favorable personal comments on the advertising copy.

In deciding upon a name a list of suggestions was given to the departmental heads to choose the ten which, in their opinion, were best. The opinions all simmered to one, but after it was chosen it was found that a certain utility company was using one very much like it. This made it unavailable and the title "Community Progress" was chosen.

No one actually suggested the name "Community Progress," but four suggested "Progress," and that being half of the name decided upon all four people were sent one-half of the prize amount offered.

In one of its advertisements the company sums up the plan:

"What is our aim? Progress. How significant, then, is 'Community Progress' as a title for this space. We will try and tell you what progress is being made in our community."

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Women, Too, Can Help Make Friends for the Railway

A Story of How a Woman Is Gaining Friends for the New Orleans Public Service Through Contact with the School Children of That City—The Public Service Idea Naturally Gets Into the Home Through Intimate Channels Barred to Other Approaches

By Julie Pailet
New Orleans Public Service, Inc., New Orleans, La.

EDITOR'S NOTE

Without doubt the light and power utilities have used the women of their companies to a far greater extent than railway companies as an aid to promote public relations work. At the last joint convention of the Southwestern Public Service Association and the Southwestern Geographic Division of the N.E.L.A., held at Galveston, Tex., Miss Pailet gave a talk on "A Recent Development," describing this important work in New Orelans. The present article has been written by the author to show how she applies "open house" to the railway operations of her company.

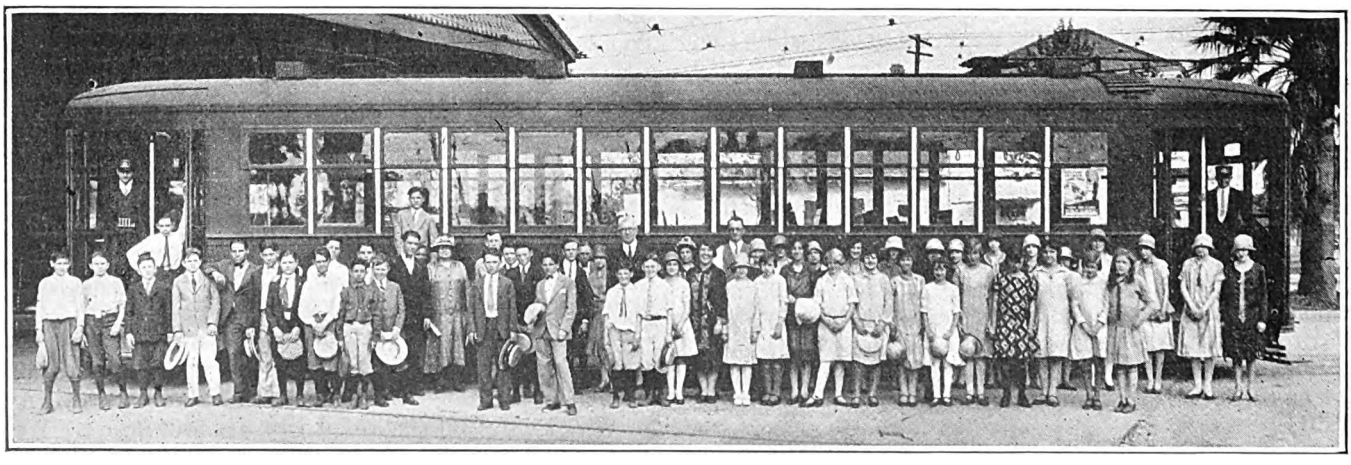
IN 1921, when broad-visioned utility executives of the National Electric Light Association inaugurated the women's public information committee, little did they realize what an important rôle the women could play in the great task of establishing better public relations.

Women in a number of companies are tactfully working their way into the clubs, civic organizations and schools. The work in the schools, however, is the most recent development. In a few localities "open house weeks" have been fostered by various utility companies. Fortunately, just about the time our company was seriously considering developing this plan, the city launched a mammoth publicity campaign, and there was the golden opportunity, for the Mayor issued a call for speakers who were familiar with all phases of the city's life—commercial, social, historical and otherwise. Our president pledged the services of our company and several employees were selected to speak for the cause. Although it had been quite a few years since I'd heard the old school bell ringing and I was rather unpolished on my historical and geographic facts, I collected quite a few facts and figures on "America's most interesting city" and gave my first talk before the principals of the public schools. After that there were numerous school engagements to fill. Then another civic campaign was fostered—"Fire Prevention Week." Again I helped and spoke in several schools, besides acting in a motion picture film on this subject, which was given much publicity in the schools.

The early part of this year we received permission from the superintendent of schools to appear before classes in the interests of the company. Attractive invitations were sent to all the public, parochial and private schools, inviting them to visit our various plants and assuring them that the New Orleans Public Service, Inc., was ever eager to promote educational projects. We further stated that we would transport the pupils to and from the schools in our up-to-date buses, and assured them that it was our earnest desire to serve them.

In the interim I visited each of the plants with the superintendents, outlined the routes, appointed capable guides and learned quite a bit about the various technicalities, for I fully realized that the pupils would expect me to answer their numerous questions.

A few days after issuing these invitations the response from the schools was beyond all expectations. There were letters galore, and the phone refused to stop ringing. On March 10 this campaign for publicity was officially launched and it was not completed until May 14. In the early part of the campaign we made a trip each day, but the schedule soon became so heavy that it was necessary to make two trips a day and it



School Children on Visit to Carhouse of New Orleans Public Service, Inc.

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continued the rest of the school year. Think of it, every day our company makes an average of about 75 new friends, and it is needless to say that these pupils carry the message home, and what parent will not listen to his own child. The teachers and principals, too, become our friends and we *do* know the amount of influence they can exert.

In handling these trips we go to the schools with buses and I first give the pupils a talk on the policy of the company and tell them what they are going to see on the trip. Then they are taken to the main power house, known as our Market Street generating station;

Showing the Children How the Electrical Equipment Works

the gas plant, and the training school for motormen and conductors. They are encouraged to ask questions that arouse their interest, and most classes take unusual notice of essential features during the entire trip and write essays afterward.

The pupils are told that the main power house has a generating capacity of 85,500 kw., and to help them visualize this they are asked to imagine 110,000 wild horses all trained and harnessed to serve them. At the gas plant I explain to them about the generator, carburetor and superheater; how the condenser system cools the gas; how the meters are tested and proved for the customer's protection, as well as the company's, and that on a cold day it is necessary that we use 250 tons of coke and 75,000 gal. of oil in order to meet the needs of the city.

At the training school it is explained that there are only two troubles that can happen to an electric circuit—an open circuit or a ground, and that the motorman is taught to locate the trouble by following a regular process. To start with, he determines whether or not the trouble is on the lines by turning on his lights, and if the lights burn, then, of course, he knows that the line is supplied with current. He then looks for trouble in his controller by trying that out and pretty soon finds out what is wrong and goes merrily on his way.

Of course, this all goes to prove to the pupils that this avoids unnecessary tie-ups on the line which would inconvenience the passengers. They are also told that the trainmen need from fourteen to eighteen days to go through this course of instruction, and after they pass a final oral examination they are assigned to their respective divisions and become subject to discipline through the supervisors, station masters, division superintendents and, finally, the superintendent of transportation. For a period of 60 days the men are under probation, however, and after this time is half over they return to the school and must pass a final written examination, consisting of 81 questions for the motormen and 79 questions for the conductors. The thing that seems to impress the children most is the fact that our men have safety contests. Prior to the year 1924 we were reporting 25 or 30 accidents per day, and since we have inaugurated our safety contests our accidents have been reduced to about fourteen per day. We have five divisions in the system and there is a continual friendly rivalry between the men of the different divisions to turn in the lowest per cent of accidents. These per cents are calculated daily and the division having the least number of accidents hoists a pennant in front of its division headquarters the following day; besides this, a monthly report is kept, and the division reporting the least number of accidents for the month is awarded a pennant, which it is allowed to keep for another month, or until such time as another division may turn in a better record; also, based on the monthly report, each member of the winning division is given a gold button with the picture of a street car on it. Most naturally a plan such as this is of mutual benefit, for the general public is benefited as well as the company.

Buses Used to Transport Visitors

From the training school the pupils are transported back to their schools in the buses, or are let off at convenient corners. At the same time they are impressed with the idea that this is just "another public service." By the time the trip is ended the pupils enthusiastically cheer the company, and it goes without saying that all the people in the immediate vicinity are well aware that the New Orleans Public Service is on the map. After the school children have made this trip I challenge anybody to say anything but commendatory remarks about us to these pupils.

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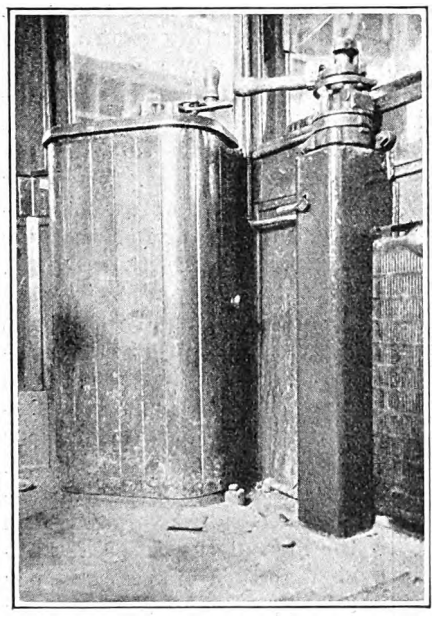
Maintenance Notes

Improving Appearance of Platform Equipment

PIPING underneath motorman's air brake valves and the space back of controllers is being incased on cars of the Department of Street Railways, Detroit, Mich. The casings, which are made of No. 20 gage



A Sheet-Iron Casing Over the Piping for Air Brake Valves and Inclosure for the Space Behind the Controllers Improve Platform Appearance of Cars in Detroit

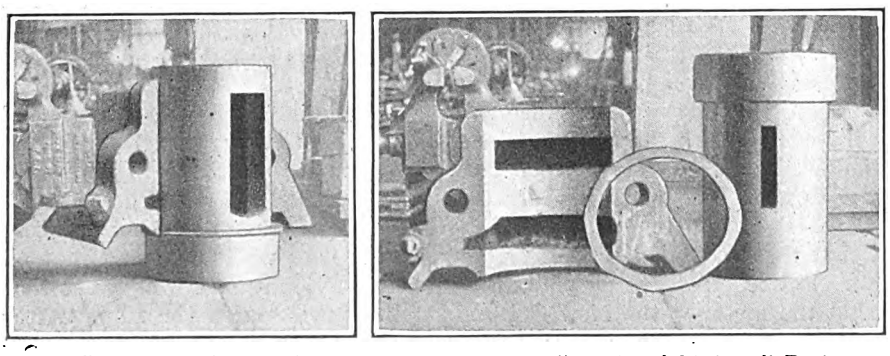
sheet steel, improve the appearance of the platform equipment considerably. Handles of air valves are arranged to extend outside the casings so that they can be operated readily. The casings extend entirely to the floor and are painted so as to correspond with the general decorative scheme of the cars.

By closing in the ordinary space back of the controllers, accumulations of refuse, papers, etc., are prevented, as is also the tendency of motormen to use these spaces as cuspidors. The railway officials plan to incorporate this improvement on all of the cars.

Armature Assembly Prevents End Play

IN ORDER to hold the armature bearing flanges tight against the housing hubs, as outlined in an article entitled "Compensating Armature Play," which appeared in the May 15 issue of ELECTRIC RAILWAY JOURNAL, the International Railway, Buffalo, N. Y., is using a square projection on the housing which fits into a slot sunk into the outside of the armature bearing. This takes the place of dowel pins. Steel washers of any desired number and thickness may be inserted over the armature bearing and, fitting between the flange and the housing hub, eliminate excessive end play.

The accompanying illustrations show the parts with the housing and the slot in the bearing, together with a single steel washer of $\frac{1}{16}$ in. thickness. In the assembled view the bearing is shown as it would be when firmly locked in place with the complete housing applied. Previously round dowel pins on the housing had been used. They did not prove to be entirely satisfactory, as they soon permitted a small amount of radial motion on the part of the bearing. The square projection holds the bearing with a maximum degree of firmness.



At Left, Assembled Bearing and One-Half of Housing. At Right, Detail Parts. Slot Holds Bearing in Place

Oil and Waste Reclamation in Denver

WASTE reclamation as carried out by a cubical tumbling box on the Denver Tramway system was described in this paper for July 26, 1924. In addition to this reclamation machine an electrically driven centrifugal waste washing machine, a sump and settling tank for preliminary treatment of used car oil extracted from waste, and a centrifugal oil separator, together with drying tables and saturating tanks, make a very complete oil and waste storage and reclamation plant.

The equipment is housed in a separate building of concrete and brick construction. This has one floor and a large basement. By use of the separate building low insurance rates result, due to the minimized fire hazard. The basement of the building is used principally for storage of oil and baled waste. Oil is kept in large welded tanks, each provided with a small receiving tank, from which oil may be elevated by use of compressed air to spigots which are located above the main floor. Supply pipes for the various storage tanks are brought through the wall on one side of the building and are equipped with valves and pipe fittings, so that easy connection to tank cars on an adjacent railway track siding can be made. When connected, oil will flow by gravity from the tank cars to the large basement storage tanks. In unloading heavy oils in winter it is sometimes necessary to heat the oil in the tank cars by means of steam in order to increase its fluidity.

A covered concrete platform is provided at one end of the building. This is on the same level as the building floor, which has a height approximately the same as that from the rail to a box car floor. Waste in bales can then be unloaded from cars directly to this platform with a minimum of labor. From the platform it is lowered into the basement which extends underneath the platform. A large trapdoor is provided for communication to the basement and a jib crane with chain blocks handles

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the material. Measuring hand pumps are also provided on the platform. These are connected to the underground storage tanks outside the building, which are used for gasoline and kerosene.

The main floor of the building is used for oil and waste reclamation and for the saturation of waste.

All waste used on the system is transported to and from the oil house in covered cans so as to make certain that it is kept clean. The cans are lettered with the name of the division, the kind of waste; i.e., armature, journal, etc., and also to indicate whether it is new or reclaimed.

To reclaim used waste it is first passed through the cubical box, which combs and pulls out the strands of waste. This shakes out small pieces of babbitt, short strands of waste and other refuse, all of which falls into a pan underneath. The waste is then placed in a centrifugal washing machine, where it is treated with live steam while being revolved at high speed. This extracts the dirty oil. The oil and water resulting from the steam condensation is passed to a sump tank which is located in the floor adjacent to the machine.

After the oil has been extracted the waste is loosened up in a basket of the centrifugal machine. Water and steam are again added and the machine is revolved for some time at a very slow speed in order to wash out any sand and dirty matter from the waste. The sludge which results from this operation is run directly into the sewer. The centrifugal machine is then revolved at high speed in order to extract the water from the cleaned waste. Live steam is admitted during the wringing operation. When all water has been thrown out by centrifugal action the waste is removed from the machine and spread on screen-covered benches under which are steam coils for drying. After the waste is dry it is thoroughly gone over by hand, all knots are removed and the waste is graded as armature or journal waste, according to general condition, length of strands, etc.

The waste is then ready for saturation. Two jacketed tanks are provided for this purpose. The inner tanks contain the lubricating oil to be used. The jackets contain water, which is kept hot by means of steam coils. Heating the oil in this manner materially reduces the time required for proper saturation of the waste. Formerly waste was handled in and out of the saturating tanks by hand-forking. Later, trays having a two-leaf drop bottom with bails were used. The trays are handled by means of a small chain block supported on a rail running over the saturating tanks. Drain boards provide a means of reducing the labor required in the saturating process. One saturating tank is used for armature waste and one for journal waste. Each tank has its own drain-board and waste-handling tray.

Practically all of the reclaimed oil is used for waste saturation. When there is not sufficient reclaimed oil, new oil is transferred to the saturating tanks from the basement receivers through a pipe line by means of compressed air. This oil is measured at a point near the saturating tanks by means of a Niagara meter. Dirty oil and water from the centrifugal waste machine are held in the sump tank adjacent to the machine until approximately 100 gal. has accumulated. This mixture of oil and water is then heated, given a chemical treatment and is elevated to a conical bottom tank. The treated oil is permitted to settle for a period of approximately 24 hours, during which time it is kept near the boiling temperature by means of steam admitted to a jacket surrounding the conical lower portion of the tank. At the end of the settling period the partially cleared oil is decanted from the settling tank and is then passed through a centrifugal oil separator. The clarified oil, which is of very high quality, is then transferred to the saturating tanks. The sludge remaining in the bottom of the settling tank is discharged directly into a sewer.

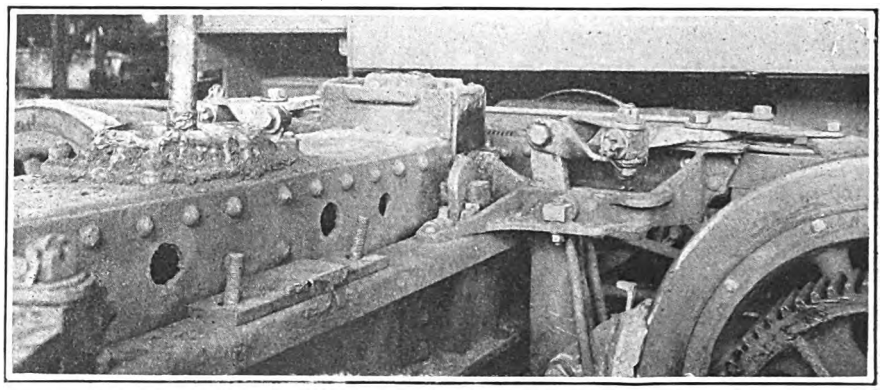
A small tank is used for the cleaning of white cotton waste used in the lubrication of older type motors. The method of cleansing is to boil the waste in an Oakite solution, floating the oil which rises to the surface directly to the sewer. After the waste has been thoroughly washed it is passed through a hand wringer, dried and shaken out before reusing.

The waste washer used was originally designed for turbine drive by means of high-pressure steam. Owing to the fact that this company does not have available high-pressure steam during the summer season, a combination belt and gear drive was developed by means of two pairs of pulleys, one clutch and a 450-1,800-r.p.m. variable speed, ½-hp. motor with drum controller. Speed regulation is provided over the range necessary for oil extraction and waste washing.

Little Wear on Manganese Steel Plates

SIX points on the trucks of cars operated by the New York, Westchester & Boston Railway have manganese steel wearing plates. These are for the motor-nose supports and for bolster side wearing plates. The motors as originally furnished had a spring type of nose support. The springs were of a laminated construction and some of the leaves broke. In 1915 it was decided to do away with these springs and manganese steel supporting plates were installed in place of the springs. The same two bolts that were used for fastening the springs were used to hold the manganese plates in position.

At the same time manganese steel was installed for the bolster side wearing plates. An accompanying illustration shows a truck with these plates in position, as the truck was brought into the shop for overhauling recently. These plates have now been in service more than eleven years and show very little wear.



Manganese Steel Plates Are Used for Motor-Nose Supports and for Bolster Side Wearing Plates

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New Equipment Available

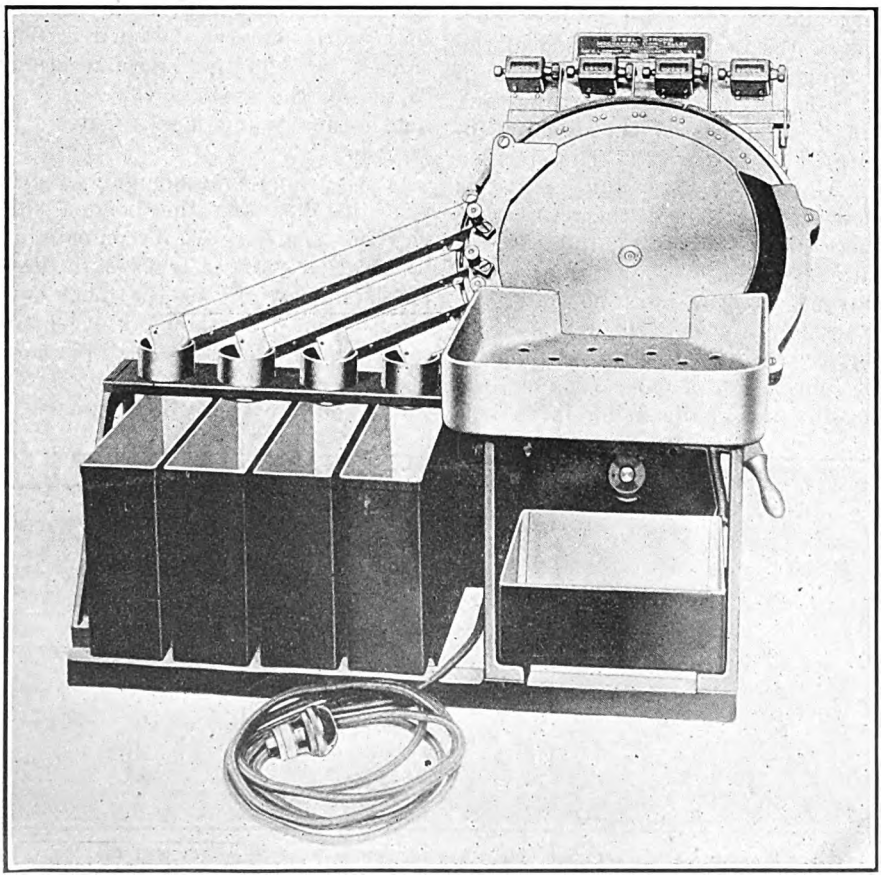
Efficient Machine Counts Coins Electrically

COUNTING and sorting of coins can be done electrically by a machine that has recently been placed on the market by the C. L. Downey Company, Cincinnati, Ohio.

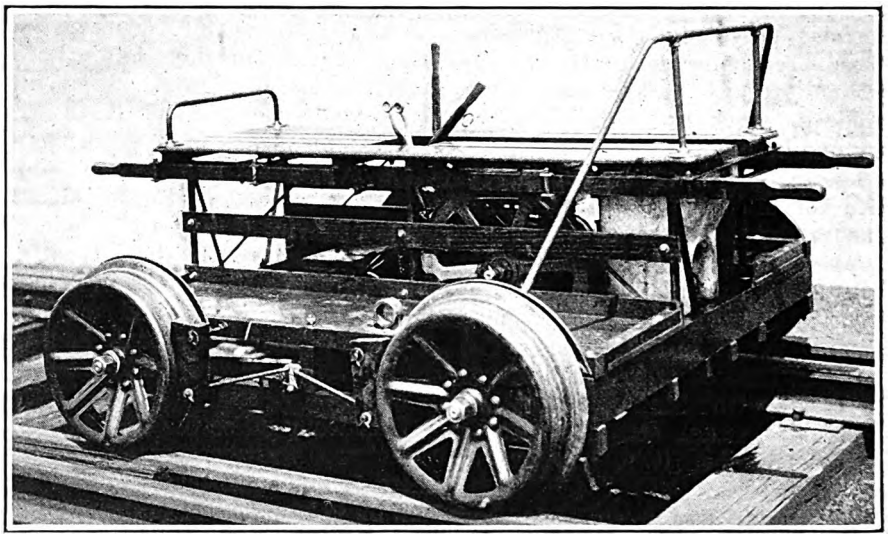
This device, known as the "Steel-Strong" Mechanical Coin Teller, will sort and count pennies, nickels, dimes, quarters and half dollars at the rate of 1,000 coins per minute, it is said. The smaller coins are counted as sorted and dropped in the receiving boxes shown at the left in the illustration; half dollars are dropped in the box below after all other coins are out of the hopper and are counted by hand.

Four coin meters give numerical readings up to 99,999 and may be reset to zero by a single revolution of the reset knob.

Model B-4, shown here, is 19 in. high and occupies a table space 20½ in. x 21 in. A 110 or 220-volt a.c. or d.c. motor is supplied and the total weight is 179 lb.



Front of Coin Counter Showing Cash Boxes and Receiving Tray



View of the Mudge Inspection Car, Showing the Self-Equalizing Brake Equipment

Center Load Inspection Car

OF A weight and design which may be handled easily by one man, a new center load inspection motor car has recently been placed on the market. The car has ample seating space for four men and is designed to provide for a long continuous inspection run. It is manufactured by Mudge & Company, Chicago, Ill., and is known as the Mudge Class B-2 "Inspector."

The car is equipped with a 4-hp. free running motor, the parts of which are interchangeable with the parts on the motors used in the new light section motor car also manufactured by this company. Transmission is by means of a multiple disk clutch which transmits the power to sprocket on the rear axle by a roller chain. The motor is water cooled with the Mudge thermo-symphonic design of water hopper, which permits three times the ordinary cruising radius.

Roller bearings are used in mounting the crankshaft of the engine and also the axles of the car. The whole unit weighs less than 500 lb. with a lifting weight of 140 lb. This light lifting weight is accomplished through the perfect balance of the unit and by the aid of extension lifting handles which are provided on both ends.

Self-equalizing brakes are among the features claimed for the car. No adjustments for wear on the brakes is necessary as they adjust themselves automatically, so that the braking power is always the same on all four wheels. It is also equipped with a unique locking device designed so that when the brakes are set they hold the car in place until released by the operator. No rock or piece of wood is necessary to hold the car while the operator steps aside to do his work. He need only pull back the lever and place it in the notch provided, locking it securely to prevent the car from moving.

The frame is made of kiln-dried selected maple and has sufficient flexibility to withstand twisting in service. The lower longitudinal rail has a metal reinforced plate which facilitates removing the car from the rails and replacing it, acting as a skid.

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Association News & Discussions

Southern Equipment Men Meet in Chattanooga

Car Maintenance Practices Were Discussed—Annual Report Shows Progress of Member Companies in Improvement of Pull-In Record and Reduction of Costs of Maintenance

THE Chattanooga meeting of the Electric Railway Association of Equipment Men of the Southern Properties, held July 28 to 30 inclusive, did not lag a minute. The program had many speakers who gave short, snappy talks, and one was no sooner finished than two or three delegates were on the floor with questions or discussions.

According to calculation, the latest group of 60 new cars now being built by the Cincinnati Car Company will save $210,000 during the first year they are run, was the startling statement of Frank L. Butler, vice-president and general manager of the Georgia Railway & Power Company of Atlanta. This saving in operating costs is practically equal to a quarter of the cost of the new cars. The estimate was based on duplicate cars purchased a year or so ago, the results of which now are a matter of record. Mr. Butler further declared that every schedule in Atlanta can be operated by one man.

E. D. Reed, manager of the Chattanooga district of the Tennessee Electric Power Company, delivered an address of welcome. He also extended an invitation to all delegates to attend a dinner Thursday evening as guests of the Tennessee Electric Power Company.

A. D. McWhorter, general superintendent Memphis Street Railway, presided as president of the association. In his opening address Mr. McWhorter said that the Southern properties continued to show greater mileage per pull-in at reduced cost of maintenance. More than 16,000 cars in the country are now operated by one man, and this number is steadily increasing. More than 40 roads have adopted more comfortable seating and more than 300 roads are using bus equipment supplemental to their electric cars.

There is a direct connection between public relations and better maintenance, and this duty falls on the maintenance men. People are demanding better service and this calls for better maintenance.

John A. Dewhurst, associate editor ELECTRIC RAILWAY JOURNAL, spoke of the accomplishments of many properties in the North, following successful franchise negotiations and the purchase of new cars. Youngstown, Ohio, was one of the best examples of a rebuilt transportation situation. Many kinds of service are offered by the Pennsylvania-Ohio Electric Company. Three 20-mile interurban lines and 340 miles of coach routes serving Youngstown, a city of 165,000 population, and three small cities have been brought to a paying basis through modern equipment and methods. Pittsburgh Railways are continuing to progress, and Cincinnati is in the middle of a $1,000,000 track reconstruction program, following the successful passage of a service-at-cost franchise last November.

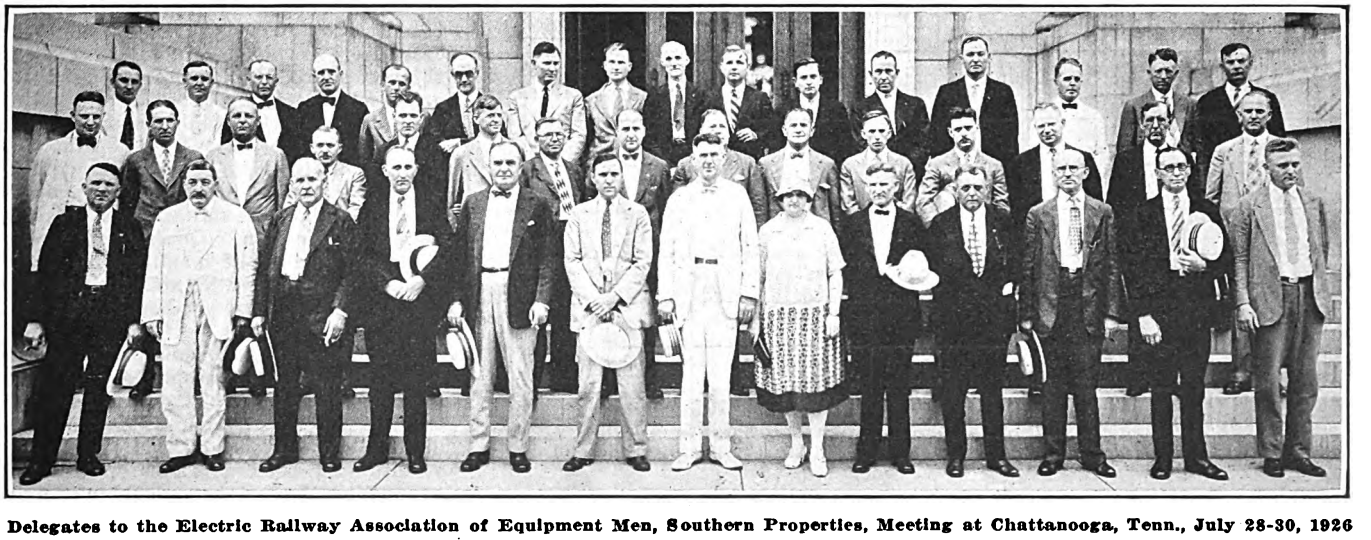
J. L. Crouse, special railway engineer Westinghouse Electric & Manufacturing Company, told of the steps that manufacturers had taken toward improved maintenance, which, in turn, was an important factor in noise reduction. The dipping and baking of armature coils was one marked improvement that was reflected in a pronounced manner in a 30 per cent decrease in the sales of this class of material. Many improvements in manufacture have re-

A feature of the work of the Electric Railway Association of Equipment Men, Southern Properties, is the record kept of pull-ins and maintenance of equipment costs for the various properties. These figures are charted just prior to each meeting and form a basis for discussion.

While the average miles per pull-in varies from 92,978 down to 2,167, the most remarkable feature of the records is the pronounced improvement made since the organization of the equipment men's association about five years ago.

In 1921 New Orleans Public Service had a pull-in every 2,803 miles. For the entire six months period from January to July, 1926, this company averaged nearly 100,000 miles per pull-in. Nearly as astonishing results are shown for half of the fourteen companies.

Nor is this all. By the expenditure of disproportionate sums of money it might be expected that a pull-in record might be made. From the cost of maintenance chart it is observed that New Orleans, ranking first in the pull-in record, ranks third in the cost, and at that is maintaining its equipment for less than 2 cents a car-mile. Memphis leads in this cost chart with a record of 1.7 cents per car-mile. To a certain extent the answer may be equipment, but methods and organization have contributed to this record.—EDS.



Delegates to the Electric Railway Association of Equipment Men, Southern Properties, Meeting at Chattanooga, Tenn., July 28-30, 1926

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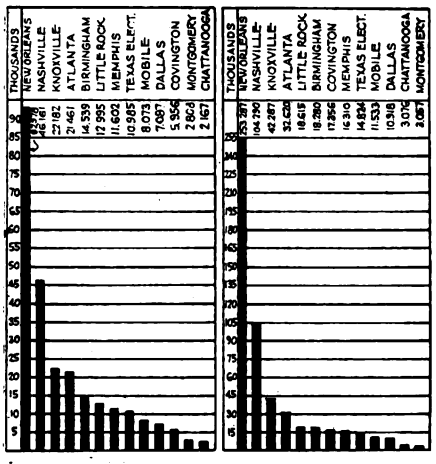


Progress of Four and One-Half Years Work of Southern Equipment Men's Association in Increasing Miles per Pull-In Shown in This Record for Member Companies. The Chart at the Left Includes Pull-Ins for All Reasons; that at the Right, Pull-Ins for Troubles Connected with the Equipment. The Figures Are for the First Six Months of 1926.

sulted from the experience of operating men.

Dual ventilated motors give promise of reducing brush wear. Much greater brush life can be expected on these motors, due to the elimination of dirt and other foreign material in the dual ventilated motor.

By the adoption of standard sizes in armature bearings and similar equipment, often varying only $\frac{1}{32}$ in. from similar orders from other properties, and the purchase for six months or a year at a time will save at least $65,000 a year based on a preliminary investigation. The Westinghouse company would be willing to ship such orders on a monthly basis as required, the larger orders, however, allowing economies of manufacture accruing from a mass production basis.

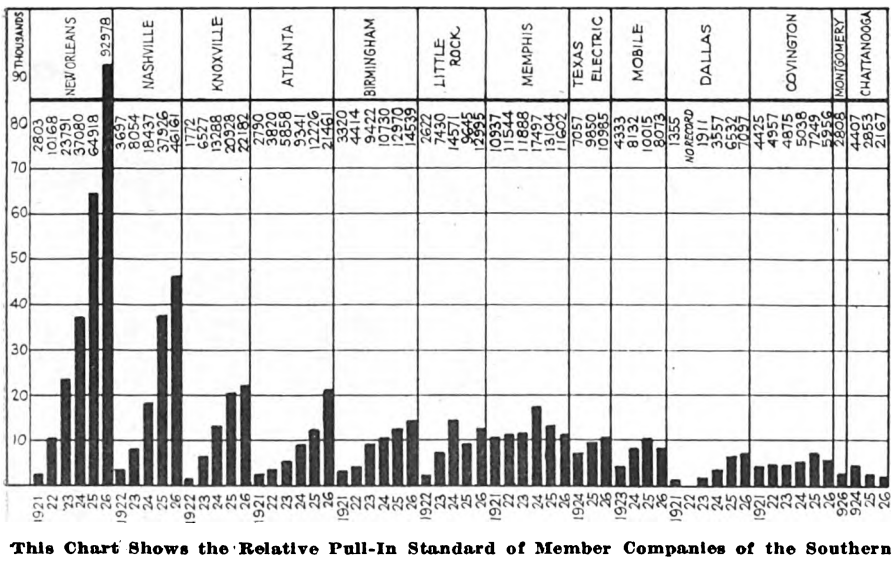
Thorough inspection and repair of armatures, coils, fields, controllers, line breakers, heaters and resistance grids are accomplished once a year in Knoxville, as told by C. A. Walker of the Knoxville Power & Light Company. The average cost of overhauling motors is $55, circuit breakers $12, heaters $1.50 each, air compressors $12 each and grid resistances $7 per car set.

J. R. Anderson, superintendent of the Chattanooga Railways division of The Tennessee Electric Power Company, stated that ten cars would be delivered next month from the Light-Weight Noiseless Car Company that would at once be the latest thing in street cars and also the first new equipment to reach the property since 1913. The cars will be double truck, 40 ft. in length, with Kemi-Suede covered seats for 44 passengers. Inside mounted roller bearing journals will be used and 17-in. drums for the automobile type brakes. The painting is a secret not to be divulged until the cars reach the property.

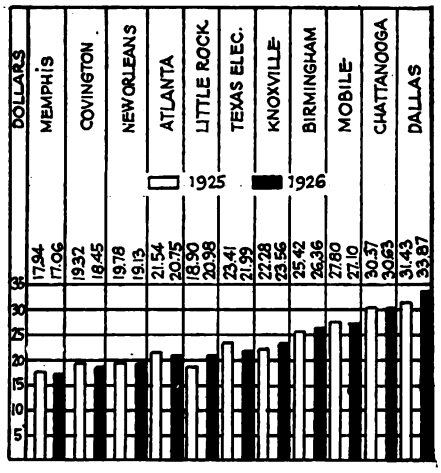
Somewhat aside from the program, Mr. Butler of Atlanta opened a discussion on personnel matters. Educational work, foremen conferences, health examinations, company insurance, all were features under discussion. In Atlanta a foreman's school was conducted last winter and was attended by 83 men, either foremen or superintendents. Of this number, 60 men were present at least 75 per cent of the meetings and passed the course.

The New Orleans Public Service Company operates nineteen buses in conjunction with its railway. An excellent garage has been established, and J. H. Stokes, the foreman, told of the methods of training operators that have been adopted. The maintenance work is well organized. Mr. Stokes presented many forms used and outlined in an able manner the practice adopted to keep this equipment in excellent shape. The methods will have to be good if the buses are to be on a parity with the car equipment record.

James S. Mahan, president Western Section, International Association of Electrical Inspectors, Chicago, gave a very instructive paper on the National Fire Protection Association regulations for car and carhouse equipment. Mr. Mahan pointed out that with the broadened regulations allowed by this association it is possible to comply with all regulations at practically no increased cost for new equipment. Even with



This Chart Shows the Relative Pull-In Standard of Member Companies of the Southern Properties Equipment Men's Association. The Figures Are for the Years 1921 to 1925 and for the First Half of 1926



Shows Cost per 1,000 Car-Miles for First Five Months of 1925 and 1926. The Pull-In Record, While Important, Must Be Considered in the Light of Maintenance Costs

old equipment many changes and improvements can be made that will net a splendid return in reduced premiums. Practically all heater manufacturers have agreed to turn out products with the Underwriters' label attached. If the equipment manufactured meets with the approval of the Underwriters' Laboratory the service of supplying approved labels is but a few cents per heater.

With improved car wiring equipment available today the laboratory is now prepared to give an inspection service to car manufacturers and to attach its label to the entire car. This service, including inspection, is nominal, being $5 per car.

Mr. Mahan pointed out the value of using this service not alone from the saving in premiums but as a factor in establishing public relations as well. Properties could well capitalize the fact that the cars used had passed the Underwriters' Laboratory, Inc., inspection.

In discussion, Mr. Mahan said that the savings in fire insurance premiums would be from $5 to $20 annually per car, depending upon the old rate and the method used in determining the schedule. At least $7.50 to $10 could be saved each year per car, thus more than paying for the initial service the first year.

Mr. Kasemeyer, Cincinnati Car Company, said that no greater construction costs were involved in complying with this standard than were involved in any good practice. Some of the main points made in Mr. Mahan's paper will appear in a later issue.

D. J. O'Brien, Galena Signal Oil Company, read an interesting paper outlining the Galena theories of oil versus lubrication. Quality of materials and quality of manufacture have a direct bearing on the ability of maintenance men to give good service to the public.

Following Mr. O'Brien's paper, there was a general discussion on oil and waste reclamation. The concensus of opinion was that doubt was cast on the quality of reclaimed oil, but that good results had been obtained on several properties from the scrubbing and cleaning of journal box waste. With the present high price for long fiber wool

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waste, it was considered good practice to reclaim this on properties of sufficient size to warrant the installation of the necessary equipment.

Other papers presented were by F. G. Koenig, E. F. Herndon, W. N. Lariscy, Gus C. Kraus and A. Taurman. A summary of Mr. Taurman's paper will appear in a later issue. Abstracts of the other papers appear below.

The entire day of Wednesday, July 29, was spent in a discussion of 50 questions pertaining to equipment maintenance. In the evening the delegates were guests at a dinner tendered by the Tennessee Electric Power Company at the Hotel Patten and on the last day an inspection of the Tennessee Electric Power Company system was made. About 60 delegates attended the meetings.

Some Remarks on Car Troubles*

By E. F. Herndon
Foreman Ashby Carbarn, Georgia Railway & Power Company, Atlanta, Ga.

AXLE fields on the split type motor, as we all know, have a field jumper around the axle with a connection in it for the convenience of splitting the motor casing. This jumper hangs under the collar side axle bearing and, consequently, stays oil soaked, which tends to rot and soften the insulation on the wire.

It was the practice in Atlanta to use what we call the knuckle joint connection in this jumper, which is too heavy for this particular place, and allowing the wire to swing with this connection in it is sure to break the strands of wire, reducing its size at this point. Then it is not heavy enough to carry the load and consequently burns in two, and often this jumper burns off flush with the motor casing, giving no chance for temporary repairs.

To get away from this condition we put on what we call a two-way connection. This is very light and by tinning the ends of the wire the solder is allowed to run down the wire as far as possible so as to support the strands of wire, before putting the connection on. After this connection is taped we pull it over to the eye in the bottom half of the motor casing and either tape it or tie it there so it is not continually under the oil drip of the axle bearings.

Another thing that has helped is to keep the motor leads off of the axle on the split type motors. To do this we welded a support for the lead blocks from one side of the motor to the other, not allowing them to rub in two on the axle.

Our carhouse location is 2.75 miles from the center of the city, 15.80 miles to the end of one interurban line, 20.70 miles to the end of another interurban line and 11.06 miles to the end of our farthest city and suburban line. We have just this month received a Ford car with small open body and are fitting it up with one jack and a lot of small tools and materials so that in case of trouble we can get to it quickly. We think we are going to find this useful.

*Abstract of paper presented at meeting of the Electric Railway Association of Equipment Men, Southern Properties, Chattanooga, Tenn., July 28-30, 1926.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Aug. 11 — Metropolitan Section A.E.R.A., annual outing, Pelham Bay Park, New York.

Aug. 12-13—Wisconsin Public Utility Association, Railway Section, La Crosse, Wis.

Sept. 17-18 — Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

Our Experiences with Safety Cars*

By W. N. Lariscy
Foreman Edgewood Barn, Georgia Railway & Power Company, Atlanta, Ga.

ATLANTA has 40 safety cars, 46 ft. 6 in. over bumpers, seating 48. They have front door entrance and exit and rear door exit. The rear door is operated by treadle interlocked with line breaker and air brake. Rear door closes within 4 in. before brakes are released. The front door is controlled by the operator and is not interlocked with line breaker or brakes.

On Dec. 13, 1925, one line of ten cars went into service and we experienced a lot of trouble with particles of pipe scale and trash blocking the valve seats, causing valves to function improperly. We next experienced trouble with leather valve seats giving way, and also with shuttle valves cutting through gaskets. We are now putting in valve seats and gaskets of material called "WABCO," which looks as though it would have a longer life and cause less trouble.

When the cars first went into service we experienced considerable trouble with dry stems in the M-28 brake valve; later the oil well was extended down to the bottom of the valve stem. We now use "Dot" fittings on them and have no trouble.

Between Dec. 13 and Jan. 13 last a total of 39 schedules were placed in service, with the 40 cars on the same headway as formerly with two-man cars, except that on two of these routes the running time was reduced five minutes for the round trip, or from 1:05 to one hour.

These new cars have been operating approximately seven months and in that time have averaged 1,143 miles per accident of all kinds, including complaints and miscellaneous things that are reported. The system average is about 2,500 miles per accident. The month of June with the 40 safety cars there was a total of 109 accidents, which shows an average of 1,270 miles per accident.

Included in all accidents there have been about twelve at the rear door, two or three of these being where crippled folks with crutches placed their crutches on the ground and got caught in the door before they could get beyond reach. The balance of the twelve were negroes who tried to get in the rear door while other passengers were coming out. About six accidents have occurred at the front door with children placing their fingers in the frame of the sliding door.

There have been three or four cases of passengers trying to board the car as the front door was being closed, but no injuries resulted. There have been no other accidents at the front door in connection with passengers boarding or alighting. The balance of the accidents have been collisions with automobiles.

We have had the least trouble with operators who were already motormen. Training is of the utmost importance, and a few men have been found who possibly may never make good operators.

So far there has not been a single case of an operator being relieved from his run on account of not being able to make the schedules, which are the same as formerly with two-man cars. The schedule speed for the system has been increased from 9 to 9.75 m.p.h. including layover. As high an accelerating rate as is found comfortable is used. At present it is approximately 1¾ m.p.h. per second.

Work Which Has Overcome Some of Our Troubles*

By F. G. Koenig
Foreman Butler Carbarn, Georgia Railway & Power Company, Atlanta, Ga.

IN THE overhauling of controllers we found that sand-blasting is an important factor, as it will remove all the old carbon dust and dirt that could hardly be scraped or blown out.

On K-28 controllers that had been in service for a long time the bearing at the base of the stand was reamed out, a ⅜-in. brass bushing inserted and the end of the controller cylinder was turned to fit the bushing. All composition connection blocks and finger bases were removed and replaced with ones made of hardwood. These were treated with a good grade of insulating varnish. This work improved our condition and has been a factor in reducing K-28 controller troubles or failures.

On all of our older type cars rotten insulation and cable covering were removed from under the platform, where they were unprotected from weather conditions. Compressor wires running from a switch on the dash were pulled up through the bulkhead and heater wires that crossed from one side to the other were taken care of likewise, doing away with all small

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wires under the platform. All cables were then painted with a heavy coat of "P&B" paint. Metal splash guards were installed so as to protect the cables and equipment from wheel wash. This has done much toward getting weak points out of our system.

The equipping of all of our cars with American type E slack adjusters and the standardization of the foundation brake rigging have insured safer and smoother operation of the cars. A periodical cleaning and inspection of the air brake equipment has eliminated the bad brake situation.

We have a total of 364 double-truck cars which were equipped last fall with Economy meters. By starting a power-saving program among the trainmen they have paid more attention to the operation of their cars, with the result that there has not only been a decrease in the consumption of power of 11 per cent but these meters have helped in locating mechanical and electrical defects that regular inspection had not determined.

A general shop and barn improvement, new machinery and labor-saving devices, etc., have given us an opportunity to do better work. Definite and thorough overhauling of cars, such as they are doing in New Orleans, and we are trying to do in Atlanta, has been a big help. We are learning that definite and careful inspection not only avoids trouble but also keeps down repairs; in other words, good overhauling and good inspection will eventually result in more reliable service.

Advantages of the LB 2-A Controller Handle on Modern Equipments*

BY GUS C. KRAUS
Assistant to the Superintendent of Rolling Stock and Shops
New Orleans Public Service, Inc.

TO GIVE passengers the maximum of comfort and convenience at the minimum maintenance cost is the modern trend in street railway service. To this end our rolling stock and shops department employs line breakers in connection with its type K platform controllers. Line breakers are primarily an asset in that they protect the meters and other electrical equipment from abuse and high maintenance costs. In addition, the use of line breakers eliminates heavy arcing and consequent blowing of overhead switches, previously a source of annoyance to passengers.

In the operation of line breakers it is necessary to have a special form of auxiliary control. This auxiliary control takes one of two forms, either a complicated ratchet switch mechanism affixed to the main cylinder of the controller, as in our K-36-JR and K-68-A types, or the recently developed LB 2-A controller handle of General Electric Company manufacture. The LB 2-A handles have been tried on three of our cars, two for a year and one for four months, and have been found to possess so many advantages over the ratchet switch mechanism that our department has undertaken to install 177 equipments with the new handles in the immediate future.

The new handles have many advantages over the ratchet mechanism from a standpoint of operation. This handle on notching up operates just the same as all other platform controllers used with line breaker equipment, but should it be moved ¼ in. to ½ in. back, or toward the "off" position, the auxiliary circuit of the line breaker is opened, thus opening the main contacts in the line breaker before controller contacts have left the main fingers in the controller. This eliminates all burning in the controller when throwing the handle to the "off" position. These features help to speed up service in that they eliminate failure of pawls to engage in ratchet when pawls become worn, thus avoiding holding circuits open. On operating cars in congested districts it is possible to "creep" by notching up to the first point, then moving back ¼ in. without having to return completely to the "off" position in order to break the circuit. Then, too, platform men find the cars equipped with LB 2-A handles easier to operate because of the low handle with improved knob-grip. The handle is 1½ in. lower than the old style. The number of controller complaints on our experimental cars has been considerably reduced over our period of operation with LB 2-A handles. For example, over a one-year period there were eleven controller complaint cards against car No. 801 with ratchet switch mechanism, while during the same time there were only three controller complaint cards against car No. 800 with LB 2-A handles, otherwise similar in equipment and operating conditions.

These handles possess many advantages over the ratchet switch mechanism from a standpoint of maintenance. Their use eliminates all special mechanism at the bottom of the main controller cylinder, which position, when controllers are mounted on the platform, is an awkward one in which to work when making repairs. Because of the position of the LB 2-A handle on top of dial plate, it is easily accessible for renewal and repairs. The use of the handles has eliminated all trouble due to stubbing fingers and burned fingers and segments. Our rolling stock and shops department has changed very few fingers and segments since the installation of LB 2-A handles on our experimental cars.

It has been found that the time for making repairs has been cut in half over that required with ratchet switch mechanism. A comparative study of inspection costs, total maintenance and time of installation of both the LB 2-A handles and the ratchet switch mechanism has been made by our department, and the following figures are submitted:

Six hours are required to install ratchet switch mechanism on controller, and an additional two hours are required to mount controller on platform; total time of installation on platform is eight hours. Three hours are required to install LB 2-A handles on controller, and an additional hour is required to mount controller on platform; total time of installation on platform is four hours.

Car No. 801, equipped with ratchet switch mechanism, ran 37,784 miles, incurring an expense of $5.64 for controller maintenance. This corresponds to a cost of 0.01493 cent per car-mile. Car No. 800, similar in equipment to and operating under the same conditions as No. 801, but having LB 2-A handles, ran 40,469 miles, incurring an expense of $1.03. This corresponds to a cost of 0.00254 cent per car-mile.

Car No. 623, with ratchet switch mechanism, ran 37,004 miles, incurring an expense of $4.26 for controller maintenance, or a cost of 0.0115 cent per car-mile. Car No. 622, similar in equipment to and operating under the same conditions as No. 623, but having LB 2-A handles, ran 28,819 miles, incurring an expense of $1.33, or a cost of 0.00464 cent per car-mile.

Car No. 950, with ratchet switch attachment, ran 37,870 miles, incurring an expense of $4.27 for controller maintenance, or a cost of 0.01126 cent per car-mile. Car No. 951, similar in equipment to and operating under the same conditions as No. 950, ran 9,941 miles since the installation of LB 2-A handles, incurring no expense for controller maintenance.

*Abstract of paper presented at meeting of the Electric Railway Association of Equipment Men, Southern Properties, Chattanooga, Tenn., July 28-30, 1926.

Wisconsin Program Arranged

COMPLETION of the program for the annual convention of the electric railway section of the Wisconsin Utilities Association in La Crosse on Aug. 12 and 13 has been announced by Nels C. Rasmussen of the Wisconsin Valley Electric Company, Wausau, chairman of the section. Improvement of local transportation conditions in all cities of the state, with the view of preventing accidents and of minimizing delays caused by continuously increasing congestion on streets, will be discussed at the convention. About 150 company representatives from all parts of the state are expected to attend.

Thursday, Aug. 12, 9 to 10:30 A.M.

Registration—Hotel Stoddard.

11 A.M.

Session held at Chamber of Commerce Hall, corner of Fifth and State Streets, one block east of Hotel Stoddard.

Address of Welcome—Hon. J. J. Verchota, Mayor of La Crosse.

Chairman's Address—Nels C. Rasmussen, Wisconsin Valley Electric Company, Wausau.

Announcements.

Address—"The Opportunities of a Transportation Man for Good Public Relations," C. R. Phenicie, Wisconsin Public Service Corporation, Green Bay.

Discussion.

12:30 P.M.

"Get-Acquainted Luncheon" at the Hotel Stoddard.

Thursday, Aug. 12, 2 P.M.

Session held at Chamber of Commerce Hall.

Paper—"Why I am Interested in Trans-

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portation as a Vocation," Oliver Wynn, East Side High School, Madison.

Paper—"Improvements in Handling Traffic by Means of Circulating Load Through Rear Exit," P. W. Gerhardt, T. M. E. R. & L. Co., Milwaukee.

Paper—"Methods of Handling Traffic with Pneumatic Door Operation Under Different Weather Conditions," Oscar A. Broten, National Pneumatic Company, Chicago.

Discussion of above papers.

Report—"A Study of Noise in Transportation Equipment," Kent Wooldridge (railway fellowship student, now with Chicago Rapid Transit Company, Chicago).

Discussion.

4 P.M.

Inspection trip over lines and through the carbarns and automatic substation of the Mississippi Valley Public Service Company.

6:30 P.M.

Informal dinner followed by dancing—Pioneer Club (Fifth and Market Streets). To reach the Pioneer Club from the Hotel Stoddard, go one block east to Fifth Street and proceed south on Fifth several blocks to Market Street. Music by Marking Brothers Orchestra. A few songs but no speeches.

Friday, Aug. 13, 9:30 A.M.

Report—"Accident Experience in Wisconsin," R. M. Howard, Mississippi Valley Public Service Company, Winona.

Paper—"Accident Prevention from an Executive Viewpoint," B. W. Arnold, Chicago, North Shore & Milwaukee Railroad Company, Milwaukee.

Discussion.

Address—"The Present Local Transportation Situation in Wisconsin," Commissioner Andrew R. McDonald, Railroad Commission of Wisconsin, Madison.

Address—President F. R. Coates of the American Electric Railway Association, New York City.

Report of the nominating committee and election of officers for the electric railway section for the coming year.

Address—"Co-ordination of Car and Bus Operation," H. G. Monger, T. M. E. R. & L. Co., Milwaukee.

Discussion.

12:15 P.M.

Luncheon for men and women—Hotel Stoddard.

2 P.M.

Golf at the La Crosse Country Club, automobile trip to Coon Valley (the Alps of Wisconsin), or fishing trip to Galesville (where you really catch them). When registering please sign up for the trip you prefer.

American Association News

American Executive Committee Meeting

Committee Reports Predict Successful Convention at Cleveland—Exhibit Space Sales Exceed Last Year—Enlarged Facilities Provided—Affiliated Associations Plan Timely Programs

MEMBERS of the American Electric Railway Association executive committee were guests of Barron Collier, treasurer of the association, on the steam yacht *Florida* during a meeting of the committee held on July 30, 1926. Reports of various standing committees and plans for the coming convention at Cleveland were given consideration.

J. P. Barnes, as chairman of the committee on subjects and meetings, outlined the tentative program for the Cleveland convention. Prominent speakers have accepted invitations to present various phases of timely subjects of interest to the industry, which include the topics of "unified transportation service," "modern equipment," "street congestion," "the acquirement of new capital" and "industrial education." The final program for the convention, together with a list of speakers, will be available for publication shortly after Sept. 1.

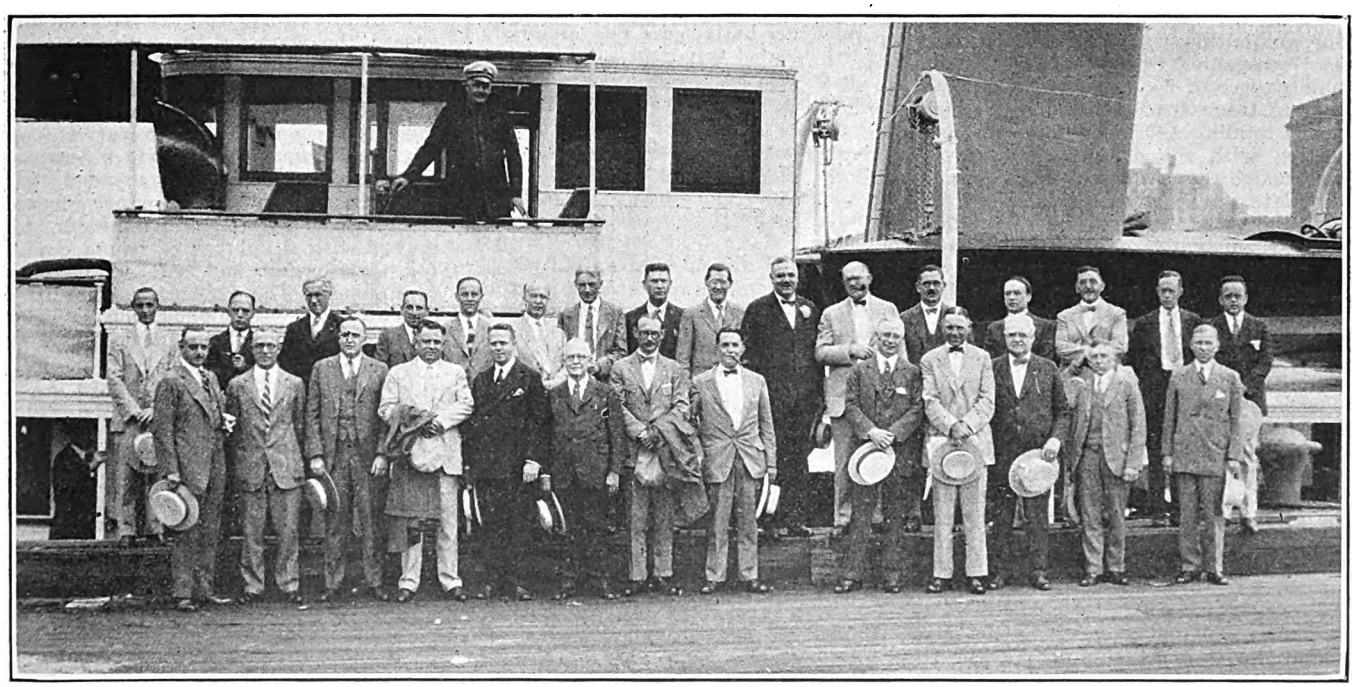
On the invitation of President Frank R. Coates, W. H. Sawyer presented a brief outline of transportation conditions in Australia.

Barron Collier reported for the committee on publicity and said that studies made by his committee indicate that approximately $4,500,000 is being spent annually by electric railways in local advertising. The committee has made a large collection of advertising material used in newspapers, car cards, buses, etc. It is planning to reproduce the best selections in pamphlet form for distribution among members of the association as copy suggestions and examples of how to use material sent out by the association in local advertising. J. P. Barnes testified to the value of the service rendered by the association's director of advertising in the preparation of publicity material in Louisville.

J. H. Hanna, chairman of the membership committee, reported a gain of two operating companies, 23 manufac-

Plan to Reach Cleveland Sunday

DUE to the full program which is planned for the first day's session of the convention at Cleveland on Monday, Oct. 4, all delegates are urged by the executive committee to plan their arrival at Cleveland for Sunday, Oct. 3, to avoid congestion in registration and delay in reaching the meeting on Monday.



American Electric Railway Association Executive Committee, Members of the Association Staff and Guests Who Attended Meeting on Board Steam Yacht Florida with Barron Collier Acting as Host

Front Row, Reading from Left to Right: Charles R. Ellicott, James W. Welsh, E. J. Murphy, E. F. Wickwire, Fred C. J. Dell, Charles L. Henry, Charles Gordon, W. H. Sawyer, Barron Collier, J. N. Shannahan, B. A. Hegeman, Jr., Charles R. Harte, A. T. Davison.

Rear Row: L. F. Schrafel, John W. Colton, Robert Dougan, J. K. Newman, Edward Dana, S. J. Cotsworth, J. H. Hanna, G. H. Clifford, L. S. Storrs, Frank R. Coates, J. P. Barnes, L. H. Palmer, E. T. Faber, M. B. Lambert, G. C. Hecker and Paul E. Wilson. Captain Peter Songdahl is on the bridge.

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turing companies and eighteen individual members since the last executive committee meeting.

For the committee on finance, B. A. Hegeman, Jr., reported in place of Chairman R. P. Stevens, who was absent.

L. S. Storrs outlined some of the work being done by the managing director's office. Hearings by the Interstate Commerce Commission on the bus-railway situation and the status of developments in connection with the application of Interstate Commerce Commission inspection rules to electric locomotives operated by interurban railways was also reported by Mr. Storrs.

A memorial to Charles A. Coffin, commenting on the significance of his life and work in the development of the electrical art and the transportation industry, was read by Mr. Storrs and unanimously adopted by the association.

Paul Wilson, secretary Cleveland Railway, reporting for Col. Joseph H. Alexander, as chairman of the Cleveland convention committee, announced that the contract for the Auditorium west wing has been let to the H. K. Ferguson Company and that work has been started on the building, which will be ready in ample time to accommodate exhibitors.

Director of Exhibits Fred Dell reported that up to the close of business July 29, 112,916 sq.ft. of space had been assigned to 202 member companies, and comparing this figure with the figures on the same date the previous year it was found that there were thirteen more exhibitors using 25,648 more square feet of space, 87,268 sq.ft. having been allotted on July 29, 1925.

So far as track space is concerned, Mr. Dell reported that seven companies had applied for 720 lineal feet in Section D, on which street cars will be shown, and that additional applications were on the way for street car space. The committee was also advised that four companies would show operating maintenance of way exhibits in outdoor covered track space, known as Section E and totaling 120 lineal feet. In connection with the exhibit of improved cars, which the committee is anxious to stimulate, C. R. Ellicott suggested the advisability of having the association sponsor an exhibit of obsolete as well as modern cars for the purpose of bringing out the progress which has been made in car developments.

Chairman Cotsworth of the entertainment committee announced that his committee has definitely decided on just what activities will be arranged for the entertainment of delegates and their ladies, and while the committee has its plans under way, it has been decided not to make them public at the present time, the committee's opinion being that the element of surprise would greatly enhance the effect of the various entertainment features.

Transportation arrangements for the convention, handled by a committee under the chairmanship of Edwin C. Faber, will follow the plan used last year, that of dividing the country into six zones with a sub-chairman in charge of the arrangements in each zone. Special trains will be run from important cities through the country. Discussion brought out the importance of having delegates make arrangements to arrive in Cleveland on Sunday in order to avoid congestion of registration Monday.

The 45th annual convention of the A.E.R.A. promises to be the largest and most successful ever held by this organization, and from the advance requests for hotel reservations, as reported by Paul Wilson, chairman of the hotel and housing committee, it seems a foregone conclusion that the attendance and registration will be the heaviest for which the association has ever had to prepare.

A sample of an association flag prepared by a committee of which T. W. Casey is chairman was inspected and accepted by the executive committee. Mr. Storrs reported on the re-establishment of the Anthony Brady medal, which was discontinued during the war. This is to be awarded to the company making the best contribution toward increasing safety of railway operation.

For the Engineering Association, President C. R. Harte reported the resignation of M. B. Rosevear from the Engineering Association executive committee. Reports of various engineering committees are being completed and plans are being made by the engineering group to build interest and stimulate discussion of current problems during the convention.

President G. H. Clifford of the Transportation and Traffic Association, said that the convention program of that association has been practically completed and will follow very closely the transportation phases of the general topics contemplated in the A.E.R.A. program.

Regarding the work of the committee on co-operation with manufacturers, Chairman E. F. Wickwire discussed a plan for preparing a series of electric railway slogans.

On the subject of education, Chairman Edward Dana said that various prominent railways have agreed to send representatives to participate in the special foreman's conference planned for the convention program. An effort is also being made by the committee to prepare an exhibit of educational work at the convention.

The insurance committee, through its chairman, Paul Wilson, reported that there is from $13,000,000 to $15,000,000 more insurance carried by the electric railways in 1925 than in 1924 at a reduction in the total premium. Despite this fact, however, the committee is of the opinion that the rates are still higher than are justified by the loss records of the industry. Relative to bus depreciation, Chairman L. H. Palmer could report only progress in the studies of this subject, because there has not yet been enough experience to determine what a fair rate should be. Director of Publicity Labert St. Clair reported for the committee on public speaking in the absence of B. I. Budd and said that the work of this committee is being handled largely by the local organizations set up in various districts.

Both Mr. Storrs and Mr. Hecker discussed the work of the committee on essential features of modern cars. Mr. Hecker indicated the cost of publishing this information according to the recommendations made by the executive committee of manufacturers, which received the report. It was recommended that a certain number of paper-covered copies be prepared as pamphlets, together with a number of bound copies for distribution and sale to member companies. The executive committee approved the recommendation to print 3,500 copies, of which 1,500 are to be bound in book form.

On the subject of special taxes, A. T. Davison, chairman, outlined the progress of his committee's work. He discussed plans of the committee for making a study of the tax situation in various states by appointing representatives to co-operate in this work for each state. It is the intention of the committee to handle this subject as a general utility problem, and it was suggested that the final recommendations resulting from the committee's studies be submitted to various state associations, where they existed, for preliminary approval before final adoption. These tentative plans were approved by the executive committee.

J. K. Newman addressed the committee on the general subject of publicity and outlined the need for a coordinated national campaign.

Resolutions Commemorating Work of Charles A. Coffin in Transportation Field, Passed at Executive Committee Meeting of the American Electric Railway Association July 30

Thirty-eight years ago Charles Albert Coffin had the vision to see the future of street railway electrification and the far-reaching economic and social effects which it would have on our urban population. With him seeing was acting. He promptly inaugurated a department for the development of that business in his own company, and encouraged his engineers to make researches and experiments in the street railway field. At that time there were a number of important patents affecting, and many skilled and able men interested in, the project, but there was a great need of finance and organization to enable the men and the inventions to function in the public interest. It was this binding influence which Mr. Coffin supplied with his own energy and personality.

The General Electric Company in 1922 made available "A gold medal, to be known as the 'Charles A. Coffin Medal,' to be awarded annually to the electric railway company within the United States which, during the year, has made the most distinguished contribution to the development of electric transportation for the convenience and well-being of the public and the benefit of the industry." This award is symbolic of the fruitful service which Mr. Coffin has rendered our industry and our nation.

The American Electric Railway Association takes proud cognizance of these facts, and its executive committee has adopted this memorial and directed that it be spread upon its record and be sent to Mrs. Coffin, with the sympathy of the association.

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Mr. Shannahan, as chairman of the nominating committee, read that committee's recommendations for officers and members of the executive committee to fill expiring terms: President, W. H. Sawyer, president East St. Louis & Suburban Railway; first vice-president, R. P. Stevens, president Republic Railway & Light Company; second vice-president, James P. Barnes, president Louisville Railway; third vice-president, Paul Shoup, president Pacific Electric Railway; fourth vice-president, J. H. Hanna, president Capital Traction Company; treasurer, Barron Collier, president Barron G. Collier, Inc.

For operating and manufacturer members of the executive committee at large for the three-year terms expiring in 1929 the following nominations were made: Operating members—Luke C. Bradley, president Virginia Electric & Power Company; C. E. Groesbeck, vice-president Electric Bond & Share Company. Manufacturer members—Harry L. Brown, secretary the Ohio Brass Company; T. W. Casey, vice-president National Pneumatic Company; Edwin B. Meissner, president and general manager St. Louis Car Company.

The adoption of these names was unanimously approved by the executive committee.

Attendance at the meeting included the following: President Frank R. Coates, W. H. Sawyer, James P. Barnes, Lucius S. Storrs, Barron Collier, J. N. Shannahan, J. H. Hanna, E. F. Wickwire, B. A. Hegeman, Jr., M. B. Lambert, S. J. Cotsworth, Charles R. Ellicott, Charles L. Henry, C. R. Harte, G. H. Clifford, J. W. Welsh, Paul E. Wilson, L. H. Palmer, E. T. Faber, A. T. Davison, Edward Dana and J. K. Newman.

Transportation & Traffic Executive

REPORTS of the various committees of the Transportation & Traffic Association were submitted to the executive committee for approval at a meeting held at association headquarters, New York, July 29. With minor amendments the reports of the committees on accident prevention, traffic congestion and merchandising transportation were approved. For the committee on bus operation, J. B. Stewart, Jr., chairman, reported that the work had not yet been completed. For that reason copies of the report when ready will be sent to the members of the executive committee for their consideration, and they, in turn, will transmit their suggestions for approval to J. V. Sullivan, sponsor.

Plans for the convention program were tentatively agreed upon. The report of the committee on merchandising transportation will be presented on Monday, Oct. 4. It is planned that this report, with its discussions, will consume the first two hours of the session. This will be followed by several speakers on publicity and advertising as applied to merchandising transportation.

A joint session with the Claims Association will be held on Tuesday, Oct. 5. The report of the committee on traffic congestion will first be presented and discussed. It is expected that this will occupy approximately one hour of the program. Following this the report of the joint committee on accident prevention will be presented and discussed. The executive committee is anxious that there be brought out fully in the discussions the necessity of the closest kind of co-operation between the claim department and the operating department, in order that accidents may be reduced to a minimum.

No regular sessions of any of the associations will be held on Wednesday, Oct. 6, as in past years this day has been set aside exclusively for the inspection of manufacturers' exhibits.

Thursday, Oct. 7, will be devoted entirely to a presentation and discussion of the report of the committee on bus operation. It was stated that the supply of pamphlets entitled "Bus Rules" drafted by the committee on trackless vehicle operation in 1924 had been exhausted and that it was planned to have a new supply printed. These rules are to be forwarded to the chairman of the present committee on bus operation with the request that he review them and suggest necessary modifications, after which they will be reprinted.

The next meeting of the executive committee will be held at the Hotel Hollenden, Cleveland, Sunday evening, Oct. 3, at 8 o'clock. Election of new officers of the association will be held on Monday afternoon, Oct. 4.

Those present at the meeting were: G. H. Clifford, chairman; Samuel Riddle, J. V. Sullivan, E. M. Walker, Paul E. Wilson, George B. Anderson, W. H. Boyce and J. W. Welsh.

Many Additions to Association Membership

NUMEROUS applications for company and associate membership in the American Electric Railway Association received since May 14 were approved at a meeting of the executive committee, July 30. These include two railway companies, 28 manufacturing companies and 24 individuals. Following are a list of company applications:

Cincinnati, Georgetown & Portsmouth Railroad, Cincinnati, Ohio.
Cincinnati Street Railway, Cincinnati, Ohio.
Ahlberg Bearing Company, Chicago, Ill.
American Brown Boveri Electric Corporation, New York, N. Y.
Baker-Raulang Company, Cleveland, Ohio.
Cleveland Tanning Company, Cleveland, Ohio.
D'Arcy Spring Company, Kalamazoo, Mich.
Joseph Dixon Crucible Company, Jersey City, N. J.
Erie Malleable Iron Company, Erie, Pa.
Falls Rubber Company of Akron, Inc., Akron, Ohio.
Kelton-Aurand Manufacturing Company, Bay City, Mich.
Macdonald Manufacturing Company, Cleveland, Ohio.
Manley Manufacturing Company, York, Pa.
Metropolitan Coach & Cab Corporation, Cleveland, Ohio.
Mohawk Rubber Company of New York, Inc., Akron, Ohio.
Motor Improvements, Inc., Newark, N. J.
Motor Products Corporation, Detroit, Mich.
North American Railway Construction Company, Chicago, Ill.
John C. Paige & Company (insurance), Boston, Mass.
Rollway Bearing Company, Inc., Syracuse, N. Y.
Phoenix Ice Machine Company, Cleveland, Ohio.
Pneumatic Scale Corporation, Ltd., Norfolk Downs, Mass.
Scovill Manufacturing Company, Waterbury, Conn.
Sisson Supply Company, New York, N. Y.
Stengel & Rothschild, Inc., Newark, N. J.
Vellumoid Company, Boston, Mass.
W-A Manufacturing & Sales Company, Newark, N. J.
Wellman Bronze Company, Cleveland, Ohio.
Leon L. Wolf Waterproof Fabric Company, Cincinnati, Ohio.
Wright Rubber Products Company, Racine, Wis.

Latest Bulletins Available

SPECIAL reports have been prepared and are available to member companies upon request, as follows:

Bulletin No. 93. Analysis of Wage Agreements on Interurban Lines.—An analytical digest of the provisions appearing in the labor contracts of a group of representative interurban companies, arranged in such a way as to make possible a ready comparison of working conditions.

Bulletin No. 94. Motor Bus Operations in California.—Contains a comparison of the results of motor bus operations of class A companies in California in 1924 and 1923, including comparative income statement, balance sheet and operating statistics. Also contains the individual income statements, balance sheets and operating statistics reported to the California Railroad Commission by all class A companies for the calendar year 1925. Freight as well as passenger operations are included. Extracted from the annual report of the California Railroad Commission for the year ended June 30, 1925.

Bulletin No. 95. Recent Developments of One-Man Car Operation.—Containing complete list of electric railways now operating one-man cars, showing the number of cars operated by each company. Also gives a comparison of the results of operations with one-man and two-man cars, including the comparative accident record of each; and a record and summary of all recent cases in which the legality or propriety of operating one-man cars has been attacked.

Bulletin No. 96. Rate of Return Allowed Electric Railways.—Extracts from decisions of public utility commissions in which the rate has been fixed after an official determination of the amount upon which the company is entitled to earn a return. This is a new edition of Bulletin 18 of April 1, 1925, and includes decisions handed down since that date.

Bulletin No. 97. Traffic Ratios, Part 3. Combination City and Interurban Lines.—A tabulation of figures derived from the operating reports of these companies for 1925. Included in the data given are average speed, revenue passenger per car-mile, per mile of track, and per car operated, the operating ratio, revenue per mile of track, operating income, etc.

In addition to the above, the following supplements have been prepared, bringing the information they cover down to Aug. 1, 1926:

Supplement No. 5 to Trainmen's Wage Bulletin No. 69.
Supplement No. 5 to Busmen's Wage Bulletin No. 70.
Supplement No. 11 to City and Interurban Fare Bulletin Nos. 40 and 41.
Cost of Living Studies (Bulletin No. 98).

A cumulative list of the reports and bulletins of the Bureau of Information and Service is now available to member companies. This includes all bulletins issued in the past, of which there is now on hand sufficient supply to meet the request of members that may be interested.

New England Outing Held

MEMBERS of the New England Street Railway Club and office employees of the Cumberland County Power & Light Company recently held a joint outing at Long Island, near Portland, Me. This was the annual picnic of each organization and was well attended. A baseball game and various other sporting events were on the program, which included also a sail on Casco Bay and a clambake.

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The News of the Industry

New Plan for Subway in Chicago

A new subway plan for Chicago, calling for a tube under State Street from Chicago Avenue south to Twelfth Street and another under Jackson and Washington Boulevards from Michigan Avenue west to Clinton Street, is soon to be submitted to the local transportation committee of the City Council by the Citizens' Subway Commission. The commission is composed of representatives of loop property owners, hotels, banks and theaters.

The plan, some of the outstanding features of which were made known recently, differs from numerous other subway schemes that have been proposed for Chicago, particularly in its recommendations for a reduction in the number of streets in which bores should be made.

Instead of an initial subway under State Street from North Avenue to 22d Street, the recommendations of the commission will probably be for the construction of a much shorter line at a saving of millions of dollars.

It is reported that the existing Washington and Van Buren Street tunnels, now used by surface cars in passing under the Chicago River, will be used in connection with a loop in Washington and Jackson Boulevards for east and west subways. This loop would be exclusively for street cars, while the north and south subway on State Street would be for the elevated lines alone.

The cost of building this initial system, which is based on operating unification of the traction lines as provided for in the ordinance now pending, will be defrayed by special assessment. The general public benefit will be paid out of the city's $45,000,000 traction fund.

Invaluable work has been done by the commission in organizing downtown property owners into a group that has indicated almost unanimous willingness to stand assessment for subway construction.

The commission has announced that it is also prepared to recommend a number of extensions of the elevated lines, action on which has long been delayed.

Confusion Continues in Columbia

The transportation tangle in Columbia, S. C., with jitneys, street cars and 29-passenger buses all playing a hand, is still giving the City Council some uneasy moments.

The Columbia Chamber of Commerce recently took some small part in the affair, but has definitely withdrawn, leaving the matter in the hands of the City Council. The Carolina Transit Company, which operates the bus lines, addressed the Chamber of Commerce to the effect that unless the 10-cent jitneys were curtailed in their operations, it, the bus company, would be compelled to discontinue operations. When the bus company began operating lines covering practically all of the city, street car service, with the exception of three lines, was discontinued, so that no competition might be offered the bus company by the trolleys, and the railway was apparently glad to get out, it claiming that it was losing steadily, month by month. The bus company manager, Chester Hawkins, was of the opinion that if the buses were allowed to operate untrammeled they would be able to drive out the jitneys, but this belief has proved erroneous and the jitneys, to the number of about 130, operate daily with no set schedules and without having any fixed routes.

City Council has an ordinance to the effect that operators of jitneys and transfer cars must carry bond in the sum of $250. This ordinance has only recently become effective. It was thought that its enforcement would push the jitneys to the wall, but the operators of jitneys and other conveyances plan to organize a bonding company of their own.

There was some talk of having the railway restore its service on the lines discontinued when the buses began operating, but the State Railroad Commission, which has charge of this matter, apparently has no intention of requesting the railway to operate its lines at a loss.

Jail Sentences for Indianapolis Men

Strike Leaders Who Pretended Not to Take Seriously a Court Order Are Committed by U. S. District Judge Baltzell—A Review of the Proceedings and the Statements that Caused the Court to Act

NINETY days in jail was the sentence imposed upon John M. Parker and Robert B. Armstrong, vice-presidents of the Amalgamated Association and organizers of the employees of the Indianapolis Street Railway, Indianapolis, Ind. Sentence was passed on July 31 by Judge Robert C. Baltzell in the United States District Court. Both men, together with nine others, were charged with violating the terms of an injunction issued on July 3 relating to the strike.

Steps will be taken to appeal the decision, but the two organizers have been in jail since July 28, when they were found guilty in court, after a hearing which lasted most of the day.

In passing sentence on Parker and Armstrong the judge remarked that their case was the most flagrant of its kind that had come to his attention. Looking at Parker, the court said:

> You bragged in a speech to the union the morning the strike vote was taken that if you were cited for contempt you would appeal the case. You are going to have that opportunity.

Albert Ward, United States district attorney, said the government would oppose bail for Parker and Armstrong pending appeal. Attorneys for the men asked for 60 days to file a bill of exceptions, but this was opposed by Mr. Ward, who said that evidence would be submitted to court on the right of the defendants to a writ of *supersedeas*.

Eight other men, all former employees of the Indianapolis Street Railway, were before the court for disposition of their cases. One man, who had been found guilty, was not present.

Efforts were made the afternoon of July 30 by R. D. Bland, Detroit, secretary-treasurer of the Amalgamated Association, and attorneys for the organizers to end the strike, but the strikers protested.

In the meantime operatives of the Department of Justice are preparing for the return of Harry Boggs from West Virginia. Mr. Boggs is temporary president of the Indianapolis union and is wanted for violation of the court injunction.

At the last meeting of strikers it was voted to request the entire labor movement of Indianapolis to stage a demonstration against the action taken by city and state officials in connection with the strike. A resolution also was passed at the meeting urging "that a request be made at the next American Federation of Labor convention, to be held in October at Detroit, that all money, stocks and bonds be withdrawn from the banks of Indianapolis and deposited in Washington, D. C."

At the offices of the railway it was said that on July 31, 30 former employees applied for their old positions. James P. Tretton, superintendent, said that in cases in which it was found that the record of the former employee was good and officials were convinced he had not taken part in any acts of violence during the strike, the man would be re-employed, but seniority rights would be forfeited.

Edgar Day, former employee, convicted of contempt by a jury, was sentenced to 30 days in jail and fined the amount of the costs in the case. The cases of seven other former employees who pleaded guilty to the contempt charges were disposed of as follows:

Everett Ellis, twenty days in jail; Russell Bane, who provided the government with most of its information, taken under advisement and released on his own recognizance; John Frakes, twenty days in jail; Oscar Southern,

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ten days; Joe Wittington, ten days; Mervin McNew, taken under advisement and released.

Everett Talley's case was taken under advisement. Most of the minor offenders had been in jail ten and eleven days before sentence was passed, but all sentences are from the day of issuance.

Jefferson Fade, who was convicted by the court, was sent back to jail without sentence. At the time of his conviction the court told Fade if he could get a reliable citizen to vouch for his good behavior the court might release him.

When Judge Baltzell called Parker and Armstrong before him he asked whether they had anything to say and whether they felt they had violated the injunction. Both said they had not intended to violate the injunction.

"What do you think would be the natural effect of your speeches in a meeting of 800 men?" the court asked.

"Your Honor, we had no intention to violate the injunction in those speeches," said Parker. "I have been served with several injunctions and never before have been convicted of violating any of them. It's the way you read those speeches that counts, your Honor."

"The speeches," interrupted Judge Baltzell, "contain boasts that you have been able to defy courts and I never have seen a more contemptuous case. The more I read those speeches, and I have read them several times, the more convinced I am of their contemptuous character."

"Those speeches," said Parker, "were made within an hour after the injunction had been served upon us by the United States marshal. We did not have legal advice as to what would constitute a violation of this injunction. All we two knew was just what we could read in the injunction. Had we had time to dissect the injunction we would not have made any utterances that might be construed to be in contempt of court."

"But," came back the judge, "you say you have read more injunctions than Will Latta or even myself, that you know about injunctions. You said this in your speech."

In commenting on the jail sentence, the court said that "to fix a fine in this case merely would mean the fixing of a license fee for contempt of court. That would permit you to go free and know the price to be paid for future violations in case you saw fit to be in contempt again."

Day, Ellis, Bane and Frakes were alleged to have met at Day's house and planned acts of violence. Following the meeting, stones were hurled at street cars, wires were thrown over trolley wires and explosives placed on the tracks. Southern, Wittington, McNew and Talley were alleged to have hurled stones at cars and to have committed other acts of violence. Fade was found guilty of having called another employee a scab and to have influenced Jacobs to quit working for the company in violation of his labor contract.

Speeches made by John M. Parker and Robert B. Armstrong, organizers for the Amalgamated Association, at the meeting at which a strike was called got them into jail. In order that the organizers might not be misquoted, they had a court reporter at the meeting to take down exactly what was said. This reporter, put on the witness stand in federal court by the defendants' own counsel, read what had been said.

The court then said to the defendant attorneys:

> I don't see how a lawyer can listen to these speeches and honestly tell me, as an officer of this court, that there has been no violation of that injunction.

Parker was quoted:

> I don't know anything about the interpretation of this injunction any more than to read it, but I say that I have read more injunctions than Bill Latta or Watson and, I say it without fear of contradiction, Mr. Judge Baltzell himself. I know something about injunctions. I have a bushel basket full of them home, if anybody wants to look them over, and it doesn't worry me very much.
>
> I never violated an injunction, never was cited for contempt of an injunction, and I want to say to you men that it has been broadcast over this city that I was indicted for dynamiting. I have a telegram in my grip in the hotel received about three weeks ago stating that those charges have been wiped off the books. So that I am not indicted at the present time for anything.
>
> So now, brothers, I am going to quit and give Brother Armstrong an opportunity to say something to you. I have tried to make my position clear. I do not want anybody to misquote me in this hall. I say I am going to live up to every letter in that contract as interpreted to me by our attorneys, who are paid for that advice. If some one wants to make an affidavit that we have counseled you men tonight, then they can cite us for contempt of court. If they cite us for contempt, we will take our medicine, but I dont think they are going to do it, and if Judge Baltzell rules against us you can take this message to the judge that we are going to appeal from his decision. We are not going to take his decision on it.
>
> I am not going to take up very much more of your time. I am going to say this to you, that our attorneys have informed us, which the injunction reads, that we are the plaintiffs, Brother Armstrong and myself—or the defendants rather—and that we are enjoined from advising soliciting you or in any manner whatsoever trying to intimidate you to do anything.
>
> I say again we are going to live up to that order. We are not going to, or wouldn't if there wasn't any injunction, advise you men either to strike or not to strike. There has never been mention made in this hall or any other hall by Brother Armstrong or myself up to the present time about a strike.
>
> They have said on different occasions on June 2 that we were going to strike. We had no intention of striking, because at that time we had only about 750 men. We have been perfecting this organization for the last month, and if I am any judge of human nature, by G-d, it is pretty near perfected.

Another paragraph read:

> So we have tried and exhausted all our efforts to bring about some peaceable settlement for you men. We have been to the Governor of the State through the mediator and conciliator of labor, Mr. Dynes, we have been to his Worship Mayor Duvall, on two different occasions. On the last time, last Monday, he dictated a letter to Mr. Todd requesting him to meet us in conference and settle this question and dispute, and anything that could not be settled to submit it to the Public Service Commission for arbitration. So that we have nothing in view at the present for you.

In the meantime attorneys continue their activities toward perfecting an appeal from the contempt judgments. In addition to appealing the cases of Parker and Armstrong, Frank P. Baker, chief counsel for the men, said he would appeal the case of Edgar Day. Mr. Baker said:

> The cases involve the question as to the right of the court to issue an injunction which enjoins men from giving advice to the employees. If the Clayton act applies to these cases, there is no question as to the innocence of Parker and Armstrong. The Clayton act provides that no court can issue an injunction to prevent men from advising employees of a company in such a case as this was.

Judge Robert C. Baltzell ruled that the Clayton act did not apply and that under the law Parker and Armstrong were not entitled to a jury trial. Mr. Baker said he would ask for bond for the defendants pending their appeal. Albert Ward, United States district attorney, said the government would oppose granting of bond and "the government may have some evidence to present on that bail question."

As to Day's case, Mr. Baker said he did not think that the injunction would be enforcable as to him because, he believed, it could not be made to apply to a man not a party to the suit.

Parker and Armstrong continue in jail. Little is heard of disorders on the cars, but isolated acts of vandalism are being committed.

New Chicago Traffic Film Being Prepared

"The Magic of Transportation," a two-reel motion picture film, produced by the Chicago Surface Lines was received so favorably during the past winter season that a new film is now in the course of preparation.

"The Magic of Transportation" tells the story of the development of electric street car service in Chicago and shows some of the problems faced in street car operation and the importance of street cars to city life. It was shown during the past winter and spring to audiences totaling nearly 100,000.

The new picture will emphasize the difficulties which must be overcome in providing regular and adequate railway service. It will show the effects of interferences of other vehicles with street cars and such obstacles as flooded subways under railway crossings, fires and snowstorms. The picture will be ready for use early in the fall and, like "The Magic of Transportation," will be shown before schools, clubs, civic organizations and similar audiences.

Information compiled by the publicity department indicates that motion pictures are an important factor in creating better public relations.

Plea for Paving Relief in Denver

Despite the material growth of the population of Denver, the Denver Tramway Corporation carried 11,000,000 fewer passengers in 1925 than in 1910. Moreover, gross receipts are declining. These facts are set forth in a petition filed by the company with the City Council of Denver to show cause why the company cannot meet paving assessments.

Total passengers carried were 68,000,000 in 1910 and 57,000,000 in 1925. The petition points out that the company is now paying 13.21 per cent of its gross income for imposts and taxes.

Since 1906 wages have advanced from 22 cents an hour to 59 cents. Materials have advanced 100 per cent in the same period. The fare is 8 cents, two tickets for 15 cents, compared with 5 cents until a few years ago. Gross revenue has declined from $5,219,094 in 1922 to $4,814,212 in 1925. On a valuation of $24,018,047, the corporation is earning 4.22 per cent, or more than 3 per cent less than it is legally allowed.

The company is 30 miles behind in its paving work.

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Hearing Starts on Rerouting in Baltimore

The Maryland Public Service Commission on Aug. 3 opened a series of hearings for the purpose of considering changes in the routes of the United Railways lines in Baltimore as recommended by the recent survey of the Baltimore Traffic Survey Commission. The first group of proposed changes considered was known as No. 1 and included nine lines. At the same time this subject was taken up by the commission that body also heard testimony in regard to another recommendation made as a result of the survey. This was to make the City Hall, at Holliday and Fayette Streets, the western terminus of the bus lines operating between the center of the city and the eastern territory, along Fayette Street. The United operates a line of buses along the Fayette Street route and there also are several independent operators.

Most of the discussion before the commission was in regard to the proposed change in the bus terminus. Several of the independent operators declared that 80 per cent of the passengers on the buses are carried to and from points beyond that which the survey commission wants used as the terminus and that to make the change would mean that their business would be ruined.

H. B. Potter, vice-president of the United, explained the advantages and disadvantages of the proposed changes embodied in Group No. 1. Track construction and other necessary work incident to the changes proposed in Group No. 1, he estimated, would cost $12,000 and it would require at least three months to make. He said, however, that the United does not want to carry out the rerouting plan until all details of the report made by the Survey Commission are ready to be put into effect.

Rebuilding Program at Cincinnati to Be Speeded

To permit the Cincinnati Street Railway, Cincinnati, Ohio, to proceed with an accelerated program of improvements, the City Council has passed an ordinance allowing the railway to borrow $400,000 so that the betterments may be made within three instead of four years. The money will augment the amounts to be paid into the special depreciation reserve fund as provided for in the franchise ordinance passed last August. The ordinance just passed by the City Council permits the railway to borrow the money in the open market or to take it out of any funds in which the amount is available, except the fare control fund. The franchise ordinance provides that the railway must rehabilitate its system by Dec. 31, 1929, and that each month it must set aside a sum sufficient for that purpose so that an aggregate of $1,750,000 may be expended for betterments within that period. The action of the City Council enables the company to make these improvements within three years and to advance the financing of the fourth year by borrowing the money. By following this procedure the railway also will be enabled to keep pace with the street improvement program of the city. It was at the suggestion of C. O. Sherrill, city manager, that the work has been accelerated.

Westchester Road to Continue

Trolley cars will continue to be operated on the lines of the old Westchester Street Railroad, which was officially taken over on July 28 by the Third Avenue Railroad through its subsidiary, the Union Railway. S. W. Huff, president of the Third Avenue Company, declared he felt sure that trolleys would give a less expensive and more satisfactory service than the proposed bus lines. He also explained that it would be practically impossible to install bus service, as that would necessitate obtaining the permission of every municipality on the proposed routes.

Mr. Huff said that he proposed to give Westchester its best trolley service in many years. Twenty cars from the Third Avenue Company's surplus stock will be substituted immediately for the old equipment formerly in use. Also, on the Tarrytown-White Plains line the headway will be cut from twenty to ten minutes. Mr. Huff admitted that a 5-cent fare cannot be maintained and said that application will soon be made to the Public Service Commission for permission to collect a 10-cent fare in each zone.

Service will be resumed at once on the Silver Lake Park line, which was abandoned June 1, and will be continued on the Tarrytown, Scarsdale, Mamaroneck Avenue and White Plains lines.

Tunnels Suggested for Providence

A subway system which would eliminate electric railways from the surface of the streets in the center of Providence, R. I., has been devised by William W. Lewis, Boston subway expert, who was retained by the city to assist Robert Whitten, city planning expert, in devising relief of traffic congestion.

Mr. Lewis's plan consists of two tunnels, one to run approximately north and south and the other approximately east and west, the latter connecting with the present tunnel to the East Side. The tubes would deliver passengers beneath Exchange Place Plaza, where they would run parallel. That location would serve as the transfer point for all sub-surface lines. The total length of the two tunnels would be 2.832 miles, and the average cost of construction per mile would be $5,714,000.

According to the plan the East Side tunnel would continue to carry its present trolley lines, and, in addition, it might carry the lines now using Washington bridge, which would be rerouted through Fox Point to enter the tube at Thayer Street.

It is believed that eventually the East Side tunnel will be continued to the Seekonk River, thus caring for all lines bound the East Side or to East Providence, and relieving Waterman and Angell Streets of trolley traffic. In such case the Fox Point section would also be relieved of all trolley traffic except that which originated therein.

Jitney Fight Renewed in Detroit

Jitney drivers are again operating in Detroit, Mich., unmolested after having been "written up" or taken to the automobile pound for any possible infraction of the traffic ordinance. The contempt case of the jitney drivers' associations against Police Commissioner William P. Rutledge and fourteen Detroit policemen is pending and the hearing is to be resumed on Aug. 10.

Last week Judge Dingeman of the Circuit Court issued an order restraining the police from interferring with the operation of the jitneys. When no longer permitted to keep the jitneys from taking on passengers at their regular loading stations as usual, the police commissioner placed traffic officers at the various points with instructions to give the drivers tickets for violating in any way the city traffic ordinances. This action is claimed by the attorney for the jitney drivers to be in contravention of the United States Supreme Court, the Michigan Supreme Court and the Circuit Court orders.

The writ of error issued by the United States Supreme Court stating that federal questions were involved in the case caused the Michigan Supreme Court to issue a stay of proceedings and to revive the original injunction issued by Judge Hunt in 1923, which allowed the jitneys to operate unmolested until the recent attempt of the police department to drive them off the street, following the ruling of the Michigan Supreme Court that the jitney ouster ordinance was valid.

Meanwhile a contract has been entered into between the Department of Street Railways and Thomas J. Doyle, representing Dodge Brothers, Inc., for a rental of 50 single-deck motor coaches, each with a seating capacity of 21 passengers; one double-deck 60-passenger coach and one single-deck 29-passenger coach. These buses will care for traffic formerly handled by the jitneys. The contract covers payment on a mileage basis, and in the case of the 21-passenger buses can be applied on the purchase price in event the department decides to buy them later. Forty of the buses are to be put on the Woodward Avenue run between the Detroit River and the Six-Mile Road. A statement issued by the Mayor following the meeting of the Mayor and the Street Railway Commission is quoted:

> The operation of the jitneys has been a serious drain on the revenues of the Department of Street Railways. If we are to accept as correct the figures of the jitney associations, the D. S. R. has lost in a period of four years approximately $6,000,000 of revenue, or an amount which would reduce by more than half the present outstanding indebtedness to the Detroit United Railway.
>
> The Department of Street Railways is being asked daily to establish new routes in outlying territory. It is conducting many of these routes at a loss trying to serve the public. It needs additional buses and cars and funds to repair its tracks and foundations. If it is to give the public adequate service without increase of fares, it is entitled to receive all the revenue from passengers immediately tributary to its existing lines.
>
> Further, it has been the policy of the present administration to establish new routes without asking for additional bond issues. It will be impossible to continue this policy if the courts permit unfair competition with the city lines.

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Rate of Return a Stumbling Block at St. Louis

Mayor Victor J. Miller of St. Louis, Mo., has stated that he will insist upon a provision in the new franchise ordinance under which the St. Louis Public Service Company will operate when it takes over the property of the United Railways Company limiting the rate of return on the investment at not more than 6 per cent.

He declared that the next move in the negotiations is up to the company, and that when representatives of the reorganizers decide to accept a 6 per cent return and so notify him negotiations will be continued. Until that time, he said, there is nothing further to negotiate.

The reorganization committee contends a return of 7 per cent is necessary.

When the tentative draft of the service-at-cost franchise was made public by Mayor Miller a few weeks ago the rate of return to be allowed the company was left blank. In the tentative draft the valuation was also blank. Both sides have agreed to abide by the findings of experts of the State Public Service Commission covering this point.

Stagger Plan Nearer in New York

Tabulation was begun on Aug. 2 of traffic census statistics taken in New York City in connection with the effort to be made to stagger the hours of workers. Health Commissioner Harris has announced that figures on 20,000 workers a day can be tabulated. When they have all been classified the actual question of staggering their hours will be taken up with the employers. The tabulation work is the classifying of information about where each worker works, what time he leaves for work, what time he quits work and what routes he uses. After this has been accomplished, "action can then be taken to broaden the rush-hour periods so that passengers may travel in comparative safety and comfort." The success of the plan will, of course, depend upon the extent of the co-operation of the employers.

Seattle Cuts Railway Budget, While Employees Ask Raise

The finance committee of the City Council of Seattle, Wash., has asked the Municipal Railway Department to cut its budget estimate from $6,618,405 to $5,750,000.

Asked where the committee could make cuts, D. W. Henderson, general superintendent, said $100,000 might be cut off by reducing the number of trainmen, $100,000 from way and structures and $100,000 from supplies. He explained that he had made no recommendation for revamping any more cars to the one-man type because of the cost.

In the meantime the City Council has under consideration a request from 1,200 street railway employees for increased wages. Trainmen ask that their compensation be advanced to 75 cents an hour, a 5-cent increase over the present wage; shop employees ask an increase from $6 to $6.25 a day to $7 and $7.25, while track workers, now paid by the day, ask to be placed on a monthly basis.

Municipal Railway Employees Want More

An increase in wages of 40 cents a day for the four classes of employees of the San Francisco Municipal Railway, San Francisco, Cal., not affected by the recent raise for platform men is asked in a communication to the Board of Supervisors by the San Francisco Labor Council. The resolution asks that the Board of Supervisors request Mayor Rolph to ask the Board of Public Works to authorize the increase in pay. The four classes of workmen named are janitors, car repairers, trackmen and clerical employees. The request is based on the fact that the Board of Supervisors intended that all employees of the railway should be benefited when it adopted the resolution affecting the platform men.

Two-Man Cars Restored on Chicago Line

As a result of an investigation by the local transportation committee of the Chicago City Council into an alleged frequency of accidents on the 79th Street crosstown line of the Chicago Surface Lines, the company has agreed to replace the 26 one-man cars which it now operates over this line with standard two-man cars. The one-man cars were installed three years ago in order to give a more frequent headway, and the number of rides on this line has increased rapidly since then. Due to this fact and to the extreme narrowness of the thoroughfare the number of accidents recently has shown a large increase. Automobiles can pass street cars only at street intersections, thus increasing the hazard to passengers boarding and leaving cars at the front end.

Illinois Traction Building Belt Line Around Twin Cities

In compliance with an ordinance passed by the city of Champaign, Ill., which prohibits the hauling of freight through its streets, the Illinois Traction System has entered into a compact with the Illinois Central and the Wabash Railroads, giving the traction system a 6-mile belt line around the twin cities of Champaign and Urbana.

The two steam roads have agreed to electrify certain sections of their track and lease them to the electric line. Practically all of the wire has been strung and the Illinois Traction System is now constructing spur tracks to connect with the Wabash and Illinois Central tracks. Completion of the work, estimated to cost about $200,000, is expected early in the fall.

By virtue of this arrangement, the traction system will be enabled to operate standard M.C.B. equipment over the entire length of the Danville Division and thus considerably increase its line haul. The new line will also accommodate longer trains and provide improved freight house and team track facilities.

Franchise at Louisville to Be Taken Up Again

It is expected that the new ordinance of the Lousville Railway, Louisville, Ky., introduced recently, will come up before the City Council for discussion or action in early August. The delay in considering the franchise grant has been due in part to the absence of Mayor A. A. Will.

Plans Being Matured for Construction of Illinois Roads

Permission to build the first railroad to enter Calhoun County, Illinois, has been asked of the Illinois Commerce Commission at Springfield, Ill., by promoters of the Alton, Quincy & Northern Electric Railroad. It will be a southern branch of the Quincy & Northeast Railway. Preliminary surveys have been run for the new line. It will be 120 miles between Alton, Ill., and Quincy, Ill., and tentative plans are to start construction within two years.

The new line has not definitely decided on its route through Madison and Jersey Counties out of Alton, but plans to bridge the Illinois River near its mouth at Grafton to enter Calhoun County and to cut backward southwest to the little town of Deerplain. Thence it will pursue a northerly direction.

It is proposed to handle both passenger and freight with a new type of Diesel electric engine.

Charles H. Petsch, New York, is head of both undertakings.

Two-Car Train Constructed by Twin City Company

Experiments are being conducted with a light-weight two-car train recently built by the Twin City Rapid Transit Company, Minneapolis, Minn. One of these cars was recently demonstrated in the Home Products Show held in St. Paul and mentioned briefly in the issue of ELECTRIC RAILWAY JOURNAL for July 3. It is planned to place additional units such as those which constitute this train into service in the Twin Cities, with certain modifications in their general construction, if the results of the tests now being conducted are satisfactory.

Restoration of Intercity Service Urged at Kansas City

The Chamber of Commerce of Kansas City, Mo., will urge a restoration of electric railway service between Kansas City, Mo., and Kansas City, Kan., via the Eighth Street tunnel through the construction of an incline. The chamber has been working for relief in railway service conditions for workers in the district since the condemnation of the viaduct as unsafe on Dec. 29, 1922. The matter was considered by the Public Improvement Committee because it was coupled with a second proposal for a new tunnel for vehicular traffic to join with Eighth Street and afford a new trafficway into the district. No action was taken on the latter project pending more complete information.

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Board Appointed to Arbitrate Chicago Elevated Wage Dispute

Submission of the demands of Chicago elevated trainmen for a wage increase of 5 cents an hour over the present scale of from 72 to 77 cents an hour as well as the counter proposal made by the Chicago Rapid Transit Company for a reduction of 5 cents an hour to immediate arbitration was agreed upon by both factions at a meeting during the week ended Aug. 7.

The Elevated Railway employees' union selected Maclay Hoyne as its representative in the mediations. Bernard J. Fallon, vice-president of the Chicago Rapid Transit Company, was designated representative for the employers. It was announced that in the event the two arbiters cannot agree on any point they shall select a third man.

Trainmen and shopmen of the Chicago Surface Lines, who have asked similar increases, have declared that they will await the outcome of the elevated arbitration hearings before negotiating any further.

Fare Case at Rome Concluded

Public Service Commissioner Lunn on Aug. 3 closed for determination the petition of the New York State Railways for permission to increase its fare rates in the city of Rome. The city and the railroad were allowed two weeks in which to file briefs. At the request of the city the commission will send an engineer to Rome to inspect the condition of the company's tracks and equipment in the city.

News Notes

Franchise Survey Ordered in San Francisco.—A survey of the franchises of the Market Street Railway and other non-municipal lines operating in San Francisco, Cal., has been ordered by the Board of Supervisors, which has passed a resolution introduced by Supervisor John B. Badaracco. Following the passage of the resolution, Mr. Badaracco announced that when the survey is completed he will move for an immediate evaluation of all the non-municipal lines.

Cheaper to Purchase Power for Ohio Line.—Abandonment of its only remaining power plant and the purchase of current from the Union Gas & Electric Company, is a proposal which has been submitted to directors of the Cincinnati Street Railway, Cincinnati, Ohio. The power plant in question is known as the Pendleton Station. It has been in operation for more than twenty years. Officials of the railway contend that the power can be purchased cheaper from the utility power company than it can be produced in their own establishment.

Sunday Excursions on Pittsburgh Lines.—Excursions to Washington, Pa., and intermediate points, with reduced rates, were started a few weeks ago on the Washington interurban lines of the Pittsburgh Railways, Pittsburgh, Pa. Inducements to visit historic spots along the Washington and Charleroi lines, by reductions in fares on Sundays, persuaded many car-riders to leave their week-day haunts.

Single-Door Cars in Baltimore to Go.—Steps have been taken by the United Railways & Electric Company, Baltimore, to discontinue the use of all its single-door one-man cars. Eighteen of the 33 that have been in operation have been sold and efforts will be made to dispose of the remaining fifteen. The double-door one-man cars, however, will be kept in service.

Rehearing on Franchise Granted Albany Company.—On July 30 the Public Service Commission granted the application of the United Traction Company Albany, N. Y., for a rehearing of the commission's holdings over franchise provisions in Rensselaer and Troy which are under consideration on the company's petition for an increase in rates of fare in the various cities served. The rehearing will be held at Albany on Aug. 11.

Increased Rates Sought.—The York Utilities Company, Sanford, Me., has applied to the Public Utilities Commission at Augusta for authority to increase freight and passenger rates on certain of its railway lines. The company operates an electric line connecting Springvale, Sanford, Kennebunk and Biddeford. The fare between Springvale and Sanford is at present 5 cents. The company wishes to increase the rate to 10 cents.

East St. Louis Employees Awarded Increase.—Employees of the East St. Louis & Suburban Railway, East St. Louis, Ill. have been awarded a flat increase of 2 cents an hour retroactive to May 1 by a board of arbitration which was appointed to investigate the question of increased wages when the wage contract expired at midnight on April 30. The increase affects about 700 employees in various classifications, including motormen, conductors and shopmen, bringing the top wage to 59 cents an hour. About $9,000 in back wages will be paid them. The arbitration board reached its decision on July 24 and the results were made public on July 26. The question of wages was the only point of difference between the company and the employees.

Reduced Fare in Pittsburgh.—Effective July 24, 1926, a 5-cent fare was put into effect on Route No. 94 of the Pittsburgh Railways, Pittsburgh, Pa., between 62d Street loop and Aspinwall. No. transfers will be issued on this fare. The regular token fare of 8½ cents will continue to be in effect and car riders are entitled to transfers by paying the 8½-cent fare.

Special Rate for Children.—The New York Transit Commission has announced approval of a 10-cent round-trip fare for children's outings on the New York, Westchester & Boston Railroad between the Harlem River and Baychester Avenue stations. The present fare is 7 cents each way. The new rate is available only for parties of children being escorted to the playgrounds by community organizations, civic associations, charitable institutions and the like.

Foreign News

Making London Trams Comfortable

Cushioned seats are being tried out on one of the cars of the Metropolitan Electric Tramways, which is one of the companies in the London underground group. The seats are placed transversely and have reversible backs. They are covered in Moquette of a pleasing design of fawn and blue. Rubber flooring is also used on the lower deck in place of the usual slats. The lighting has been improved by a 50 per cent increase in units. Special shades are used to insure even distribution of light and to avoid glare. The interior decoration of the car is carried out in light oak and white enamel. Staircases to the upper deck have also been redesigned for safety and ease in ascent. These changes have been made as the result of competition from the buses. If successful, they probably will be adopted as standards for use by the railway.

New Zealand Issues Regulations for Buses

Revised regulations of the Board of Trade of the Division of New Zealand as regards motor buses took effect May 7. One of the principal clauses is that relating to fares to be charged between any two places which are also served by a tramway or trackless trolley. A clause of the new act provides that in such cases the bus fare must be at least 2d. more than the corresponding tramway or trackless trolley fare. Where the route only partly parallels a tram line the bus fare must be at least equal to that of the tram line for the distance covered.

All bus operators must secure a license showing that there are no other adequate means of transport on the route proposed. They must file a liability bond of £2,000 for damages to any single person and £500 per passenger for the carrying capacity of the bus, with a minimum limit of £3,500. The bus and equipment must be of an approved type and the operator's license may be revoked if the authorities consider the operator unfit to hold such a license.

South Shields Tramways Shows Profit

The county borough of South Shields, England, for the year ended March 31, 1926, shows net revenue or profit from operation of £21,413, as compared with £14,590 last year. After interest and amortization were deducted, the net income this year is £3,084, as compared with a deficit of £2,262 last year. There was a loss in gross revenue, but the operating expenses were decreased by a much larger amount. The tramcar mileage was 1,126,034 and the bus mileage was 117,028. J. Austin Baker, the present manager and engineer, has been in charge since April, 1925. Previously

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he was technical assistant to the electrical and rolling stock engineer of the Manchester City Tramways.

South African Tramway Systems.—Eleven tramway systems now operate in South Africa, including two trackless trolleys. Greater proportionate profit is shown by the four companies owned and operated by private interests than by the seven controlled by municipalities. According to a recent report, statistics of the combined companies are, for the years 1924-25: Passengers carried, 138,048,233; car-miles run, 14,431,151; persons employed, 3,472. Johannesburg has just put into service the first tram car constructed in entirety in South Africa. Heretofore, certain parts, such as trucks and motors have been imported. During 1924 imports of tramway materials for operation and construction purposes were valued at £94,492, of which £71,293 came from the United Kingdom and £23,059 from the United States.

Ground Broken for Bermuda Railway.—The Bermuda Light Railway will now put into effect its franchise granted to run its line from one end of the island to the other, even though the House of Assembly refused to insert the clause that motor transportation be barred for 40 years. It is hoped that the road will be completed within two years.

Tramway and Bus Advertising in Peru.—Car card advertising is taking hold rapidly in Lima, Peru. Both the Lima Tramway and the independent buses are selling space in their vehicles. This is a new venture and the cards are printed locally. A few foreign advertisements have appeared, but there is much room for improvement in appearance.

Berlin Line Earns 7 per cent.—The Berlin Overhead & Underground Railways, reports that for 1925 its balance sheet shows a gross profit of 24,380,000 marks. After deducting various expenses, including 12,700,000 marks for taxes and administration, there remains a net profit of 8,800,000 marks, out of which a 7 per cent dividend is paid and 739,290 marks are carried forward.

Car with Worm Drive.—Experiment is being made by the Halifax Corporation Tramways with a single-deck car fitted with worm drive instead of ordinary gears. It is a light-weight, low-floor car with 25-in. wheels, and seats 36 passengers. Noise reduction has been given particular attention.

Subway Planned for Tokyo.—Plans for subway construction in Tokyo at an estimated cost of 187,485,959 yen (approximately $80,620,000) have been completed. The expenditures will extend over a period of thirteen years, commencing with the fiscal year ending March 31, 1927, and terminating March 31, 1939. It is proposed to nfiance this project with loans aggregating 240,000,000 yen, to be issued each year in the amounts required.

Revival of Half-penny Fares.—Pre-war half-penny fares are proposed for short journeys by the Aberdeen Tramway companies in Scotland. The zones are to include about 1,000 yd. Other pre-war reductions are being considered, such as season tickets, etc.

Recent Bus Developments

Buses to Be Replaced by Cars in Alliance

Officials of the Stark Electric Railroad, Alliance, Ohio, have completed plants to withdraw buses on Sept. 20 and return to railway service. They say city bus service is not profitable.

Nine months ago the Stark Electric put on buses to replace antiquated street cars which were being operated at a loss. Additional service was offered residents of the city, but the routes failed to produce the revenue expected by company officials.

Shortly after permission was secured from the City Council, to operate buses, the Stark Electric was taken over by New York capitalists. Although the belief was held that buses would not pay, service has been continued by the new owners.

Next month, six city bus routes will be discontinued and railway service again adopted in the city.

The request of the company for permission to increase car and bus fares from 7 to 8 cents was refused by the City Council. Shortly after presenting the request for the increased fare, officials of the railway announced plans for discontinuing bus service.

Buffalo-Niagara Falls Bus-Line Proposed

The International Bus Corporation, Buffalo, N. Y., applied on July 27 to the Public Service Commission for a certificate for the operation of a bus line between Buffalo and Niagara Falls under consents received from the municipalities through which the proposed bus line will pass.

The company says that adequate service in the transportation of persons and property on interurban electric railroad cars and trains is being furnished to the public upon the high speed line of the International Railway, but that there has come with the development of motor vehicle transportation by means of high class buses a demand among certain classes of travelers for that kind of transportation. In the opinion of the petitioner, many persons would prefer to patronize a bus line and to pay for such transportation a fare greater than that now charged upon the interurban line. This demand the petitioner desires to fill by the proposed operation.

Inasmuch as the proposed bus and motor vehicle line and route will in a measure compete with the high speed line of the International Railway, the new company deems it appropriate that these additional transportation facilities shall be furnished by it as a subsidiary of the International Railway. The proposed line may also compete with the New York Central Railroad, but the petitioner holds that the different character of service to be rendered and the fact that the buses will carry passengers direct, without transfer to the territories through which the route will extend will make such competition, if it exists at all, inconsiderable.

Charters for Bus Lines Sought by Pennsylvania Steam Roads

Charter applications of the Reading Transportation Company and the Pennsylvania General Transit Company have been referred to the Attorney-General of Pennsylvania for a "thorough investigation," the companies seek charters for the operation of buses and trucks. The Public Service Commission announced its approval of the applications, but before a charter may be issued it must bear the Governor's approval. However, approval of the commission carried with it a provision making it obligatory for the companies to have the commission's approval for each individual route proposed.

The application of the Reading Transportation Company seeks charter rights in twenty-four counties and that of the Pennsylvania General Transit Company in 55 counties.

One of the companies will be affiliated with the Reading Railroad and the other with the Pennsylvania Railroad, both steam railroads. As explained previously in the ELECTRIC RAILWAY JOURNAL, more particularly the issue of July 24, page 160, the rights sought by the Reading Company were opposed by the electric railways on the ground that the system of routes outlined for operation by that company contemplated the use of buses by the company in territory that would bring the service into competition with the electric railways.

Adjunct to Gray Line in Colorado Springs

David P. Strickler, president of the Colorado Springs & Interurban Railway, Colorado Springs, Col., has completed negotiations with officials of the Gray Line Corporation for a new bus unit which will link the Pike's Peak region with the co-operative sightseeing transportation service. New equipment will be purchased by the Colorado Springs & Interurban company, which will give the tramway a fleet of the finest cross-country sightseeing buses manufactured. Points of interest in the entire state will be the realm of the new organization.

The new Broadmoor-Stratton Park-Manitou sightseeing route of the Colorado Springs & Interurban Railway, upon which three new buses will operate will be a part of the new Gray Line service. The three buses will be emblazoned with the insignia of the Gray line before they are put into service.

The Gray Line is a co-operative sight-seeing service and transportation organization composed of innumerable units in this country, Canada and abroad. All units closely interlock and each sends its clients to the Gray Line

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of the city to which the travelers are going. The Gray Line is in short a series of small units, each operated by an independent company, and all running according to the standards laid down by the head of the company.

The prospective extent of the new Gray Line unit at Colorado Springs has not yet been decided, Mr. Strickler stated. This will be taken up in detail at a meeting to be held later.

Union Opposes San Francisco Bus Grant

Action on the granting of a franchise for a new privately owned bus line in the Mission district of San Francisco, Cal., has been postponed by the city authorities pending further investigation of the city's rights in the matter. W. J. Gaffney, applicant for the franchise, made a modified proposal in which he said that he and his associates would give the city a chance to acquire the line before any other agency, should the original owners at any time decide to dispose of it. The franchise was opposed by John O'Connell, secretary of the Labor Council, and by Edward D. Vandelur, president of the platform men's union of the Municipal Railway.

Buses Substituted for Dover Cars

The Public Service Commission of New Hampshire has authorized the substitution of bus service on all lines of the Dover, Somersworth & Rochester Street Railway, Dover, N. H. The commission ordered the change July 20. Announcement of the railway company's petition to make this substitution was made in the ELECTRIC RAILWAY JOURNAL of April 3.

Bus Operation Curtailed by Indiana Road

The Interstate Public Service Company, operating traction and bus lines from Indianapolis south to Louisville, has been authorized by the Indiana Public Service Commission to suspend bus operation between Franklin and Columbus, Ind., and to abandon operation of buses on its through line between Indianapolis and Louisville, and on its line between Seymour and Jeffersonville. This will leave the company operating bus lines only between Indianapolis and Franklin and between Columbus and Seymour. The operation of buses between Franklin and Columbus is expected to be resumed when the paving between those cities is completed. The company sought this relief because the lines were being operated at a loss.

Bus Line Authorized in Iowa

The Iowa Railroad Commission has authorized the Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa, to operate motor carriers between Harcourt and Rockwell City, and its associated company, the Fort Dodge, Des Moines & Southern Transportation company, Fort Dodge, Iowa, to establish a Fort Dodge-Spence bus line, but permit for a similar line between Spirit Lake and Spencer was denied.

Railway Receivers to Turn Bus to Advantage

William H. Riley and Edwin M. Walker, equity receivers of the Binghamton Railway, Binghamton, N. Y., have applied to Federal Judge Frank Cooper, in United States District Court, for an order allowing the railway to take over the lines of the Triple Cities Bus Lines, Inc., formed by Edward J. Dorey, who also is the directing head.

The bus lines would be taken over by the Binghamton Railway Bus Lines, Inc., a subsidiary corporation and in preparation for this, the Binghamton Railway Bus Lines, Inc., has filed a certificate of incorporation.

Four bus passenger routes are contemplated, extending through the Third and Fourth Wards, Johnson City, Endicott, Vestal, Willow Point and intermediate points and touching the Town of Dickinson on the north.

Judge Cooper is expected to approve the petition of the receivers. The next move will be to apply to the Public Service Commission for permission to take over the Dorey lines and for permission to exercise the franchises for the Third and Fourth Wards purchased at the city of Binghamton public auction a few weeks ago.

Specifically, the petition put before Judge Cooper by the equity receivers was for permission on the part of the Binghamton Railway Bus Lines, Inc., to lease the Dorey lines for a period of five months with the privilege of buying the business outright at the expiration of that time.

Mr. Riley stated that the Dorey lines will be taken over before Aug. 10 and operated by the railway. By Sept. 1, he declared, the new bus system will be in complete operation.

Eight buses used now by the Dorey lines will be added to the present railway bus equipment. That will be sufficient to operate the four routes to be established.

There is no consideration or price stipulated at present, for the leasing privilege. But the equity receivers guarantee the payments, as they fall due, on condition sales contracts for certain buses used by the Dorey lines.

Rival Bus Company Bought Out by Tacoma Railway

Fourteen buses of the Puget Transportation Company, operating on various streets served by the railway, have ceased operations following completion of negotiations for purchase of the transportation company's preferred stock by the Tacoma Railway & Power Company. An agreement now under way will protect the preferred stockholders, it is stated, and in some measure the creditors of the organization.

Note was made in the ELECTRIC RAILWAY JOURNAL of July 3 of the bus company's attitude that the City Council was within its rights in revoking its operating permits and that it had no desire to cause friction in the attempt to solve the transportation problem.

Supplementing the service into the districts beyond the end of the street car lines, the railway company plans to institute bus service. It has purchased a number of former jitneys and withdrawn them from service, and some of these cars will be used in the bus service. The company has now taken over 21 buses.

Competitive Rights Refused

The Pennsylvania Public Service Commission has denied an applicant the privilege of running a passenger bus service between Bangor and Nazareth through the Wind Gap. The opposition came not primarily from the railway with which the bus line would have competed but from the borough authorities of Wind Gap. They feared that the operation of the buses would mean the eventual removal of the surface tracks and the abandonment of the trolley service.

Decision Awaited on Western Motor Coach Petition

All evidence bearing on the petition of the Western Motor Coach Company to operate buses from the western city limits along Jackson Boulevard to the Wells Street terminal of the Chicago, Aurora & Elgin Railroad in Chicago, and from the city limits westward to Aurora, Elgin and Geneva, was taken at the final hearing conducted by the Illinois Commerce Commission in Chicago recently.

Opposition to the project was voiced by representatives of the cities of La-Grange, Oak Park and Maywood, who maintained that the territory is already adequately served by three steam railroads. It was further contended that the operation of additional buses would aggravate the already serious congestion on the main highways traversing this district.

The coach routes, according to the petition, are designed to feed an supplement train service on the Chicago, Aurora & Elgin Railroad, which line they will closely parallel.

Buses Proposed for Berkeley, Cal.

A system of bus lines, augmenting the street cars, in Berkeley, Cal., is proposed as a method of solving the transportation problems of that city. The removal of the Key Division trains from Shattuck Avenue is understood to be the basis of all of the plans now being studied. The specific plan that will finally be presented to the City Council has not yet been drafted, according to the officials, and the Key officials refused to discuss the matter until City Manager Edy has acted.

Bus Experiment in Wisconsin Town

Manitowoc began its three months test of city-wide bus service on July 19, replacing the street cars of the Wisconsin Public Service Corporation. Under this experimental bus plan there will be an increase in fares, seven tickets selling for 50 cents and cash fares 10 cents. A charge of 4 cents will be made for transfers from the Two Rivers-Manitowoc interurban railway to city buses.

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Financial and Corporate

Non-Recurrent Income Helps Interborough

For the twelve months ended June 30, 1926, the total revenue of the Interborough Rapid Transit Company, New York, from all sources was $61,985,794, an increase of $3,274,602 over the preceding year. This increase is due in part to the receipt of approximately $1,167,000 additional growing out of the new advertising contract which became effective last November. Of this increase in advertising receipts $770,000 was due to a lump sum payment upon the signing of the contract, against which no similar payments are to be made in subsequent years. Operating expenses, taxes and rentals paid to the city for the old subway increased $2,951. Income deductions increased $482,448.

The net result for the twelve months was a surplus of $2,443,694. This represents an improvement of $2,789,203 over the preceding year, due to a large extent to the new advertising contract.

Frank Hedley, president and general manager notes that all available balances must be utilized for the old debts and outstanding obligations. These are mainly unpaid taxes, cost of new cars and certain contractural obligations.

The cost of the strike just ended, is not reflected in these figures. This loss will show in the July statement and will, of course, represent an additional and unexpected drain on the balance for the year ended June 30.

It is explained that from the commencement of operations under Contract No. 3 and the related certificates respectively it has been the practice to include in all reports of operating expenses 14 per cent of the gross operating revenue upon the Manhattan division and 17 per cent on the subway division, to cover maintenance and depreciation. These are the percentages fixed for the first year of operation in each case. Negotiations have been pending between the company and the Public Service Commission ever since the end of the first year to determine what, if any, changes in these percentages should be made for subsequent years. Prior to July 1, 1923, the amount expended in excess of 14 per cent upon the Manhattan was approximately offset by the amount under 17 per cent expended upon the subway division. The net expenditures for maintenance in excess of the amounts therefor included in "operating expenses, taxes and rental paid city for the old subway" are shown as "maintenance in excess of contractual provisions."

Traffic, Fare and Wage Figures Reported

The month of June continued the record of improvement in electric railway traffic in 1926 over 1925 that has been returned every month since the beginning of the year. The number of revenue passengers, including bus passengers, reported by the American Electric Railway Association for 206 companies in June, 1926, compared with June, 1925, was as follows:

June, 1926	780,549,894
June, 1925	766,449,184
Increase	1.84%

Average cash fare in cities of 25,000 population and over:

July 1, 1926	7.6946c.
June 1, 1926	7.6946c.
July 1, 1925	7.5551c.

Average maximum hourly rates paid motormen and conductors in two-man service by companies operating 100 miles or more of single track:

	Average Hourly Rate	Index Number 1913=100%
July 1, 1926	56.77	208.33
June 1, 1926	56.75	208.26
July 1, 1925	56.27	206.50

STATEMENT OF EARNINGS OF INTERBOROUGH RAPID TRANSIT COMPANY

	Twelve Months Ended June 30, 1926	Comparison with Twelve Months Ended June 30, 1925 Increase
Total revenue	$61,985,794	$3,274,602
(A) Operating expenses, taxes and rentals paid city for the old subway	39,564,781	513,901
	$22,439,012	$2,760,701
(A) Maintenance in excess of contractual provisions	981,345	*510,950*
Income available for all purposes	$21,457,666	$3,271,651
Fixed charges:		
Interest on I. R. T. first mortgage 5 per cent bonds	$8,074,066	$3,104
Interest on Manhattan Railway bonds	1,808,240	.....
Interest on I. R. T. 7 per cent secured notes	2,379,073	3,211
Interest on I. R. T. 6 per cent ten-year notes	526,899	128,726
Interest on equipment trust certificates	291,321	121,899
Miscellaneous income deductions	414,131	*12,342*
Sinking fund on I. R. T. first mortgage 5 per cent bonds	2,453,753	236,673
Total	$15,947,485	$481,272
	$5,510,180	$2,790,379
Dividend rental at 7 per cent on capital stock of Manhattan Railway not assenting to the "plan of readjustment"	$232,701	$1,069
Dividend rental on Manhattan Railway stock under the "plan of readjustment"	2,833,785	106
	$3,066,486	$1,176
Balance after actual maintenance	$2,443,694	$2,789,203

Figures in italic denote decrease.

Steady Gain for Twin City Company

Net income of the Twin City Rapid Transit Company, Minneapolis, Minn., for the first half of 1926 shows a gain of $64,222 over the similar period for 1925, the total being $722,445, or $2.80 a share on the common stock after preferred dividends. Last year this was $2.51. T. Julian McGill, vice-president, said:

> If our present rate is continued through the year I believe the return will be 7 per cent on the preferred and 5 per cent on the common stock, as authorized by the State Railroad and Warehouse Commission. The increase is due entirely to the increase in fare from 6 to 6⅔ cents. There has been a decrease in passenger haul of 7 per cent since the fare was raised, but the difference in fare more than compensates the lighter business.

The rate of fare was increased to 8 cents cash with tokens remaining at 6 cents on Aug. 1, 1925, and Jan. 1, 1926, the rate became 8 cents cash and 6 tokens for 40 cents, or 6⅔ cents.

Net income of the Minneapolis Street Railway division for the second quarter of 1926 was $188,417, or a gain of $16,475 over the like period for 1925. Gross operating revenues for the quarter were $1,900,407, an increase of $66,437 over last year. Operating expenses were $1,294,749, compared with $1,256,344. Net operating revenue was $605,657 compared with $577,626 in 1925.

The income of the St. Paul City Railway for the first half of the year showed a gain of 18 per cent, reaching a total of $376,556 gross income compared with $307,155. Total operating revenue was $2,356,499 compared with $1,778,724 operating expense.

STATEMENT OF TWIN CITY RAPID TRANSIT COMPANY FOR SIX MONTHS

	1926	1925	Per Cent Inc. or Dec.
Gross revenues	$6,597,165	$6,384,466	+03.33
Operating expenses	4,746,786	4,599,710	+03.20
Net revenue	1,850,378	1,784,755	+03.68
Fixed charges and taxes	1,127,933	1,126,531	+00.12
Net income	722,445	658,223	+09.76

Terms of Providence Merger Plan

Interests identified with Bodell & Company, Providence, R. I.; Harris, Forbes & Company, Boston, and the First National Bank, Boston, have announced a plan under which the Narragansett Electric Lighting Company and the United Electric Railways, Providence, may be consolidated if the necessary approvals of stockholders and the public authorities are obtained. It is proposed that the Narragansett company be acquired by the recently created United Electric Power Company, all the stock of which will be owned by the Rhode Island Public Service Company, a new corporation, and the last-named will also hold such stock of the railway as is exchanged under the plan.

In an announcement by the Rhode Island Public Service Company it is pointed out that the plan strengthens to a considerable degree the position of the bonds of the United Electric Railways. The market of the bonds will be benefited by the association of the lighting and power property and the railway.

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$5,000,000 Bonds of Dallas Railway Offered Publicly

At a recent meeting of the directors of the Dallas Railway, Dallas, Tex., an amendment to its charter was authorized changing the name to the Dallas Railway & Terminal Company. The directors also adopted a refinancing program which provides that 10,000 shares of preferred stock and 10,000 shares of common stock will be issued, with a par value of $100. The sale of $5,000,000 first mortgage bonds was approved.

The issuance of the new securities will enable the company to pay off past due mortgages and notes and place the company upon a financial basis that is expected to enable it to meet the growing transportation needs of Dallas.

The company operates, under a modern franchise, the entire electric railway service in the city of Dallas, Tex., serving a population estimated at about 250,000. The company also owns and operates a modern eight-story terminal station and office building near the center of the business district of the city. In addition the company operates under lease the electric railway serving that part of Dallas known as Oak Cliff.

The earnings of the company for the four years ended Dec. 31, 1925, were as follows:

Year	Gross Earnings	Operating Expenses, Including Maintenance, Taxes and Rentals	Net Earnings
1922	$3,270,827	$2,532,958	$737,869
1923	3,330,425	2,632,349	698,076
1924	3,322,215	2,547,246	774,969
1925	3,429,298	2,578,079	851,219

The bonds will be secured by a direct first mortgage on all the company's property and equipment, including the terminal building. The principal amount of the $5,000,000 bonds to be issued is less than 60 per cent of the value of the company's wholly owned property as of May 31, 1926, as established under the franchise for rate-making purposes.

A syndicate in which Tucker, Anthony & Company, the Old Colony Corporation, Halsey, Stuart & Company and W. C. Langley participated offered the bonds on July 23 at 96½ and interest to yield 6.25 per cent.

Cuban Deal Approved

Stockholders of the Havana Electric Railway, Light & Power Company, Havana, Cuba, have approved the plan to merge the company with Cuban Utilities Company. The new company is to be known as Havana Electric Railway, Light & Power Company. The Cuban Utilities Company, in addition to owning the electric railway systems in Santiago and Comaguey, Cuba, owned more than 86 per cent of the preferred and more than 98 per cent of the common stock of the old Havana Electric Railway, Light & Power Company. Consequently the merger brings together the electric power and light, gas and railway properties in Havana, and the electric railway properties in Santiago and Camaguey. Substantially all the stock of the new company is owned by the Havana Electric & Utilities Company. The electric railway systems in Santiago and Camaguey now owned by the new Havana Electric Railway, Light & Power Company were acquired by Cuban Utilities Company from subsidiary interests of American & Foreign Power Company, Inc., operating in Cuba.

Dividend Cut by New Bedford Road

The Union Street Railway, New Bedford, Mass., has halved its dividend, current declaration being on $4 annual basis. With the textile situation in the doldrums and bus competition on the increase, the company decided to conserve assets. For years it paid 8 per cent annually on its $2,437,500 stock.

Receivership for Sharon-New Castle Road

Rufus Moses has been appointed receiver of the Sharon & New Castle Street Railway, New Castle, Pa., by Judge Gibson in the United States District Court.

The appointment was made at the request of the New York Trust Company, which filed an equity suit against the railway to recover interest on $120,000 of first mortgage bonds, issued by the railway in 1901.

The appointment of a receiver was by mutual consent of the defendant concern and the New York Trust Company, which, as trustee for the bondholders, cited in its bill of complaint that no interest had been paid on any of the bonds since January, 1903.

The present action is a friendly one as explained in the ELECTRIC RAILWAY JOURNAL for July 24, page 162.

Insulls Buy Into National Electric Power

Announcement has been made that Insull Son & Company, Inc., have purchased an interest in the common stock of the National Electric Power Company and that the company would be continued as organized, with Victor Emanuel as vice-president.

The principal New England property controlled by the Emanuel interests, is the Cumberland County Power & Light Company. It is expected that this will be merged with the New England Public Service Company, an Insull organization, thus further strengthening the Insull interests that already dominate in New Hampshire, Maine and Vermont.

Albert Emanuel, president of the National Electric, is in retirement, and Victor Emanuel has been the acting head of the company for several years.

The Cumberland County Power & Light Company provides all electric light and power for Portland and vicinity. It also operates the street railway in Portland.

Representatives of the Insull interests in Chicago described as an investment the acquisition of a common stock interest in the National Electric Power Company by Insull Son & Company, Inc. The latter is an Illinois corporation formed two years ago to do a financial business with Samuel Insull, chairman of the board, and his brother, Martin J. Insull, as president.

Maryland Interurban Sold at Foreclosure

The property, franchise and equipment of the Cumberland & Westernport Electric Railway, Cumberland, Md., in Allegany County, have been sold at trustees' sale for $50,000 to R. H. Koch, Paul L. Hitchins and F. Brooke Whiting, a committee representing the bondholders.

It is stated that the purchasers will reorganize the company and continue operation by trolley from Cumberland to Frostburg and by bus between Frostburg and Westernport.

The line was offered in four parcels. This is the way it was organized prior to the merger in 1906. The first parcel, between Westernport and Lonaconing, was bid in at $17,000; the second parcel, the franchise and property between Lonaconing and Frostburg, brought $12,000; a third parcel, the line between Frostburg and Narrows Park, $10,000, and the fourth parcel, consisting largely of buildings and local freight stations, brought only $10,000, or a total of $49,000. When the property was offered in its entirety the bid of $50,000 of the bondholders' committee was not raised.

The company's franchise covers the right to run from Narrows Park to Frostburg and thence to Westernport, through the George's Creek Valley. The trackage between Frostburg and Westernport has been abandoned in the last year and traffic has been handled in buses. The company has a trackage agreement with the Potomac Edison Company to operate the Frostburg cars into Cumberland. It owns power houses and carhouses at Clarysville and Reynolds.

Upon a petition of the Real Estate Trust Company, Philadelphia, Pa., a decree was passed by the Circuit Court on June 17 naming trustees and ordering the sale.

Washington-Virginia Road Near the End

Receivers for the Washington-Virginia Railway, Washington, D. C., have announced their intention of closing up the affairs of the company at the earliest possible moment, but are said to have made known their willingness to consider sale of the system—rolling stock, carhouses, buses and all—on the basis of their scrap value.

The disclosure was made by F. W. Woodcock, representing the receivership, at a meeting in Alexandria of a special citizens' committee formed to seek continuance of the railway's operation, even though it should be sold for "scrap."

Preliminary intimation of the agreement of the receivers to wind up the affairs of the company was given some time ago at a meeting in Alexandria of interested parties, called at the instance of Day & Zimmermann, operating engineers, of Philadelphia, who are advisers in the receivership. At that time Mr. Woodcock is said to have declared that the receivership must end shortly, since the revenues had been badly depleted by bus competition, and the road was barely paying expenses.

A committee was then appointed to

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confer on the matter, and attempt to reach a solution as to the disposition that might be made of the company's property. This committee met again a few days ago, with Mr. Woodcock again present. Formal organization of the group for the purposes outlined was effected.

Chairman Church announced after the meeting that Mr. Woodcock had assured the committee that any proposal to purchase the road with a view to continuing its operation would be entertained by the receivers on basis of "scrap" valuation of $750,000, as estimated by the road's engineers.

Financial Plan of Danbury Company Approved

The Danbury Power & Traction Company, Danbury, Conn., formerly identified under the name of the Danbury & Bethel Traction Company and the Danbury & Bethel Street Railway, has been authorized to issue $500,000 of 6 per cent bonds and also 5,000 shares of common stock without stated par value. The latest decision of the Public Utility Commission supersedes a previous finding and allows changes in the capital structure of the company to provide for the purchase of the franchise and property rights of the Danbury & Bethel Traction Company.

The new company will continue to operate a street railway and bus service, and is further allowed to distribute electric power. The railway has been in the hands of Receiver Edward M. Bradley. In acquiring control the Danbury Power & Traction Company proposes to deliver in payment $400,000 in first mortgage bonds and virtually the whole of the 5,000 shares of capital stock without nominal value. The proceeds of the balance of the authorized issue of stock, amounting to $100,000, will be used for improvements and additions.

Concluding Ohio Traction Deal

Holders of preferred stock of the Ohio Traction Company, Cincinnati, Ohio who are not disposed to deposit their stock under the plan of the committees of the common and preferred shareholders will receive $70 a share for their holdings. This was made known in a letter sent out by E. C. Bernhold, secretary of the company. Attention was called to the fact that at the recent meeting of the stockholders to ratify and confirm the purchase of the assets of the Ohio Traction Company 168,714 shares were voted in favor of the plan and 246 against the agreement. More than 90 per cent of both classes of stock have been deposited with the Western Bank & Trust Company. Stockholders who have withheld may deposit their stock until the deal is concluded.

It is expected that the plan for the liquidation of the company's properties will be completed within a short time. Stock which is not to be deposited should be surrendered without delay the letter states.

The assets of the Ohio Traction Company will be converted to the Cincinnati Car Company, which will have jurisdiction over all the properties formerly held by that company. The Ohio Traction Company owned the Cincinnati Traction Company, which until last fall operated the electric railway system in Cincinnati under lease.

Merger Plan in Indiana Approved

Purchase of four electric railway and light and power properties in northwestern Indiana by the Indiana Service Corporation has been authorized by the Indiana Public Service Commission. The properties which pass in the transaction are the Marion & Bluffton Traction Company, both railway and power property; the Bryant Electric Company, the Wells County Electric Company and the Berne Electric Company. The total valuation placed by the commission on these utilities was $1,295,992. By this transaction the corporation will serve 39 communities with electric light and power service and 37 towns will be connected by the company's electric railroad lines. The transaction is to be in cash or by the exchange of no par common stock of the Indiana Service Corporation for stock in the selling companies. To complete the transaction, the commission authorized the Service corporation to issue 76,000 shares of no par common stock. The order provides that the reserves which have accrued for depreciation and other purposes be kept separate for the benefit of the individual properties.

Chicago City Railway Bond Interest.—Announcement was made that interest on the first mortgage 5 per cent bonds of the Chicago City Railway and Calumet & South Chicago Railway deposited under the bonholders' protective agreements would be paid on Aug. 1. Coupons due on that date will be detached from deposited bonds, collected and checks sent to registered holders of certificates of deposit as of Aug. 1 next upon receipt of ownership certificates or authority to sign them by the First Trust & Savings Bank, Chicago, the depository.

Authority Sought to Issue $351,000 in Notes.—Authority to issue notes totaling $351,000 to be used in the purchase of land and in the construction and equipment of substations is asked in a petition filed with the Indiana Public Service Commission by the Indianapolis Street Railway. Construction of the substations, the company claims, would result in faster operation of the cars, more dependable operation and a saving of energy. Eighteen notes of $5,500 each will carry an interest rate of 7 per cent and the rest 6 per cent.

Security Hearing Put Over Indefinitely.—The hearing on the application of the Wyandotte Railways, Kansas City, Kan., to permit it to issue securities totaling $1,750,000, scheduled for the week ended July 24, has been postponed indefinitely by the Kansas Public Service Commission. The company desires to issue first mortgage bonds on its property in Wyandotte County. This company will take over under reorganization the lines of the present Kansas City Railways in Kansas City, Kan.

Line Abandoned as Economy Move.—The Cincinnati Street Railway Cincinnati, Ohio, has abandoned its Glendale to Hamilton, Ohio, line, which it recently acquired, together with the Zoo-Glendale route from the Cincinnati & Hamilton Traction Company. For years the line had been operated at a loss and authority to abandon it was given by the Ohio Public Utilities Commission. The railway will continue to operate the Zoo-Glendale route as a part of the original Cincinnati & Hamilton Traction system.

West Penn Railways Calls Debentures.—The West Penn Railways, Pittsburgh, Pa., will redeem on Sept. 1 the entire $3,500,000 principal amount of the three-year 6½ per cent gold debentures.

Asks Street Railway Foreclosure.—Foreclosure of a mortgage protecting a bond issue of $180,000 by the Milford & Uxbridge Street Railway, Milford, Mass., is sought by a bill in equity brought in the Supreme Court at Boston by the American Trust Company, Boston. The bank also asked for a receiver. The principal of the mortgage, issued in 1898, was payable on Jan. 1, 1923.

Toledo Line Abandoned.—The City Council of Toledo, has approved abandonment of the Indiana Avenue line of the Community Traction Company, Toledo, Ohio, in order to prepare for repaving of the streets and removal of tracks. Company officials have contended for more than five years that the line was unnecessary and a burden.

Successor to Westchester Company Chartered. — The Westchester Street Transportation Company, Inc., has been chartered at Albany with capital of $180,000 in $100 shares, with duration of 1,000 years to operate a street surface railroad in Westchester County. Alfred T. Davidson, 2396 Third Avenue, New York City, is attorney for the corporation. It will be recalled that it was Mr. Davidson who purchased for the Third Avenue Railroad the Westchester Street Railroad, sold under foreclosure recently. Presumably the new company is the successor under foreclosure to the Westchester Street Railroad.

Certificate of Dissolution Filed.—A certificate has been filed in the office of the Secretary of State at Albany, N. Y., dissolving the corporate existence of the Nassau County Railway, Sea Cliff, L. I., which suspended operation of its 10-mile line some months ago.

Massachusetts Line Reports Surplus.—Eastern Massachusetts Street Railway, Boston, Mass., reports June gross of $740,924, against $744,423 in June, 1925. June surplus after taxes and charges was $46,313, comparing with $36,823 for the similar month of the previous year.

Milwaukee Electric Calls Bonds.—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has announced that it will redeem and pay on Sept. 1 at the office of the Central Union Trust Company in Milwaukee, all refunding and first mortgage 6 per cent gold bonds outstanding under this mortgage, series C. The bonds will be redeemed at 104½ and accrued interest.

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Legal Notes

FEDERAL SUPREME COURT—*Private Carrier Cannot Be Converted Against His Will Into a Common Carrier by Legislative Demand.*

This decision declares unconstitutional the auto-stage and truck transportation act of California as applied to the Frost & Frost Trucking Company, in which the California Railroad Commission attempted to class this company as a common carrier, although it claimed to be purely a private carrier. The Federal Supreme Court did not question the power of the state to prohibit the use of public highways in proper cases, but it did question the right of the state to permit the use of the highways only on conditions which required the relinquishment by the grantee of his constitutional rights. The majority of the opinion also says that it did not challenge the power of the state or of the railroad commission under the present statute, whenever it shall appear that a carrier, posing as a private carrier, is in reality a common carrier. Dissenting opinions were held by three justices. [Frost vs. Railroad Commission, 42 Supreme Court Rep., 605.]

COLORADO—*Power of Utilities Commission Over Common Carriers Defined*

When a business is affected with a public interest, as is that of the common carrier, the right of the public to regulate it is unquestioned. When a common carrier seeks to utilize public property such as streets and highways, the authority of the public becomes twofold. Motor common carriers attempting to operate without a certificate of convenience and necessity can be stopped by injunction. [Greeley Transportation Co. vs. People, 245 Pacific Rep., 720.]

INDIANA—*Surrender of Franchise for Indeterminate Permit Voids Former Franchise Conditions.*

In 1922 a railway surrendered its franchise in a city and took out an indeterminate permit, pursuant to the provisions of an act of the General Assembly. Subsequently, it secured permission from the city to operate freight cars over its tracks, a service which was forbidden by the former franchise. The right to do so was upheld in a case brought for damages by a number of property owners, the court holding that with the indeterminate permit such freight operation does not constitute an additional servitude on the property. [Chicago, L. S. & S. B. Railway, vs. Guilfoyle et al, 152 Northeast. Rep., 167.]

MARYLAND—*Collision at Street Intersection of Railway Built on Reservation*

Where a railway in the suburbs is built in a reservation except where it crosses intersecting streets, its rate of speed is usually much higher than allowed on a street. Hence, more caution is expected of those crossing the railway track at such street intersections. The obligation to exercise ordinary care is not fulfilled by looking once, but by continuing to look until all danger of a collision is past. [Crystal et al. vs. Baltimore & B. A. Elec. Ry., 132 Atlantic Rep., 629.]

MICHIGAN—*Duty of Prudent Man at Street Intersection*

"A reasonably prudent man will not take a chance of street cars slowing up to let him cross a street." [Public Administrator of State of Michigan vs. City of Detroit, 207 Northwest. Rep., 882.]

MISSOURI—*Definition of "Vigilant Watch"*

Under the "Vigilant Watch" ordinance in St. Louis, a motorman must keep, not ordinary, but vigilant watch for persons and vehicles approaching or crossing the tracks. This duty is broader and stronger than the usual common-law duty of ordinary care, except in situations where common law would impose a very high degree of care, as in highly congested places of travel. Under this law, however, vehicle drivers and pedestrians are required to exercise only ordinary care to protect themselves. [Grossman vs. Wells, 282 Southwest. Rep. 710.]

NEBRASKA—*Ordinance Regulating Auto Buses Held Not to Be a Franchise but Regulatory and Therefore Valid*

The city of Omaha passed an ordinance authorizing the issue of permits for auto buses, provided they fulfill certain provisions. This ordinance was attacked by the plaintiff on the ground that the city did not have power under its charter to grant "franchises." The Nebraska Supreme Court held, however, that the permits contemplated were not "franchises," a number of definitions of franchises being given. Instead the permits were in the direction of regulating the use of the streets. The ordinance, therefore, was within the power of the city to pass under its charter. [O. & C. B. Street Railway vs. City of Omaha, 208 Northwest. Rep., 123.]

NEW JERSEY—*Care Required in Stairway Maintenance in Railroad Stations*

An instruction that a passenger, who was injured by falling on the steps of a railway station, was entitled to have the stairway "in good condition for her to be carried on it" was held erroneous, because it made the railway an insurer and imposed a greater burden on it than was justified by law. The railway need only exercise reasonable care to provide a safe place for passengers going to and from the trains. [Pabst et al. vs. The Hudson & M. R. Co., 133 Atlantic Rep. 74.]

NEW HAMPSHIRE—*Liability in Collision at Railroad Grade Crossing*

A state statute requires drivers of street railway cars, before crossing steam railroad tracks, to stop their cars before crossing and to examine carefully for approaching trains. Where a street car operator, depending upon the fact that the gates were open, crossed the track and was struck by a train hidden behind a line of standing cars, he was held contributorily negligent, barring recovery. [Carleton vs. B. & M. R.R., 132 Atlantic Rep., 680.]

NEW YORK—*Examination of Railway Official in Negligence Case*

Under civil practice act, Sec. 289, the vice-president and general manager of a railroad is subject to examination by the plaintiff in a negligence case respecting the operation, maintenance, equipment and management practice of the railroad. But the court should be careful, especially in such a case, to limit the inquiries to matters clearly necessary and material, such as the facts and circumstances of the accident itself, the equipment, weight and condition of the railway car, the time schedule and the operating rules and regulations having reference to the occasion in question. Expert opinions and experimental tests do not fall within the scope of permissive examination. The railroad's claim agent is not a person subject to examination concerning operation, maintenance, equipment and management of the railroad under the act. [Warner vs. Rochester & S. R. Co., 214 N. Y. Sup., 579.]

TEXAS—*Duties to Alighting Passenger.*

A passenger signaled for a car to stop and thinking it was about to do so attempted to alight and was injured. The company was held not responsible, the court holding: "It is only at such places where it may be reasonably anticipated that a passenger may attempt to leave the car that the duty rests on the carrier to use care in allowing time for passengers to alight therefrom." [Galveston Elec. Co. vs. Marangola, 283 Southwest. Rep., 777.]

VIRGINIA—*Duty to Person Who Gives Signal to Board Car When Not at a Regular Stopping Point*

A person standing at a corner where she knew cars did not usually receive passengers signaled an approaching car, thinking it might stop, then crossed in front of the car to get on the side on which the entrance was. The car did not stop and she was struck by the rear of the car as it swung around the curve. The company was held not to be negligent as a matter of law. [Beale vs. Virginia R. & P. Co., 131 Southeast. Rep., 200.]

WASHINGTON—*Motorman May Assume Automobile Will Change Course to Avoid Collision.*

Where an automobile and a street car approach head on, the motorman may assume that the automobile will change its course to avoid a collision, where it has time and opportunity to do so. [McKinney et ux. vs. City of Seattle, 245 Pacific Rep., 913.]

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Personal Items

Superintendent of Galveston-Houston Interurban Named

James W. Howard has taken over the position of superintendent of the Galveston-Houston Electric Railway, Galveston, Tex. He succeeds C. A. Brann in this position.

Mr. Howard is a graduate in mechanical engineering, class of 1921, Stevens Institute of Technology, Hoboken, N. J. After his graduation he worked for three months in the home office of Stone & Webster, Inc., at Boston. Following this he was transferred to the Fall River Gas Works Company at Fall River, Mass., where he remained for six months. He was then transferred to the Blackstone Valley Gas & Electric Company at Pawtucket, R. I., where he stayed for 3½ years as the company's engineer of industrial service. Following this connection Mr. Howard went to Houston as superintendent of the Galveston-Houston Interurban, another utility property under Stone & Webster direction. He is a native of Brooklyn, N. Y.

George W. Burgess with Houston Electric Company

George W. Burgess recently was transferred from the Boston office of Stone & Webster, Inc., to the Houston Electric Company, Houston, Tex. Mr. Burgess is connected with the traffic department of the Houston Electric Company. He is a native of Milton, Mass., and received his A.B. degree at Harvard University in 1925. In September, 1925, he joined the Stone & Webster organization at its office in Boston.

Charles Jones Made General Manager of South Shore

The appointment of Charles Jones, former electrical engineer of the Chicago Rapid Transit Company and Chicago, North Shore & Milwaukee Railroad, as general manager of the Chicago, South Shore & South Bend Railroad and the removal of the company's operating headquarters from Gary to Michigan City, Ind., have been announced by Charles W. Chase, vice-president and former general manager of the South Shore Lines. Mr. Jones has spent twenty years in various electric railway executive positions. He will succeed Mr. Chase as general manager.

The operating department of the railroad was established in Gary following the purchase of the insolvent Lake Shore system by the Insull interests a year ago. The executive offices and accounting department will remain in Gary, but the entire operating force, including the electric, maintenance and purchasing departments, will be transferred to Michigan City at once.

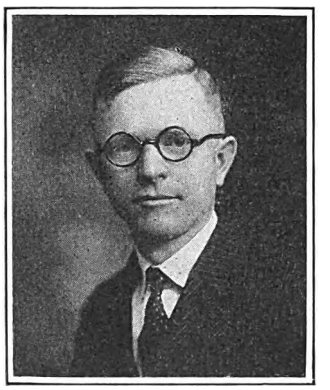
Thomas W. Hamilton, assistant general manager; J. K. Gray, general superintendent, and their assistants, will continue in these capacities, but will likewise be assigned to the new headquarters.

The re-electrification program was completed on July 28. The company's new steel passenger cars are now being operated over the entire line from South Bend to Kensington.

L. E. Lippitt in Charge of Central New York Road

Laurence E. Lippitt, newly-appointed manager of the Auburn & Syracuse Electric Railroad, Auburn, N. Y., is a veteran in experience in electric railroading, and virtually has climbed from the bottom of the ladder to the top in the score of years he has been in the industry.

He is only 37 years old, one of the youngest of electric railway executives in central New York state. He began his career as an employee of the Oneida Construction Company, which electrified the West Shore Railroad between Syracuse and Utica, a line now operated by the New York State Railways. This was in 1906.



Laurence E. Lippitt

In September, 1907, he entered the employ of the New York State Railways and served in various positions in the accounting department.

In July, 1913, he was appointed auditor of the Syracuse & Suburban Railroad, under the management of Allen & Peck, Inc.

Three years later he became auditor-treasurer of the Auburn & Syracuse Electric Railroad under the management of Peck, Shanahan & Cherry, Inc.

He held this position until July 1, 1926, when he was named general manager of the company to succeed W. J. Harvie, resigned.

The Auburn & Syracuse operates between Syracuse and Auburn and also the lines in Auburn and to Owasco Lake, where it controls Lakeside Park.

D. P. Morrison has been appointed general manager of the Dundee Corporation Tramways, Dundee, Scotland, to succeed W. T. Young. Mr. Morrison has hitherto been engineer and deputy-manager to the Gateshead & District Tramways, while Mr. Young has gone to be general manager of the Halifax Corporation Tramways.

Thomas J. Brennan, whose resignation as general manager of the Dayton, Covington & Piqua Traction Company, West Milton, Ohio, was reported in the May 1 issue of the ELECTRIC RAILWAY JOURNAL, announces that he has reconsidered his intention to sever his connection with that company and decided to remain at his old post of general manager. Mr. Brennan has served the Dayton company for more that twenty years.

Obituary

J. W. McCrosky

J. W. McCrosky, for many years in charge of electrical construction work in this country and South America for the J. G. White Company, New York, is dead at Pasadena, Cal., at the age of 57.

Mr. McCrosky was a Nebraskan and one of the first electrical engineers graduated at the University of Nebraska, where he studied under Mr. White, then a professor at the university. His first work was the electrification of the Lincoln railway system. Mr. White sent him to South America first, and later he looked after the English end of the business. Many street railways and other electric utilities were built under his supervision in different parts of the world. He served the government during the war as an expert at Washington, and following that was in charge of the foreign trade department of the Bankers Trust Company, New York. He retired from business some time ago.

F. S. Terry

Franklin S. Terry, Cleveland, Ohio, vice-president of the General Electric Company and for years a leader in the incandescent lamp business, died suddenly, of heart failure, at his summer home at Black Mountain, near Asheville, N. C., on July 23. Mr. Terry was born in Ansonia, Conn., in 1862 and held his first position with the Electrical Supply Company of Ansonia. In 1889 he organized the Incandescent Lamp Company, Chicago, and four years later took personal charge of the company.

In 1901 the National Lamp Company, of which Mr. Terry was a founder, purchased the Sunbeam Company. A few years later the National Lamp Company merged with the General Electric, Mr. Terry remaining with the National Lamp Works, Nela Park, Cleveland, Ohio. He was one of the organizers of the National Electric Light Association. Mr. Terry devoted his genius as an organizer to the betterment of the manufacture and quality of incandescent lamps.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

More Cars for Cleveland Exhibit

Applications for space at the convention in Cleveland, Ohio, Oct 4, for the exhibit of street railway cars in special Section D, allotted to them, continue to be received by the American Electric Railway Association. The list of car exhibitors follows:

Beaver Valley Traction Company.
J. G. Brill Company.
Cummings Car & Coach Company.
Differential Steel Car Company.
Northern Ohio Power & Light Company.
Phoenix Ice Machine Company (Northern Ohio Refrigerator Car).
Pittsburgh Railways.
St. Louis Car.
Perley A. Thomas Car Works.
United Railways & Electric Company, Baltimore.

In addition the following companies have applied for track space on which to show operating maintenance of way equipment:

Blacker Engineering Company, Inc.
Electric Railway Improvement Company.
Ingersoll-Rand Company.
Metal & Thermit Corporation.
Railway Track-Work Company .

The sub-committee of the exhibit committee on decorations, L. W. Shugg chairman, will hold a meeting during the week ending Aug. 14, at which time contracts will be let covering decorations for both floors of the public auditorium and the auditorium's west wing.

The total list of exhibitors who have been assigned space to date numbers 208. The total square footage assigned amounts to 113,526. The total lineal feet of track space to be occupied by both car exhibitors and exhibitors of operating maintenance of way apparatus is 1,030 lineal feet.

An account of the proceedings of the meetings of the executive committee, including Fred Dell's report, is published elsewhere in the JOURNAL.

Midsummer Business Conditions Appear Unusually Prosperous

Business since 1923 has been, on the whole, better than for any other three-year period, except during the war, and there is no reason to expect serious depression in the near future. This is the substance of a review of national economic conditions given out by President Coolidge on Aug. 3.

Production in general is well above normal, particularly in the steel industry, which has been setting records for July. Consumption, however, is keeping up the pace, and prices remain practically unchanged.

The railroads show unusual activity. In June 4,112,150 cars were loaded, compared with 3,965,872 cars a year ago. This, of course, is an indication of the high level of general trade activity. Recent purchases of rails and inquiries for freight cars by the railroads testify to their activity.

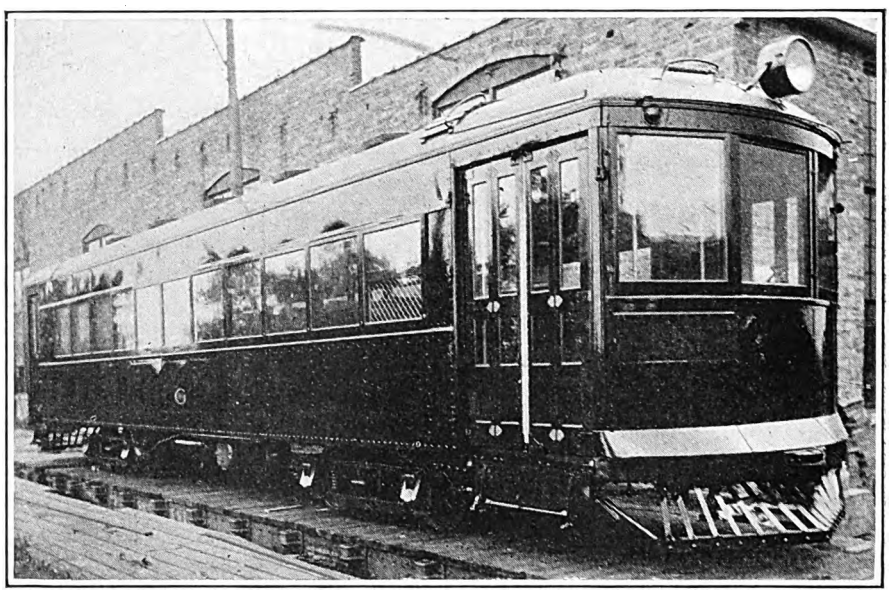
Labor conditions are good. Wages remain high, but commodity prices have dropped in the last few years. Thus there is not much dissatisfaction among the workers.

It is true that the textile industry continues in the doldrums, but none of the usual premonitory symptoms of depression are visible, and there is nothing to indicate any drastic decline in the general activity so prevalent at present.

Largest Electric Locomotive Is Sesqui-Centennial Exhibit

The largest and most powerful electric locomotive in the world has just been installed for exhibition at the Sesqui-Centennial Exposition in Philadelphia. Built by the General Electric Company for the Chicago, Milwaukee & St. Paul Railway to haul its "Olympian" and other transcontinental trains through the Rocky and the Cascade Mountains, the giant locomotive left Tacoma, Wash., a month ago on a journey of 3,000 miles to reach Philadelphia. Because of its immense size it was necessary to make several detours to reach Philadelphia, as movement under bridges and through tunnels on the direct route was impossible in several instances.

Light-Weight Interurban Cars Now Operated by Gary Railway



Five new light-weight double-truck interurban cars built by the Cummings Car & Coach Company of Paris, Ill., have just been placed in service by the Gary Railways, Gary, Ind. The cars are now in operation on the Gary-Hobart and Gary-Indiana Harbor divisions. The company expects materially to reduce power requirements and running time through the use of these new cars, which were built at a cost of $16,800 each. The new units weigh only 37,000 lb. and will replace cars of approximately 50,000 lb. in weight. Each car is equipped with all modern safety devices and seats 46 passengers. Some of the outstanding features of their construction are mahogany finished interiors, green plush upholstery, battleship gray linoleum floor covering, low entrance steps, safety windows and dome ceiling lights. Specifications follow:

Date order was placed	March, 1926
Date of delivery	July, 1926
Type of car	Light-weight, double-end, one-man, two-man interurban
Seating capacity	46
Weight:	
Car body	17,600 lb.
Trucks	11,000 lb.
Equipment	8,400 lb.
Total	37,000 lb.
Bolster centers, length	21 ft. 0 in.
Length over all	44 ft. 8¾ in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 8¾ in.
Height, rail to roof	10 ft. 9½ in.
Body	All steel
Interior trim	Mahogany
Headlining	Agasote
Roof	Arch
Air brakes	General Electric
Armature bearings	Sleeve
Axles	Forged steel 4 in.
Bumpers	Channel
Car signal system	Faraday high voltage
Car trimmings	Statuary bronze
Center and side bearings	Cummings Car & Coach
Compressor	CP-27B, 15 ft.
Control	Double-end K-35 with line breaker
Curtain fixtures	National Lock Washer
Curtain material	Pantasote double coated
Destination signs	Cummings Car & Coach
Door-operating mechanism	National Pneumatic
Fenders	Steel pilots
Gears and pinions	General Electric
Hand brakes	Drop type
Heater equipment	Railway Utility
Headlights	Golden Glow
Journal bearings	3¾ in. x 7 in.
Journal boxes	Cummings Car & Coach
Lightning arresters	General Electric
Motors	Four GE-265, 35-hp., inside hung
Paint	Detroit Graphite Company
Registers	Ohmer
Sanders	Ohio Brass
Sash fixtures	O. M. Edwards
Seats	Hale & Kilburn reversible
Seating material	Plush
Step treads	Feralun
Trolley catchers	Ohio Brass
Trolley base	General Electric
Trolley wheels	General Electric
Trucks	Cummings Car & Coach, MC-62
Ventilators	Nichols-Lintern
Wheels	Davis steel, 26 in.

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Reduction of Physical Hazards in Industry Planned

Plans looking toward an intensive study of physical hazards in industry, with a view to conclusions which will bring remedies and remove the causes of accidents, were discussed in Washington, July 14, 15 and 16, at the Industrial Accident Prevention Conference called by Secretary of Labor Davis.

Resolutions were adopted at the closing session favoring a plan of detailed industries accident reports to some department of each state, these in turn to be forwarded to the United States Department of Labor. A bill to create in the bureau of labor statistics a division of safety, to gather and study accident statistics, met with considerable favor before Congress.

Speakers at the conference stressed the need of more adequate statistics in order more accurately to judge the cause of accidents in industry, which Secretary Davis estimated are costing 23,000 lives and 2,500,000 injuries annually. Frank Morrison, secretary of the American Federation of Labor, using Secretary Davis' further estimate that 85 per cent of industrial accidents are preventable, said that 19,550 are killed needlessly and 2,125,000 injured needlessly each year. He estimated the annual wage loss due to accidents at a billion dollars.

Seattle Bids Are In

Bids for supplying 80 new street cars for the Seattle Municipal Street Railway, Seattle, Wash., were opened on July 29 by the Board of Public Works. No action has been taken on the bids as yet as there seem to be a few technical details which must be straightened out before the contract is let. The following bids were received: St. Louis Car Company, $17,500 each; Cummings Car & Coach Company, $20,675; J. G. Brill Company, $19,969. It is estimated that $1,875,000 will be required to cover the total cost of these new units. They are to be double-truck cars, with a seating capacity of 58, and are to be used in city operation.

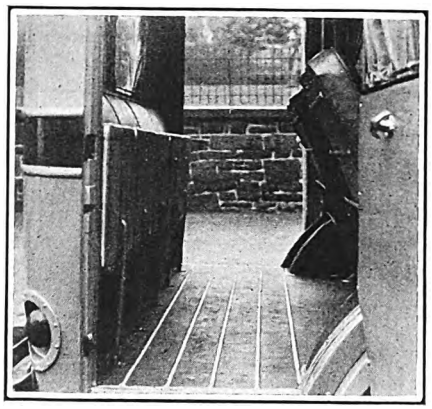
General Electric Board Pays Tribute to C. A. Coffin

Resolutions expressing deep sorrow over the death of Charles Albert Coffin, founder of the General Electric Company, have just been adopted by the board of directors of that organization, meeting for the first time since his death on July 14. The resolutions are as follows:

"Charles A. Coffin was the founder of the General Electric Company, and throughout his life its leader. His spirit was its inspiration. He had unfaltering courage in trying times. He had modesty and self-restraint in the days of great success. He developed an art and built an industry so that his company might succeed and his country prosper. No man could do this without force and tact and sympathy. No man could do it without the capacity to select and the personality to stimulate other men. No man could do it without that modesty in his own achievements which represents the highest generosity to his associates. Truly, if an organization may be a monument to a man, then this company is a monument to him. Some of the members of this board have been associated with Mr. Coffin throughout the life of the organization, and others are indebted to him for their opportunity. For themselves and for every member of the organization, in whatever capacity, they record their gratitude, their appreciation of his service and their sorrow."

Extreme Lightness and Flexibility of Service Mark New Bus Body

Several unusual features mark the bus body recently developed by the Six-Wheel Company of Philadelphia and now being manufactured by the Alex Wolfington Company. Particularly in the matter of weight this body is interesting in its possibilities. Realizing that the proper place to obtain information regarding extreme lightness with the maximum of strength was the aircraft industry, the builders made a close study of general procedure in this field, and the body as finally evolved followed closely along airplane construction lines. The pillars themselves are copies of hollow airplane struts and the belt and head rails are modeled after the thick single wings of monoplanes. By combining these two types vertical and horizontal strength were obtained with extreme lightness.



Unusual Rear Entrance, Showing Taxi-Type Folding Seats

The body subframe has been entirely eliminated, the pillars resting directly on steel channels. The side paneling is 14 gage aluminum, the body being arranged for servicing any section so that in case of collision a section can be removed and another installed.

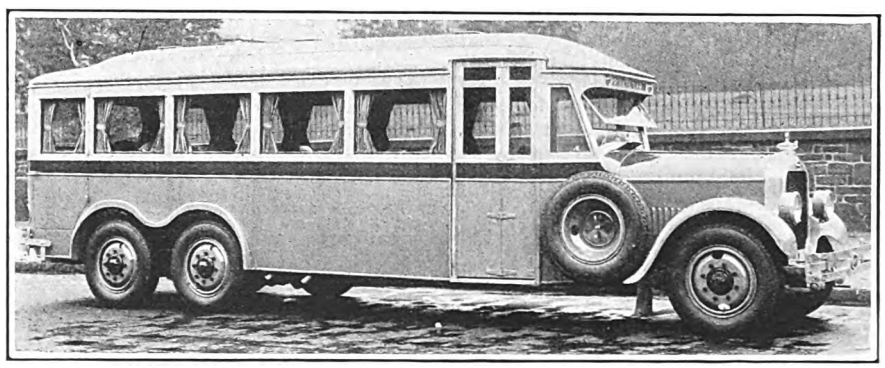
Another outstanding feature of the body is that it is available for either city type or parlor car type of service. This is accomplished by having the center headroom 76½ in. high. By the removal of the curtains and present windows, the installation of raise type brass sash windows and outside window guards and handrails inside, over the aisle, the body becomes available for street car type service.

It will be seen from the accompanying exterior view of the body that a full headroom jack-knife street car type door has been built into the parlor car model. Two rear doors are in the body and folding taxi-type seats are available if desired, with baggage carrying space in the rear. All doors are connected with a red bullseye tell-tale light on the dash. Doors must be entirely closed before this light goes out.

The seating capacity of the body is 29 passengers, all facing forward, and the over-all length, bumper to bumper, is 27 ft. 11¾ in. The body shell without seats weighs 2,702 lb. Complete with seats and ready for road service it weighs 3,518 lb. It is expected that within a few months, due to possible savings in weight of seats and hardware, it will be possible to reduce the combined weight of body and seats to approximately 3,000 lb., this being nearly 2,000 lb. less than ordinary construction.

John F. Ohmer Sizes Up the European Situation

That America has a hard battle before her if she expects to retain her present industrial supremacy was the substance of a statement recently made by John F. Ohmer, president of the Ohmer Register Company, upon his return from a three months' tour of Europe. Mr. Ohmer visited Italy, Switzerland, France and England, and was particularly impressed by the long strides which have been taken in Italy toward regaining pre-war economic prosperity. He also emphasized the fact that the English pound sterling being at a slight premium over the United States dollar shows the imposing financial stability of Great Britain. In spite of these facts, however, Mr. Ohmer believes that, with sane legislation and large scale production, the United States will continue to hold her commanding position in the commerce of the world.



Combination City and Parlor Car with Aluminum Body

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Bridgeport Brass Ads Take First Place in Competition

A selection of the historical advertisements by the Bridgeport Brass Company, Bridgeport, Conn., similar to the ones which have appeared currently in ELECTRIC RAILWAY JOURNAL, received first prize for "the best use of art in industrial advertising" at the annual convention of the National Industrial Advertisers Association, held June 21 to 25 in Philadelphia. The three types of selling appeals which the Bridgeport company entered were a series of their Phono-Electric advertisements, a similar series on brass products and a third on plumbing fixtures.

Rolling Stock

Los Angeles Railway, Los Angeles, Cal., has placed an order for three more single-deck, 29-passenger buses. One of these is a six-cylinder gas-electric bus to be built by the Yellow Truck & Coach Manufacturing Company, equipped with air brakes, and the other two are six-cylinder Fageol buses.

Lincoln Traction Company, Lincoln-Neb., is double-ending its Birney cars in order to permit of the elimination of loops and wyes and the lessening of track maintenance costs thereby. Reversible seats with full leather upholstering and floors covered with linoleum will represent the company's efforts to make car interiors more inviting.

Track and Line

Winnipeg Electric Company, Winnipeg, Man., has completed plans and placed orders for material for the construction of double track on Osborne Street extension and Memorial Boulevard from Broadway to Portage. This work, it is expected, will be completed by Oct. 1. Special construction is necessary in connection with this work. A new grand union will be installed at Broadway and Osborne and a double wye at Portage and Memorial Boulevard. The tracks will be laid on concrete foundation with asphalt pavement and will be insulated with elastite rail filler, which eliminates the use of stone liners and reduces track noises. The city proposes to carry out a scheme of ornamental lighting standards which will at the same time be suitable for supporting the overhead trolley wires, thus eliminating the use of special poles for trolley wiring.

Wisconsin Gas & Electric Company, Kenosha, Wis., has applied to the Common Council for permission to lay a single track on Center Street to extend from Sixth Street to Washington Avenue. If the company's request is granted this new line will speed up railway service during rush hours in the downtown district, as cars from the north will then be permitted to be returned to that section without traveling to the west limits of the city.

Williamsport Passenger Railway, Williamsport, Pa., has submitted to the Council plans for the new trackage and street improvements. The company desires additional franchises as a result of rerouting and the relocation of the carhouse. The company also asks to install new switches and rebuild and replace track on Basin, Fourth, East Fourth, Washington, West Fourth and Beeber Streets.

Lincoln Traction Company, Lincoln, Neb., with the permission of the City Council, will substitute a single track for a double track on a part of its line that serves the state fair.

Los Angeles Railway, Los Angeles, Cal., has received a consignment of 825 tons of 116-lb. steel girder rail, part of the 2,000 tons ordered from the Bethlehem Steel Company. The rail will be used in the extensive track reconstruction program on which the railway is now engaged. At present there are four large jobs under way. The old 60-lb. rail on the West Adams line is being replaced with 116-lb. grooved girder rail.

Trade Notes

Triumph Electric Corporation, Cincinnati, Ohio, has been organized to take over the good will, designs, records, patent rights and inventions of the Triumph Electric Company. So far as practical the new company will retain the old personnel and Triumph customers are promised prompt service on existing installations and the same high quality in new product for which the old company was so well known. The new company will specialize on its TR self-start automatic heavy-duty motor and at the same time be in a position to supply its other lines of electrical and refrigeration products.

Charles W. Harris, San Francisco, has been selected to build up a sales organization for the Dunn Painting Machine Company of the same city. The sales division of the company will be located on the second floor of the Dettner Building, 335 Howard Street, San Francisco, Cal.

R. J. Tiedeken has been appointed raw material salesman in the Philadelphia territory of the Bridgeport Brass Company of Bridgeport, Conn. Mr. Tiedeken has had considerable experience in the manufacture and sale of brass goods, having been associated with several different firms in that field.

Metal, Coal and Material Prices

Metals—New York	Aug. 3, 1926
Copper, electrolytic, cents per lb	14.50
Copper wire, cents per lb	16.25
Lead, cents per lb	8.925
Zinc, cents per lb	7.75
Tin, Straits, cents per lb	65.00
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.675
Somerset mine run, Boston, net tons	2.075
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.825
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.50
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb	12.6
White lead in oil (100-lb. keg), N. Y., cents per lb	15.50
Turpentine (bbl lots), N. Y., per gal	$0.95

New Advertising Literature

Condit Electrical Manufacturing Corporation, Boston, Mass., asks in its most recent circular, "Do You Need a Chaperon?" It then completes the analogy by pointing out that Condit M-4 safety switches equipped with thermal cutouts provide complete safety in supervisory control for motors up to 5 hp. and 600 volts. Industrial Handbook 5007 provides information on these switches.

Hill, Hubbell & Company, San Francisco, Cal., have issued a booklet which comprises 77 questions and answers on Bitulumin and other aluminum paints and metal primers. The treatment of the information given is such that it will satisfy both the executive and the scientific expert, the answers having been couched in language as non-technical as possible, although containing accurate information on practically every phase of metal painting.

Roller-Smith Company, New York, N. Y., has issued bulletin No. 550, covering new type SR line of relays. These type SR relays supersede the old Imperial type relays and have many marked advantages over the old type. The scales are longer, the accuracy is much greater, the torque has been increased several times and the new 7½-in. round pattern style of case matches the type SA and type SD lines of indicating instruments. Complete technical details are given in the bulletin.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued special publication No. 1734, a 55-page discussion of regulators for generator-voltage control. Data contained in this pamphlet have not heretofore been published, in particular the sections on rheostatic type automatic voltage regulators and special regulator applications having just been released by the Westinghouse company.

General Electric Company, Schenectady, N. Y., has issued booklet GEA 441, entitled "Gas-Electric Drive for Buses." In this publication the various advantages of single motor and dual motor electric drives are discussed, and the features which all gas-electric equipment has in common are outlined. The subject is considered generally rather than individually in the matter of manufacturers of this type of vehicle.

American Brown Boveri Electric Corporation, New York, N. Y., has issued circular No. 400, which describes the newly developed electric locomotive with individual axle drive. The general advantages of this type of drive are given as well as a number of specific ways in which the Brown Boveri development has attacked the various problems.

J. G. Brill Company, Philadelphia, Pa., has issued the second reprint of a series of advertisements from ELECTRIC RAILWAY JOURNAL setting forth the advantages of modern cars.

Copperweld Steel Company, Rankin, Pa., has issued revised engineering data and wire tables on messenger, guy and span wire for insertion in the standard loose-leaf binder which it furnishes for all of its engineering data sheets.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, August 14, 1926 *Number* 7

The Radio Sells Rides at Melbourne

ELSEWHERE in this issue appears an abstract of a radio talk by W. O. Strangward, secretary of the Melbourne & Metropolitan Tramways Board, on the ticklish subject of "Tramway Finances and Fares." One may suspect that the average radio listener is not keen on hearing statistics and why his fare had to be increased, but a reader of the article will realize that Mr. Strangward's simple and pleasant handling of the subject must have brought the subject home effectively to his listeners. Some of the flavor has remained even in the abstract imposed by space limitations.

This talk is only one in a series of twenty-minute lecturettes broadcast every fortnight by heads of the different departments. Thus the chairman has discussed "The Constitution and Activities of the Board"; the chief engineer, "Building a Tram Line and Planning the Tramway Development of the Metropolis"; the manager, "How the Trams Are Run"; the rolling stock superintendent, "The Building and Maintenance of a Tramcar," and one of the staff officers, "A History of Melbourne's Street Transportation."

It is quite obvious from the foregoing alone that the Melbourne tram-bus system is heartily in accord with the "tell-the-people" policy which our own W. H. Sawyer recently recommended to the government light and power officials. Furthermore, our Melbourne brethren have gone American trolley broadcasters a kangaroo's jump further through weekly use of the radio for direct ride-selling suggestions. For ten minutes every Friday night the radio fan receives suggestions on how to use the service for travel to this or that pleasure objective on Saturday and Sunday. The best proof that these "lecturettes" and shorter talks are appreciated is that the broadcasting station makes no charge for this valuable contact with the public.

Bus Progress in Europe

WHILE the use of the bus as an integral part of the general transportation system has been progressing rapidly in this country, development in Europe has been somewhat less extensive. The total number of buses now in operation in Europe is not much more than 30,000, as compared with about 80,000 in the United States.

In the United Kingdom the number is estimated to be approximately 18,000, of which some 5,500 are in London. The latest figures obtainable from official sources in France, appearing elsewhere in this issue, show a total of 4,500 buses in operation, of which 1,368 are in Paris. Throughout the rest of Europe the best available figures indicate that there are not more than 10,000 additional buses.

London and Paris have more bus service than cities of corresponding size here. Outside of these two capitals, however, bus operation has not been developed on a scale comparable to that in the United States. Interurban service in Europe has lagged far behind its counterpart in this country.

Compared to the situation in Europe, development has progressed with remarkable rapidity here. Today nearly all the large American cities are planning additional bus service. Intercity service has been growing by leaps and bounds. The contrast illustrates once more how the riding habit has been developed in the United States and how greatly the transportation demands here exceed those of other countries.

Latent Public Opinion Aroused at Newark, Ohio

NEWS of the shutting down of the Southern Ohio Public Service Company's electric car and bus operation in Newark is published elsewhere in this issue. Reports of the causes of this action make a story of political chicanery startling in its stark disregard of the best interests of the riding public. As usual the man on the street was unaware or uninterested in the machinations of his representatives until they resulted in the loss of a valuable service. Only then did the public itself take cognizance of the plight of its transportation company. But, bad as the situation appears on its face, there is now a ray of hope in the attitude taken by the public, once the facts were brought home by a shut-down in service.

The system at Newark is a part of the old Columbus, Newark & Zanesville Electric Railway that has twice passed through receivership and about a year or so ago emerged from a second reorganization. Zanesville, a part of the same system, has granted the new company a favorable franchise and is now receiving an excellent service with twenty new cars and several high-grade buses. Shortly after the Zanesville settlement Newark granted a similar franchise to the company for 25 years. In accordance with the terms of this franchise the company asked the Council for a 10-cent cash, four for 25 cents fare, the same as has existed in Zanesville for many months. No action resulted, and an attempt by the company to institute this fare resulted in an injunction. But the city went further. It granted a city-wide franchise at a 5-cent fare to an independent bus line despite the terms of the railway franchise. In an attempt to provide service the company had previously co-ordinated all bus operations with its own by buying up the almost worn-out competing buses and had acted in good faith in an attempt to provide an adequate service in Newark.

So much for history. No sooner had operations ceased than an indignation meeting was held that vented its wrath against the Council and the new bus

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company alike. A special meeting of the Council called for Tuesday night was not held; perhaps the indignation meeting of 600 citizens was too ominous.

At first blush, the Newark situation looked like another abandonment, and perhaps it may so result, as the company is justly firm in its decision. But despite the seeming apathy of the public during the negotiations, it now manifests an interest in the situation that promises to bring quick and definite action. It is this aroused public opinion, grounded in a faithful performance of public service, that renews faith in the security of a public transportation service founded on public friendship.

Balanced Consideration Important in Improving Cars

INTEREST in the improvement of electric railway cars is growing apace in the industry. There is evidence on every hand that railway operators and car manufacturers are taking active steps to provide cars with features that will be attractive to passengers. There is a stimulated interest in paints and finishes, floor covering and seat materials. The industry is beginning to move definitely toward the objective of supplying its rides in a more attractive package.

Now, however, that the industry has begun to make definite progress in improving its cars a word of caution may not be amiss. Here and there are indications that rapidly growing enthusiasm may soon result in overstepping the bounds of practicability. Attractiveness of finish and fittings does not call for "doodads." Street cars are mass transportation vehicles, and any features which are obviously unsuited to such service become incongruous. The limits of both good taste and reasonable maintenance cost may be easily exceeded. If this is permitted to occur the very object for which improvements are made will be defeated.

As in the case of light-weight construction, one-man operation, use of buses and similar movements which have taken place in the industry there is a tendency in some instances to swing from one extreme of the pendulum to another. From slat seats to lace curtains offers a range within which there is a happy medium of desirable and practicable improvement.

In such a movement as this there is also a tendency to grab a hobby and ride it hard. A particular color, a type of floor covering or seat material is not a short cut to attractive cars. A given seat material may or may not be justified under certain operating conditions. But it is only when judged in combination with the general character of the rest of the interior that the final effect produced can be determined. On the exterior paint helps materially and it covers a multitude of sins. But the paint in itself will not entirely compensate for awkward lines and angles that result from inadequate consideration of the general effect produced. The exterior lines and appearance of cars may well be the subject for much more attention than this phase of design is receiving.

All this may be summarized in the single word "balance." In the past there was a tendency to abandon considerations of merchandising attractiveness in the effort to achieve economy of maintenance. That policy has proved to be unwise. In the new movement looking to more attractive cars, however, consideration of maintenance economy must not be entirely abandoned.

A Victory Without Laurels in California

MOVING horrors in California are something of an anomaly. With "movie" horrors the case is different, but that is neither here nor there. One of the California cities recently had what some were inclined to think was a moving horror. The case got into the courts, but the judge decided on the basis of the facts, and the facts alone. So the electric railway won the right over the city's objections to use advertisements on the outside of its cars. The learned jurist admitted that the advertisements in question were not pleasing to the eye, but added that the esthetic was not a consideration in deciding what constituted the peace and safety of the citizens. Thus one sees the limitations of the law and likewise its impotence as a social force.

But the need for things of beauty in car advertising is not indigenous to that state. Once a railway imbibes the psychology of picture advertising as regards the transportation business its esthetic sensibilities will be too keen to permit inharmonious insignia to screech their messages from the side panels of the cars. This increasing appreciation of the need of art in industry has been stressed before in ELECTRIC RAILWAY JOURNAL, notably in the issue of Aug. 22, 1925. It is being achieved in increasing measure in this industry. Art in industry is not unattainable. Only a few weeks ago the New York *Times*, in commenting on the advertising show at the fifth annual exhibition of the Art Center in New York, said that the exhibit displayed "increasing ability of artists, working in harmony with the demands of business, to produce pictures of intrinsic beauty and merit."

Considering the enormous sums of money being expended yearly to perfect art in advertising and the resultant stimulating effect on the public, it should be construed as an arraignment for a judge to rule that the advertisements were more or less of an eyesore even if the safety of the patrons were not impaired. The slogan "it pays to advertise" has long since been amended to "it pays to advertise well." Witness the heights to which soap, soup and sermons have transported us in recent years. In view of the court's comment the California railway won a legal and technical victory only. Some day when a judge rules that advertising on the outside of cars is permitted because it is a mental and moral stimulus the victory for the railway will be a glorious one.

Soliciting Contributions with a Club

THERE exists in the utility industries an insidious practice. It is the policy of exacting tribute from manufacturers in the form of advertising in house organs, subscriptions to employees' benefits, purchase of customer-ownership stock and similar forms of "voluntary contributions" which are unwarranted impositions upon the seller's relationship with the purchaser.

Should a railway wish to encourage a benefit performance for its disabled employees, then immediately the equipment manufacturers who have enjoyed this company's trade in the past, or who hope to share in it in the future, are "invited" to take a page in the program which is to be sold at the performance. Should the mutual aid association of some utility find that its monthly bulletin is proving somewhat of a burden, there

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is always the opportunity graciously to allow a few manufacturers to express their friendship for the purchaser by taking space in the publication. Should a utility decide to sell a block of stock to its customers to encourage community interest in the company's welfare, again the manufacturers are canvassed to participate, although it could hardly be imagined that their friendliness toward the utility needed bolstering up.

The practice has reached a point where some one ought to ask the utilities to consider these requests in their true light. They are not justifiable requests. In each particular instance the amount at stake is no very disconcerting sum. And often the cause is a worthy one. But the manufacturer must deal not with one case nor with ten, but with hundreds of such proposals every year. In one instance the annual outlay in these channels reached nearly 1 per cent of the gross income for the year or an amount which, if added to net profit, would increase the sum available for dividends by 6 per cent.

There is no reasonable ground for levying tribute against the manufacturer under the guise of advertising. This is simply an indirect way of soliciting contributions—with a club in the hand of the solicitor. Customer ownership of stock is an excellent plan for raising capital and building good will, but manufacturers selling to the utilities are not customers and they cannot afford to tie up their funds in such paper. Such transactions are based on the relationship between buyer and seller in a way that transcends the limits of modern business ethics.

Traffic Congestion Relief Needs More Active Community Spirit

ACTIVITY by railway men in grappling with the growing seriousness of traffic congestion in American communities is not only justified by their direct interest in the mitigation of this widespread evil but is to be commended as a public-spirited effort to apply their experience as transportation men to the service of their communities

There is always danger, however, that their motives may be questioned. The very growth of traffic congestion to its present intensity is attributable in large part to the number and variety of interests responsible and affected. There has been a lack of any agency which on the one hand had the incentive to tackle this situation seriously, while at the same time having a broad enough community consciousness to knit together the many diverse elements interested in some phase of the problem.

It is becoming increasingly evident that the local common-carrier transportation companies have the broadest interest in the subject, and that where the approach is made in such a way as to eliminate any suspicion of selfishness, they can lead the way to effective improvement. In Chicago notable relief has been accomplished through the efforts of the Chicago Surface Lines, working in conjunction with the Association of Commerce.

Retail merchants are quickly alert to any move in the direction of traffic regulation. Real estate boards, automobile and automobile supply dealers, and shippers are all directly interested, in addition to the general automobile driving public, both as individuals and through automobile associations. In general, the attitude of most of these groups tends to become a defensive one whenever the subject of traffic regulation is approached. In most instances the interests of the community as a whole take a secondary position.

Success on the part of local transportation men in taking the leadership looking toward congestion relief is dependent to a large extent on their own breadth of view and method of approach. Local chambers of commerce furnish an excellent medium for contact with the other agencies affected. When this contact is made with a flexibility of mind that permits the other fellow's position to be so thoroughly understood that his cooperation may be won in making unbiased studies to determine the facts of the situation and their effect on his own business, definite progress toward relief may be expected.

Properly Designed One-Man Cars Earn Their Way to Popularity

MODERN one-man cars continue to show real improvements in operating conditions wherever they have been instituted with due regard to traffic requirements. An example of the case in point is found in the experience of three Fitkin properties which have recently taken definite steps to expand this form of operation. As recounted elsewhere in this issue, the Youngstown, Scranton and Altoona properties placed orders toward the end of last year for a number of light-weight one-man cars to be used in the various communities served. These cars have now been in operation for several months and have elicited nothing but words of commendation from railway men and patrons alike.

Of course the usual number of knockers were on hand to foretell dire happenings, such as retarded schedules, accidents and sundry evils. But no satisfaction has been accorded them; their prophecies have succeeded in arousing nothing more serious than the badinage of local wits, and the cars themselves have justified their existence from the first in reduced operating costs and in improved public good will. Particularly noticeable has been the evident pride in the equipment taken by the men who have been selected as operators of the cars. They feel the greater responsibility which has been accorded to them and measure up to it with an appreciable improvement in personal efficiency.

Here is an important element in the successful introduction of one-man operation. New and attractive equipment designed specifically for operation by one man helps to "sell" the new idea to both public and employees through the obvious improvement which is made. Remodeled old equipment lacks this "selling" feature and much of the opposition to one-man operation is attributable to attempts to utilize former old and heavy two-man cars.

The success of the venture was not prejudiced by a lack of adequate publicity on the part of the railways. In Youngstown, where the one-man car was being tried for the first time, a thorough educational campaign was conducted prior to the inauguration of the service to banish any prejudices which might be held by patrons of the lines affected. This is the essential step which all railway managements should take in making a similar change-over from two-man operation. If a person knows all about a thing he is less likely to shy away from it when asked to accept it as an everyday factor in his life. So a stressing of the manifest advantages of one-man cars cannot but prove beneficial as a preliminary step.

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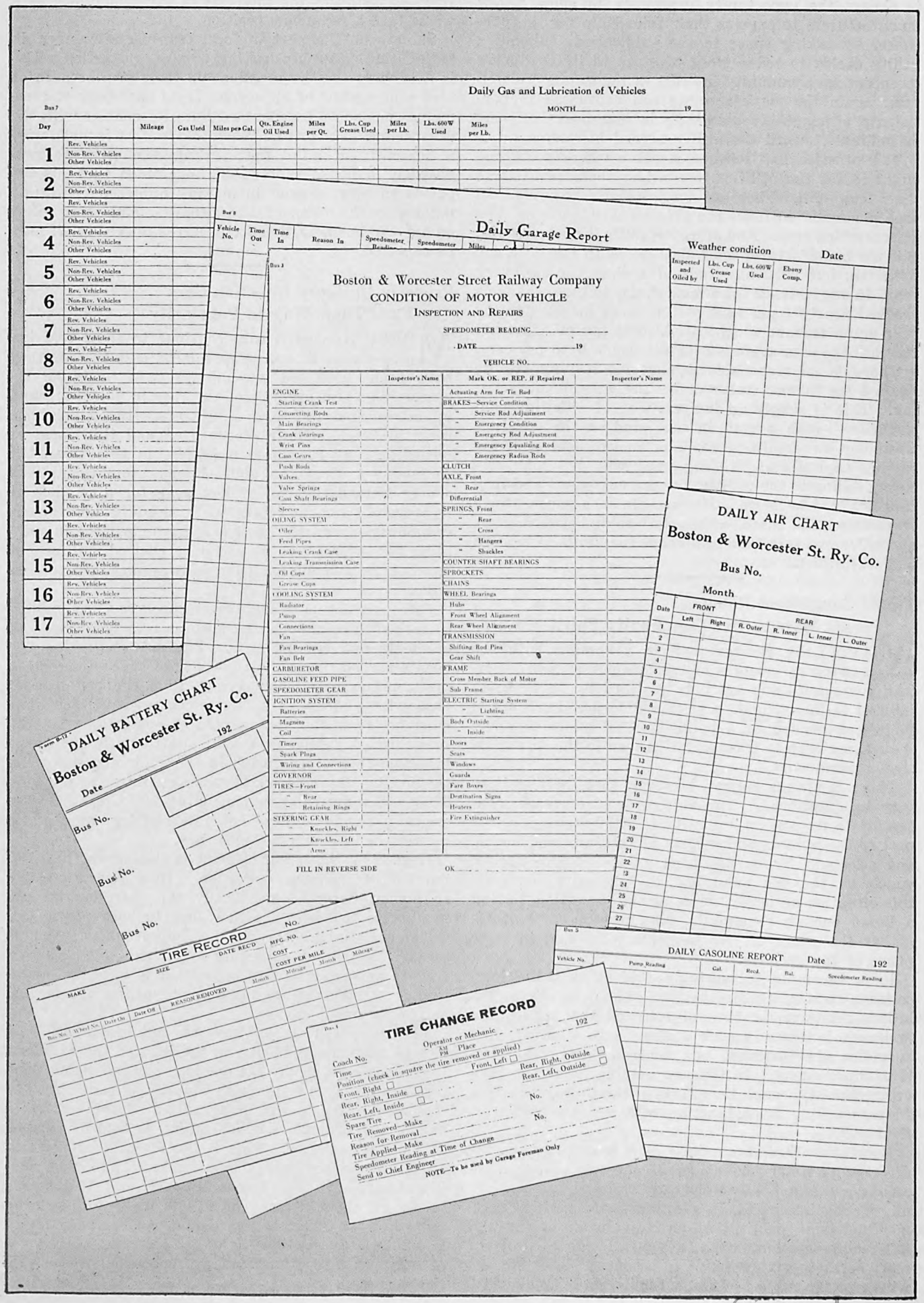
Record Cards of Many Types Used by Boston & Worcester Street Railway In Connection with Its New Bus Operations



Daily Gas and Lubrication of Vehicles

Bus 7

MONTH _____ 19__

Day		Mileage	Gas Used	Miles per Gal.	Qts. Engine Oil Used	Miles per Qt.	Lbs. Cup Grease Used	Miles per Lb.	Lbs. 600W Used	Miles per Lb.
1	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
2	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
3	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
4	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
5	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
6	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
7	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
8	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
9	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
10	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
11	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
12	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
13	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
14	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
15	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
16	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									
17	Rev. Vehicles Non-Rev. Vehicles Other Vehicles									

Bus 8

Daily Garage Report

Weather condition _____ Date _____

Vehicle No.	Time Out	Time In	Reason In	Speedometer Reading	Speedometer	Miles	Inspected and Oiled by	Lbs. Cup Grease Used	Lbs. 600W Used	Ebony Comp.

Bus 3

Boston & Worcester Street Railway Company

CONDITION OF MOTOR VEHICLE

INSPECTION AND REPAIRS

SPEEDOMETER READING _____

DATE _____ 19

VEHICLE NO. _____

	Inspector's Name	Mark OK. or REP. if Repaired	Inspector's Name
ENGINE		Actuating Arm for Tie Rod	
Starting Crank Test		BRAKES—Service Condition	
Connecting Rods		" Service Rod Adjustment	
Main Bearings		" Emergency Condition	
Crank Bearings		" Emergency Rod Adjustment	
Wrist Pins		" Emergency Equalizing Rod	
Cam Gears		" Emergency Radius Rods	
Push Rods		CLUTCH	
Valves		AXLE, Front	
Valve Springs		" Rear	
Cam Shaft Bearings		Differential	
Sleeves		SPRINGS, Front	
OILING SYSTEM		" Rear	
Oiler		" Cross	
Feed Pipes		" Hangers	
Leaking Crank Case		" Shackles	
Leaking Transmission Case		COUNTER SHAFT BEARINGS	
Oil Cups		SPROCKETS	
Grease Cups		CHAINS	
COOLING SYSTEM		WHEEL Bearings	
Radiator		Hubs	
Pump		Front Wheel Alignment	
Connections		Rear Wheel Alignment	
Fan		TRANSMISSION	
Fan Bearings		Shifting Rod Pins	
Fan Belt		Gear Shift	
CARBURETOR		FRAME	
GASOLINE FEED PIPE		Cross Member Back of Motor	
SPEEDOMETER GEAR		Sub Frame	
IGNITION SYSTEM		ELECTRIC Starting System	
Batteries		" Lighting	
Magneto		Body Outside	
Coil		" Inside	
Timer		Doors	
Spark Plugs		Seats	
Wiring and Connections		Windows	
GOVERNOR		Guards	
TIRES—Front		Fare Boxes	
" Rear		Destination Signs	
" Retaining Rings		Heaters	
STEERING GEAR		Fire Extinguisher	
" Knuckles, Right			
" Knuckles, Left			
" Arms			

FILL IN REVERSE SIDE OK _____

DAILY AIR CHART

Boston & Worcester St. Ry. Co.

Bus No.

Month

Date	FRONT Left	FRONT Right	REAR R. Outer	REAR R. Inner	REAR L. Inner	REAR L. Outer
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						

Form B-12

DAILY BATTERY CHART

Boston & Worcester St. Ry. Co.

192

Date

Bus No.

Bus No.

Bus No.

TIRE RECORD

MAKE SIZE DATE REC'D NO. MFG. NO. COST COST PER MILE

Bus No.	Wheel No.	Date On	Date Off	REASON REMOVED	Month	Mileage	Month	Mileage

Bus 4

TIRE CHANGE RECORD

Operator or Mechanic _____ 192

Coach No. _____

Time _____ AM PM Place _____

Position (check in square the tire removed or applied)

Front, Right ☐ Front, Left ☐ Rear, Right, Outside ☐

Rear, Right, Inside ☐ Rear, Left, Outside ☐

Rear, Left, Inside ☐ No. _____

Spare Tire ☐

Tire Removed—Make _____ No. _____

Reason for Removal _____

Tire Applied—Make _____

Speedometer Reading at Time of Change _____

Send to Chief Engineer _____

NOTE—To be used by Garage Foreman Only

Bus 5

DAILY GASOLINE REPORT

Date _____ 192

Vehicle No.	Pump Reading	Gal.	Recd.	Bal.	Speedometer Reading

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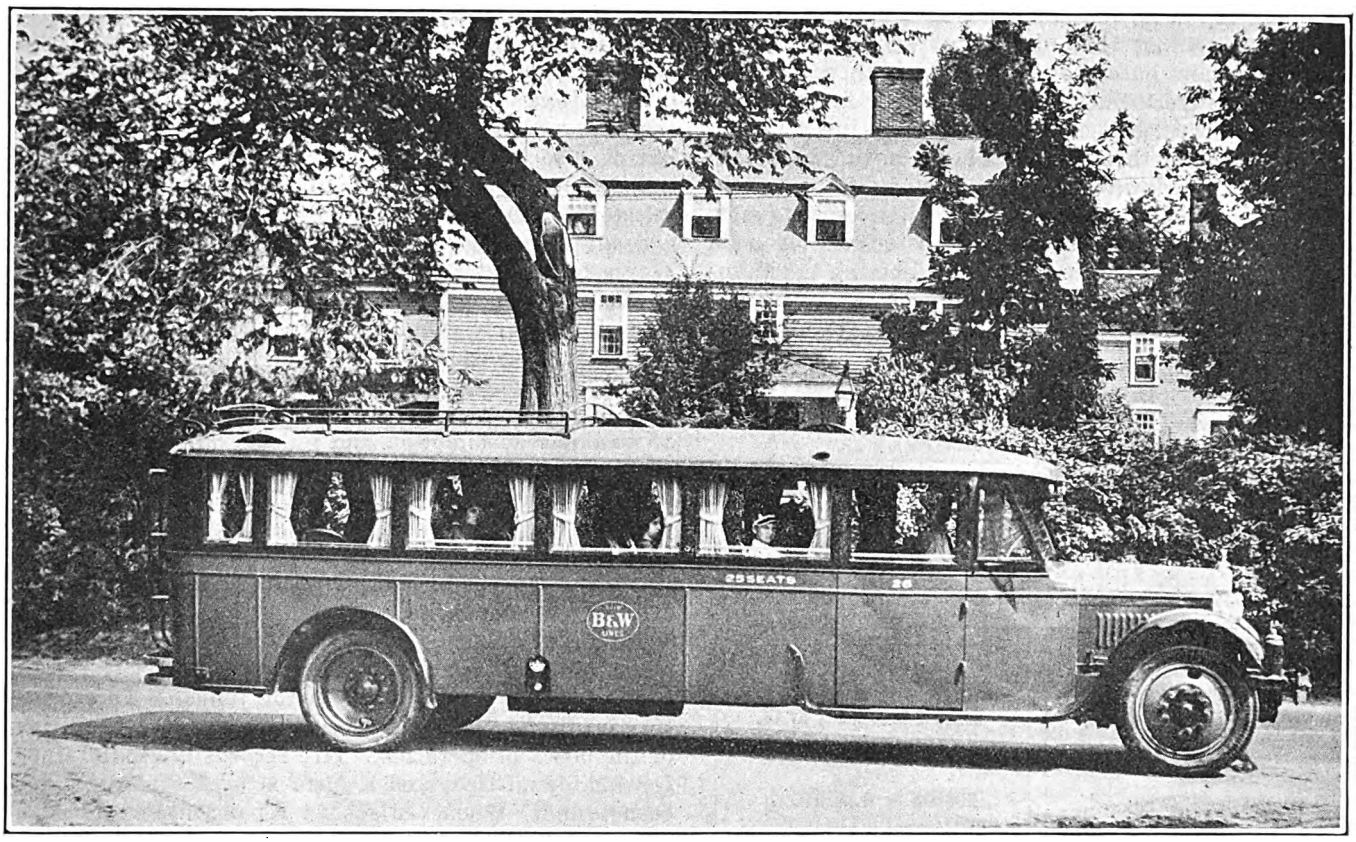

Intercity Bus Operated by the Boston & Worcester Street Railway Passing the Historic Wayside Inn at Sudbury. The Highway Route Between Boston and Worcester Traverses Different Territory from that Served by the Electric Railway Line

Recovering Revenue Through Bus Operation

Boston & Worcester Street Railway Establishes Service on 44-Mile Route and Recovers a Daily Average of 500 Through Passengers—No Co-ordination with Rail Service

THROUGH bus service between Boston and Worcester was begun June 1 by the Boston & Worcester Street Railway. In some respects this adoption of service is unique. It is not supplementary to nor co-ordinated with the electric rail service, which has been and still is in operation by the same company. The route followed by the buses covers for the most part a distinctly separate territory, that adjoining the so-called "The Yellow One Trail," known locally as the Weston Road, passing the historic Wayside Inn and thence leading through Marlboro, Northboro and Shrewsbury to Worcester. Thus the company operates a service for passenger travel quite independent of existing rights of way, and in so doing has extended its field of service.

Secondly, this railway becomes the exclusive through passenger carrier between Boston and Worcester by means of buses. The ruling of the Massachusetts Department of Public Utilities has acknowledged to this company rights of priority in service and by such act has eliminated competition by independent bus operators who for more than a year have contested for the growing passenger travel between these two cities.

Establishment of motor bus service by this company is of interest for another reason also. Whereas it has been a not uncommon practice to substitute buses for electric cars, with the subsequent abandonment of tracks, in this case the procedure has been different. It is the intention to continue rail service over the regular line and to rehabilitate to an efficient standard both rolling stock and track. Justification for this plan is found in the growing revenue from an increasing electric freight service, a not inconsiderable proportion of the total income now derived by this company, as told in ELECTRIC RAILWAY JOURNAL, Nov. 5, 1925.

During the past year careful study was made of methods for increasing revenue from passenger travel and decreasing the cost of operation. Experience gained in the operation of ten street car type buses on branch lines of this company, the Framingham-Marlboro-Hudson, Framingham-Saxonville and the Framingham-Framingham Center routes, on which electric cars were abandoned, has proved invaluable as a basis on which to consider motor bus service on other routes within the territoroy served. For the reconstruction of 12 miles of branch line track and efficient rolling stock

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more than $100,000 was estimated as a first and immediate cost; against this figure was set an outlay of $70,000 for new buses to operate along thoroughfares adjoining the track lines. The decision in favor of bus operation on these branches has been fully justified.

The problem of through bus service on the main line, on the other hand, involved a number of different problems. The route for a considerable portion is double track and on the western, or Worcester, end is on a private right-of-way. The highway adjoining the main-

Franklin T. Miller, Receiver of

BOSTON & WORCESTER ST. RY. CO.

BUS TIMETABLE

Between

BOSTON, WORCESTER and Intermediate Points

BOSTON to WORCESTER		A.M.	P.M.	P.M.
Boston	Lv.	8.30	9.30	11.00
Watertown	.	8.55	9.55	11.25
Waltham	. .	9.00	10.00	11.30
Weston	. .	9.15	10.15	11.45
Wayland	. .	9.30	10.30	12.00
So. Sudbury	.	9.35	10.35	12.05
Marlboro	. .	10.00	11.00	12.30
Northboro	.	10.15	11.15	12.45
Shrewsbury	.	10.30	11.30	1.00
Worcester	Ar.	10.45	11.45	1.15

HOURLY UNTIL

WORCESTER to BOSTON		A.M.	P.M.
Worcester	Lv.	8.00	10.00
Shrewsbury	. .	8.15	10.15
Northboro	. .	8.30	10.30
Marlboro	. .	8.45	10.45
So. Sudbury	. .	9.10	11.10
Wayland	. .	9.15	11.15
Weston	. .	9.30	11.30
Waltham	. .	9.40	11.40
Watertown	. .	9.50	11.50
Boston	Ar.	10.15	12.15A.M.

HOURLY UNTIL

Franklin T. Miller, Receiver of

Boston & Worcester St. Ry. Co.

BUS RATES

from

WORCESTER

to

SO. SUDBURY . .	1.30
WAYLAND . . .	1.30
WESTON	1.30
WALTHAM . . .	1.30
WATERTOWN . .	1.50
BOSTON	1.50

Beautifully appointed De Luxe Buses

Careful and Courteous Operators

Legalized and Bonded Bus Service

Franklin T. Miller, Receiver of

Boston & Worcester St. Ry. Co.

BUS RATES

from

BOSTON or WATERTOWN

to

WESTON	$ .90
WAYLAND . . .	.90
SO. SUDBURY . .	.90
MARLBORO . . .	.90
NORTHBORO . .	1.50
SHREWSBURY . .	1.50
WORCESTER . .	1.50

Beautifully appointed De Luxe Buses

Careful and Courteous Operators

Legalized and Bonded Bus Service

Rate Cards and Timetables Distributed by Railway

line track throughout the eastern end is not, at the present time, the popular route from Boston to Worcester, nor is the condition of the road surface such that heavy bus traffic can be maintained as satisfactorily so far as time and safety are concerned as is the case on the well-known and widely used route through Weston and Sudbury. Thus there was practically only one motor bus route available between the two cities, and on this, though outside its immediate territory, the Boston & Worcester Street Railway has been granted licenses by the municipalities served and a certificate for operation by the Massachusetts Board of Public Utilities.

These permits are issued to the Weston Transportation Company, a subsidiary company acting as holding company and from which the Boston & Worcester Street Railway leases equipment for the purpose of carrying passengers over the route. Such a procedure became necessary in order that the new routes might be established and also because this direct through line could be more advantageously managed as an independent unit.

Under agreement, seven de luxe type Mack buses, each of 25-passenger capacity, are leased to the Boston & Worcester Street Railway at the rate of 30 cents per vehicle-mile, of which 5 cents is charged to depreciation of equipment. Not only is the holding company responsible for providing adequate equipment but it also assumes the responsibility of furnishing well-trained, reliable drivers. Fourteen have been selected for this service. Costs of operation and repair are carefully checked at the offices of the Boston & Worcester Street Railway.

Inspection of motor buses is made at the expiration of each daily run. On arriving at the garage the driver reports his speedometer reading, and after recording the gasoline pump reading he fills his supply tank and records again the final pump reading. Calculations of gasoline consumption and mileage are later carried out by the office force. The bus is then inspected by the garage attendant and entries made on daily record cards for air pressure in each tire, hydrometer readings of each battery, amount of lubricating engine oil replaced and pounds of grease required for replenishment of cups and containers.

At the expiration of each 5,000-mile run a thorough overhauling of each bus is made and a complete record kept of the condition of the motor vehicle. This practice insures an accurate accounting for the condition of the buses in operation. Tire records are maintained for individual tires and a form is used separately for each brand. Whenever special repairs are required a record is kept of both kinds of work and the cost. These are entered on a card, of which there is one kept separately for each vehicle.

The company has commenced a survey of a number of factors affecting cost of operation of vehicles employed on the regular Boston-Worcester run. Outstanding as a condition affecting economy is the matter of proper lubrication, both amount and quality. To this end experiments are in process and these require engine oil tests in regular routine travel. Five gallons of a specified oil are placed in a clean engine; after a day's run under definite mileage this oil is drained and tested for solids, viscosity and flash. Using again the same engine cleaned, and under similar conditions of traffic and mileage, other oils are subjected to tests. It is expected after these tests have been carried on for a reasonable time that data will be obtained that can be used to arrive at a decision as to the most suitable engine oil under actual conditions of operation. Similarly tire wear is being studied. The fact that much of the highway on this route is concrete with little crown and that curves are frequent and at places quite sharp warrants close attention to these items of cost keeping.

Average Daily Revenue Increased $750

At the end of the first month of operation the record of passenger traffic showed some interesting information. The average number of daily passenger rides for the month was 500; the peak load carried on holidays and Sundays reached more than 1,200. These figures multiplied by the trip rate, which is $1.50 between Boston and Worcester, give an indication of an encouraging recovery of revenue. Conversely, they also show to what extent independent operators might well infringe on the returns of the company if such competition were allowed to continue unrestrained.

Under agreement with the Boston Elevated Railway,

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the Middlesex & Boston Street Railway and the Worcester Consolidated Street Railway the buses operated by the Boston & Worcester Street Railway do not accept passengers within zones of these former companies for local stops. On the other hand, through passengers are accepted, with fares so arranged as to avoid encroachment on territorial rights of local operating companies.

Rate cards and time-tables are distributed by the Boston & Worcester Street Railway to acquaint its passengers with schedules and fares. A terminal has been established at Park Square, Boston. Here passengers can secure hourly service to Worcester on a scheduled time of 2¼ hours. In order to accommodate theatergoers who desire to attend Boston theaters special late buses, held until some time after the starter has received announcement by phone from the principal theaters that the last curtain has been rung down, wait for the convenience of the public. This feature of accommodation alone has added much to the popularization of motor bus travel over the route recently opened for operation by this company.

New Cars Make Money on Fitkin Properties

Purchase of Modern Equipment for Altoona, Scranton and Youngstown Popularizes the Introduction of One-Man Operation—Passengers and Employees Welcome Improved Facilities

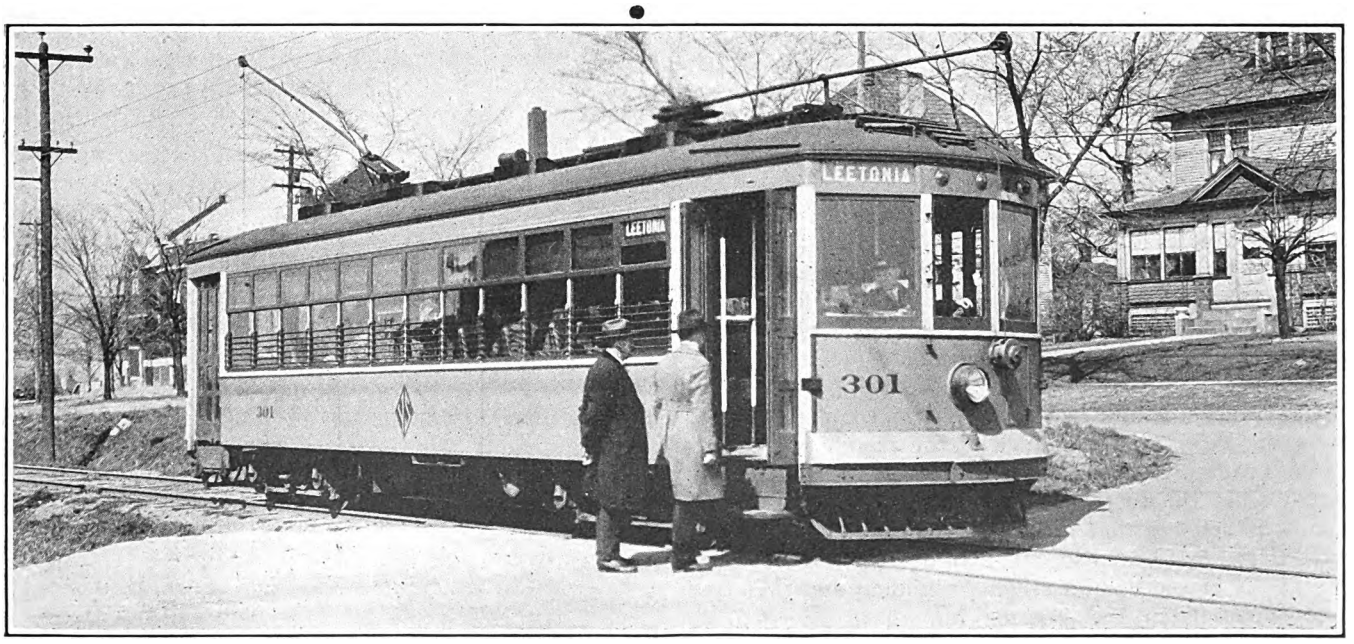
FURTHER proof as to the efficacy of light-weight cars in reducing operating costs has been obtained by the results on three railways under Fitkin management. In November and December of last year the Youngstown & Suburban Railway, the Scranton Railway and the Altoona & Logan Valley Electric Railway received a number of new cars, designed for one-man or two-man operation and built by the Osgood-Bradley Car Company. These cars were identical in construction for the three railways, but have been subjected to somewhat dissimilar operating conditions.

In Scranton, Pa., prior to the receipt of the ten new cars obtained under this order, one-man operation had never been attempted. With the new equipment it was introduced. Now, in addition, the company has 29 P-A-Y-E cars which have been remodeled for one-man operation. The ten new units replace old-style cars with longitudinal seats and of much heavier construction.

One-man operation had previously been adopted by the Altoona and Youngstown companies, but a number of refinements of design and operation were effected with the Osgood-Bradley cars. The thirteen new cars ordered for Altoona replaced a number of old and obsolete single-truck wooden cars and two heavy double-truck units of wood construction. Favorable comments have been received from patrons of the line with regard to the improved riding comfort and appearance of the light-weight cars.

The cars for the Youngstown & Suburban Railway now run between Youngstown and Leetonia, a distance of 19½ miles. It was not thought advisable to place them in interurban operation during the height of the holiday rush and they were accordingly limbered up in local service, where light-weight one-man cars had been in operation for a number of years. The older interurban units, which were replaced, were unsatisfactory for a change-over to one-man operation. The new cars in Scranton and Altoona are used principally for local service and are giving excellent performances as well as meeting with considerable popularity.

Considerable interest centers on the interurban operation of the new cars by the Youngstown company. Schedules, ordinarily presumed to be slowed up by one-man operation, have been maintained even better than with the two-man cars. The company states that the one-man operators are thoroughly sold on the new type of operation and would be loath to return to the two-man system. While the cars have not been in service long enough to make possible a definite statement as to the reductions which will be effected in maintenance of equipment, the company believes that 1 cent per mile is a conservative estimate of the savings which will be possible. The scheduled speed of the new units is the same as that of the old, while a reduction in energy consumption from 3.1 kw.-hr. to 2.1 kw.-hr. per



Exterior View of One of the Youngstown Cars. This Car Is Exactly Similar to Those in Use in Scranton and Altoona

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car-mile has been made. Total platform wages have been reduced from $1.10 per hour to 60 cents per hour. This allows for an increase of 5 cents per hour for one-man operators.

Considerable thought and study were necessary in determining the method of fare collection to be used with one-man interurban operation. It was desired to adopt a system which could be readily checked and still would not be a burden on either passengers or operators. The Macdonald ticket box for cash fare receipts was chosen to care for passengers paying cash. It was further determined to encourage the use of tickets and commutation rates by the daily rider, and ten-ride

Attention Patrons!

Soon after January 1, 1926, new cars will be placed in service between Youngstown and Leetonia. These cars are of the most modern type, low, light, sanitary, one-man operated and equipped with all known safety devices.

With the inauguration of this new equipment certain changes will be necessary in the method of fare collection. We are adopting the method now working very satisfactorily on a number of interurban lines, as same is, we believe, one that will meet the approval of our patrons and account for passengers carried.

On all through cars fares will be collected on a pay as you enter basis; all passengers boarding at stations will be asked to purchase tickets. These tickets will be punched by operator as passengers board car, ticket thus punched will be returned to passenger by operator and will serve as an indication of fare paid. ON LEAVING CAR PLEASE RETURN THIS CANCELLED TICKET TO OPERATOR.

In case of passengers boarding en route and tending cash fare operator will issue cash receipt for fare paid. THIS CASH FARE RECEIPT PASSENGER WILL PLEASE RETURN TO OPERATOR UNFOLDED AS YOU LEAVE THE CAR.

On local cars operating between Youngstown and Lowell Avenue and Youngstown and Boardman no change in the present method of fare collection will be made.

Your co-operation will be appreciated.

THE YOUNGSTOWN & SUBURBAN RAILWAY COMPANY,
E. O. SHRYOCK, Manager.

Card Given to Patrons of the Youngstown & Suburban Railway Prior to the Adoption of One-Man Operation

family tickets were provided for those not riding frequently enough to warrant the purchase of commutation books.

Signs were placed in all agencies requesting passengers to purchase tickets before boarding cars. A week previous to placing the new cars in through service the change in methods was well advertised by car cards and station signs. In addition, all passengers were presented with cards giving full instructions concerning the methods to be used in collecting fares under the new service. A reproduction of one of these cards appears herewith. So carefully were the instructions read and digested by the patrons that company officials state it would have been practically impossible for a stranger riding over the line on the day the change was made to become cognizant of the fact that a complete metamorphosis of methods had been made. One hundred per cent one-man operation is now in vogue over the company's lines, with the exception, of course, of the freight work.

In Scranton fewer schedule failures have been experienced since the introduction of one-man service. The company believes that this improvement may be attributed to the fact that with one-man operation the responsibility is placed upon a single individual and that this man appreciates the greater import of his job, is more alert and performs his work better. With two-man operation, on the other hand, the men are inclined to divide the blame for schedule failures and accidents. One-man operators are paid 8 cents over the maximum two-man wage, or 72 cents per hour. This high wage rate was the result of an arbitration on the 1925 contract, the award being made by Thomas J. Williams of the Department of Labor.

Operation in Altoona during the peak load in the morning is front-entrance, pay-as-you-enter and exit both doors. This method is employed for approximately two hours each day, due to the number of men who must be transported to the Pennsylvania Railroad shops. During the balance of the day the operation is rear entrance, front exit and pay-as-you-leave.

The 27 new cars in use on the three railway properties are fully equipped with safety devices and have the following specifications:

Builder of car body	Osgood-Bradley
Type of car	One-man, double-end
Seating capacity	44
Weight, car body	35,000 lb.
Bolster centers, length	21 ft. 4½ in.
Length over all	41 ft. 10 in.
Truck wheelbase	5 ft. 6 in.
Width over all	8 ft. 4½ in.
Height, rail to trolley base	11 ft. 1½ in.
Body	All steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse
Axles	Pollak heat treated
Car signal system	Faraday buzzers
Compressor	West'house DH-20
Control	Westinghouse K-35
Curtain fixtures	Morton Mfg. Co. pinch handle
Curtain material	Pantasote
Destination signs	Hunter illuminated
Finish	Pratt & Lambert enamel
Gears and pinions	Nuttall
Hand brakes	Peacock staffless
Heater equipment	Consolidated Car Heating Co.
Headlights	Ohio Brass, Gold Ray; Electric Service Supplies dimmer
Journal boxes	Symington
Lightning arresters	Aluminum cell
Motors	Four Westinghouse 510-A, 2,600 volt
Safety devices	Safety Car Devices Co.
Sanders	Osgood-Bradley traps
Sash fixtures	O. M. Edwards
Seats	Heywood-Wakefield reversible
Seating material	Leather
Step treads	Kass safety
Trolley retrievers	Knutson
Trolley base	Ohio Brass
Trolley wheels	Ohio Brass
Trucks	Osgood-Bradley 45-66-FE
Ventilators	Eight Garland C-1 fr. type
Wheels	26 in. diameter

Tramways Operate One-Third of All Buses in France

CO-ORDINATION of rail and bus service is making steady progress in France. According to the latest French governmental reports approximately 4,500 buses of all kinds are now in operation. Of this number about 1,500 are run by the various tramways, some 2,000 are used in regular intercity service and 1,000 more are in special service, such as sightseeing, touring, etc.

By far the largest single tramway bus operator is the Société des Transports en Commun de la Région Parisienne, with 1,368 such vehicles on Aug. 1, 1926. Classified according to types these were:

	Aug. 1, 1926	Aug. 1, 1925
Four-wheel buses	1,265	1,263
Six-wheel buses	51	51
Express buses	30	28
Sightseeing buses	22	22
Total	1,368	1,364

Passengers carried by the buses of the Société des Transports en Commun de la Région Parisienne increased steadily from 1921 to 1924. In 1925 the fare was raised and some loss of traffic resulted. Figures for the various years follow:

1921	245,902,430
1922	290,146,147
1923	337,503,838
1924	356,529,851
1925	344,800,583

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Melbourne Tramways Bolster Up City's Finances

Strenuous Efforts Being Made to Safeguard the Goose Which Lays the Golden Eggs—Mr. Strangward Points Out Why It Is Necessary to Increase Tramway Fares in the Australian Metropolis

By W. O. Strangward
Secretary Melbourne & Metropolitan Tramways Board

EDITOR'S NOTE

This article is based on a recent radio talk made by Mr. Strangward in Melbourne. It presents that portion of his remarks which indicates the peculiar tax situation that has been allowed to grow up. It is scarcely conceivable that such conditions can exist in a modern, progressive city. The Melbourne Tramways are supporting even the sick, the halt and the blind. Conditions in some parts of the United States are sufficiently bad, but it is to be doubted if they can approximate the mélange which is Melbourne.

HERE are some facts which cause tramway fares to be very much higher than they would otherwise be. Although we are expected to run the trams upon business lines and to make each year's revenue balance the expenditure, we are compelled by act of Parliament or by time-honored custom to meet expenditure out of tram fares which cannot be justified upon commercial principles and most of which would not be paid by a tramway management if it were privately owned. Of course this expenditure is not waste or a loss to the community, because if we did not pay it some one else would have to do so.

Tramways Are Forced Into the Rôle of Public Benefactor

The first item to which I refer is a sum of about £28,000 per annum which the state government used to contribute to the Queen Victoria Infectious Diseases Hospital. No one can urge that the tramways should be responsible for a proportion of the upkeep of an infectious diseases hospital, yet since 1919 an act of Parliament has compelled the Tramways Board to relieve the state of this burden. It is now paid out of tramway fares.

Then a sum of £53,000 per annum is required to supplement the contributions of the Councils and the insurance companies so that the Metropolitan Fire Brigade, of which we are so justly proud, may continue to protect the people's properties from destruction by fire. The Tramways Board pays this, although it is difficult for any one to see why tramway passengers, as such, should contribute to the upkeep of the Fire Brigade.

Another Chance to Sting the Tramways Board

Some of you may remember that long before there were any tramways in Melbourne an alteration was made in the method of collecting license fees for public houses. This alteration deprived the local Councils of the publicans' license fees, which up to that date they were accustomed to collect. The government, however, decided to pay to the Councils a sum equivalent to what they were deprived of. This now amounts to £23,000 per annum. In 1919 an act of Parliament shifted the payment from the government onto tramway passenger fares, and we have paid it every year since that date. As the Mikado would have said, "It's a fool of an act, but still, that is what the act says!"

Now these three items alone cost the Tramways Board £104,000 per annum. The payment is a loss to us, but of course if we were not compelled to pay it the government would have to raise your income tax, or land tax, or some other tax, to a similar extent.

The Old Story of the Paving Charges

I could continue for quite a while quoting payments made by the board which save an equivalent expenditure by some one else. For example, we know that the railway finances have to bear the cost of making and maintaining the railway tracks. The Tramways Board also pays for the construction and maintenance of its tracks. There is this difference, however. No one, other than the railway department, has any right to use the railroads, but any one, even the motor buses, which would like to entice our tramway passengers away from us, can freely use the tramway tracks. As a matter of fact, our tramcars do hardly any damage to the roads which we make, because the tram wheels run only on the tram rails. Most of the damage to our tracks is done by ordinary vehicles. Just consider for one moment the immense value of the tram tracks to the people and the immense amount we save the municipalities every year.

We have constructed about 130 miles of the highest class of road, an average of 19 ft. in width, and we also maintain it in a condition which generally is much superior to the sides of the road, which are under the care of the Councils. You all know that our portion of the street is usually the best-kept portion of the road; the Councils see to that and promptly phone us if, as occasionally occurs, a rut temporarily escapes the notice of our track inspectors. Sometimes the Councils complain of the condition of our portion of the road at a time when the sides of the road are in a most deplorable condition, and we have to see that the complaints receive prompt attention. In many of the outer suburbs drivers of ordinary vehicles refuse altogether to run on the sides of the roads, and our tram drivers are sometimes compelled almost to stop before such vehicles will allow the tram to pass. If no tramways had been constructed the Councils would have been com-

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pelled to spend about £1,500,000 in making the central portion of these roads, and the interest and sinking fund on this expenditure would cost the ratepayers about £100,000 per annum. The Councils would also be required to maintain the roads and would thus be involved in an annual expenditure of £250,000 per annum. I leave you to estimate what increase in municipal rates would be involved. In America the ratepayers are commencing to relieve the tramway companies of this burden, as they recognize its injustice.

Tramways Are Fair Game for Municipal Taxes

I don't want to pick out every large item which tends to increase tramway fares, but it is worth while remembering that although the board up to last month was carrying the public at slightly less than cost price, it is compelled to pay the Councils about £13,000 per annum in municipal rates upon the portion of the road which, as I have just told you, was constructed and maintained by the board. Of course, we pay rates on our depots and other buildings as well; no one complains of that.

Even Have to Light the Streets

Are you aware that the board pays for the street lighting of 80 miles of suburban streets which are used by our trams? This costs us about £10,000 per annum. If there were no trams this expenditure would have to be met by the Councils out of your rates. I do not know of any other tramway undertaking in the world which pays for the lighting of the streets.

I will just mention one other item. I refer to the enormous amount of free traveling which the board is practically compelled by public opinion to grant. For example, we carry all members of the police force, while in uniform, free. Then the board runs a large number of so-called "workmen's" cable tramcars, upon which any one may travel at concession rates at practically half fare. Then we give passes to hundreds of blind people which entitle them to unlimited free travel. If the blind person is a returned soldier we also allow his attendant to travel free. We issue about 500,000 free passes per annum to returned soldiers whose war injuries seriously impair their means of locomotion. Scholars attending school are carried at rates which are about one-fourth of the adult fare and thousands of concession tickets are issued to school children visiting the sea baths, dental clinics, etc. It is estimated that these concessions, for which we receive no refund, are worth at least £30,000 per annum.

At Any Rate the Government Saves Money

The items I have mentioned represent an expenditure by the board amounting to a community value of at least £400,000 per annum. In other words, they are a loss to us, but the government, the Councils or the people thereby save that sum per annum. British and American tramway men who have visited Melbourne tell us that they have never heard of a tramway management which is subjected to such huge and unreasonable public burdens.

When the Church Street bridge was erected a few years ago Parliament ordered the board to pay £20,000 toward its cost. The Spencer Street Bridge Commission has recommended Parliament to direct the board to pay £80,000 toward the cost of constructing a bridge over the Yarra at Spencer Street. These payments must eventually be paid out of tramway fares, yet the board's passengers only use the bridges in the same way as passengers in motor cars or motor buses use them. Payments of this nature render increases in tramway fares inevitable.

Had to Open New Track Even Though Traffic Failed to Justify It

Since the board was appointed, seven years ago, we have opened more than 50 track-miles of new tramways. Not one of these new tramways (desirable as they are from the standpoint of public convenience) is yet able to meet its operating expenses and its proportion of the charges imposed upon the board by act of Parliament.

On some lines the passengers are not charged much more than half of what it costs to carry them. But these new tramways open up the comparatively cheap lands of the metropolis; the value of the land is greatly increased, the public is provided with a good road at the board's expense and the Councils are able to raise big rates from the properties. These new tramways are a good thing for the metropolis, but they all help to cause an increase in tramway fares.

The Trolley Car the Safest Vehicle on the Street

MUCH has been published about the small amount of street area per passenger taken by the electric railway car as compared with other means of transportation in the city streets. Not so much has been said about the relative safety of the various means of transport, but probably in most cities just as good a case for safety to passengers and pedestrians could be made out for the street car as in economy of street area occupied.

Some instructive figures of this kind have recently been compiled in Berlin, Germany, for accidents reported in 1925. Here it was found that, on the basis of passenger trips, the street car was 50 times as safe as the private automobile, and that on the basis of responsibility for accidents caused it was 100 times as safe. Necessarily, rather broad assumptions had to be made as to the number of passenger trips made daily in private automobiles and taxis in Berlin by the author of the compilation, Doctor Wentzel, professor in the Technische Hochschule in Aachen. But on the bases assumed, and taking the figure of the street car in each case as unity, the proportions work out about as shown in the accompanying table. The table appears in the issue for July 2 of *Verkehrstechnik*.

Ratio of Berlin Street Accidents Classified by Vehicle Causing Accident

1925

	Private Passenger Automobile	Taxi	Motor Bus	Street Car
Accidents, total	58	26	2.77	1
Persons injured	25	12	2.2	1
Persons killed	29	24.5	6	1
Accidents for which operator was responsible	103.6	53	4.4	1

Corresponding figures for a number of the cities in this country would be of interest.

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Application of Automatically Controlled Equipment to Substations

Complete Control Sequence of Substation Apparatus Is Necessary from the Time a Unit Receives Its Initial Starting Impulse Till It Is Taken Out of Service—Various Forms of Supervisory Control Systems Meet Requirements

By R. E. Powers
General Engineering Department, Westinghouse Electric & Manufacturing Company

SELF-STARTING synchronous converters and motor-generators with automatic switching have now become used quite generally in railway substations. Relays have been developed to indicate at all times the electrical and mechanical condition of the conversion unit and its associated switching equipment. Relays function to initiate the impulse that automatically starts the converter or motor-generator set when the voltage of the trolley circuit indicates the necessity for the capacity of the idle unit. Specific relays continuously check the supply line electrically, to determine the value of the voltage, the phase rotation and single or unbalanced phase conditions. Deviations from normal, within predetermined limits, will prevent an idle machine from starting and will take an active machine out of service until suitable line conditions are again restored.

In the case of the converter, synchronous speed and polarity are indicated by the action of a polarized relay, which functions to complete a portion of the sequence of operation when the polarity builds up in the correct direction. Should the polarity build up in the wrong direction, this relay closes certain auxiliary contacts that reverse the shunt field circuit momentarily, causing the converter to slip a pole and correct the polarity. Thermal relays that indicate the temperature of the bearings, windings and load limiting grids close their contacts when the temperature approaches a limit at which it is dangerous to operate the equipment. The closing of the thermal relay contacts shut the unit down temporarily if the grids or windings overheat, and permanently should a bearing overheat. Relays that indicate overload, overspeed, reverse current, etc., are constantly in attendance, checking the conditions under which the equipment operates, so that they may function to protect the equipment if a dangerous operating condition is indicated.

Automatic switching equipment has reached a stage in its development where the automatically controlled substation is considered superior to the manually controlled station. The tendency in railway practice is toward the installation of a larger number of small substations equipped with full automatic control. These can be located at the load centers, thus establishing a more uniform system voltage, eliminating long and costly feeder systems, mitigating the effect of electrolysis and securing the benefits and savings effected by automatic operation of the various elements of conversion equipment.

Every effort is being made to establish continuous service. Duplicate conversion equipment is placed in important substations so that a spare unit is always ready to be put on the line in case the operating, or "lead off," unit is automatically taken out of service by one of its protective devices. In order to increase the reliability of the high-tension supply it is recommended in such cases that duplicate transmission lines, each capable of carrying the substation load, be supplied from the same or independent power sources. The switching equipment should be so designed that an automatic transfer from the preferred to the emergency feeder system is effected upon failure of the preferred feeder.

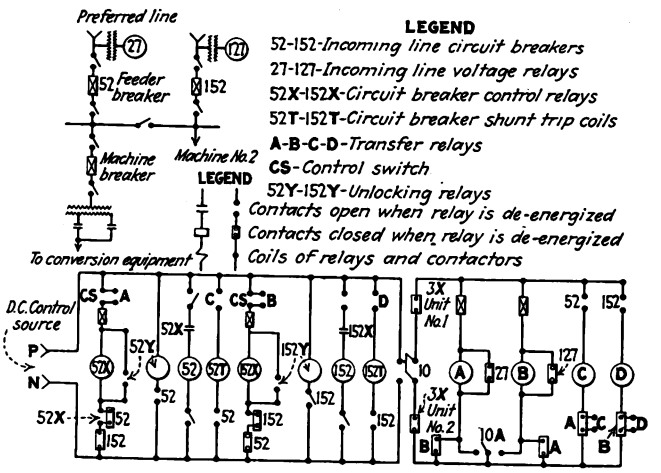

Fig. 1—Sequence of Operation to Automatically Transfer from the Preferred to Emergency Feeder System

A typical scheme of rapid transfer from the preferred to the auxiliary source of power in case the preferred source fails is shown in Fig. 1. This shows the relays, contactors, and breakers in the de-energized position. A single-pole, double-throw switch 10*A* is used to select the preferred source of supply. With the double-pole switch 10 in the closed position, connecting the transfer relays *A*, *B*, *C* and *D* to the control potential, and knife switch 10*A* thrown to select breaker No. 52 as the connecting link to the preferred source of power, the sequence of operation is as follows:

Relays *A* and *B* will attempt to pick up, but the auxiliary contacts of relay *A* will open to prevent relay *B* from closing. A second set of contacts on relay *A*, which are closed when relay *A* is closed, will complete a circuit to the closing coil of relay 52*X*. Upon the closing of the main contacts of 52*X* the circuit to the closing coil of breaker 52 is completed, thus closing the breaker and latching it in. Auxiliary contacts on breaker 52 close when the breaker is closed and en-

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ergize the unlocking coil on relay 52*X*. This relay will cut off current from the closing coil of breaker 52 and from its own circuit, thus leaving the feeder breaker mechanically latched. The main busbars are now energized from the preferred source of power through breaker 52.

If the machines are operating and the incoming line through circuit breaker 52 fails, the machines in the station will be disconnected immediately from the alternating-current and direct-current ends by the action of the reverse current relays. Upon opening of the auxiliary master relay 3*X* of the machine automatic switching equipment, the transfer scheme becomes operative as follows:

Low voltage relay 27 being de-energized will close its contacts and de-energize relay *A*, thus causing relay *B* and *C* to close. Relay *C* will energize the shunt trip coil 52*T* to trip out feeder breaker 52. The opening of breaker 52 will complete a circuit through 152*X* to close breaker 152, as described above. The sequence of operation to retransfer from breaker 152 to breaker 52 can easily be checked by following the circuits in the sketch.

The automatic switching equipment controlling the machine is so designed that the rotating equipment may not be reconnected to the station alternating-current bus until the induced voltage due to rotation has been reduced to a low value. In order to decrease the normal time element of the induced voltage due to rotation, a block of high resistance is automatically inserted in the field circuit during the closing down period. This will effectively kill the field, and rapidly reduce the voltage to a minimum so that the equipment may be restarted without loss of time. Upon reduction of the induced voltage the automatic features of the switching equipment function to reconnect the units to the station bus and restore service with the minimum outage.

Selection of Conversion Equipment

It is difficult to make a general statement as to whether motor-generator sets or synchronous converters should be installed in a given railway substation or system without first making a complete study of the conditions under which the equipment is to operate. Certain situations are ideal for synchronous converters while others indicate clearly that motor-generator sets would be more efficient and reliable. Motor-generator sets should be used at the ends of long transmission lines where the voltage is subject to sudden fluctuations, such as result from switching operations or sudden shifting of large blocks of power. If the resistance of the transmission line is excessive the operation of synchronous equipment in general will not be satisfactory.

On voltages of 13,200 or lower, the comparison between converters and motor-generator sets must be made on the basis of converters with their step-down transformers as units. On voltages above 13,200 the motor-generator set must be supplied with a step-down transformer, which gives a decided advantage to the converter in the items of over-all efficiency, space requirements and weight. In smaller sizes, however, up to and including 1,500 kw. at 13,200 volts, the installations of synchronous converters with automatic switching equipment are about on a par with the installations of automatically controlled motor-generator sets. With the transformers on the same floor level there is little difference in space required. There is little difference in first cost for equipment in capacities of 1,000 to 1,500 kw. The over-all efficiency is in favor of the converter.

Protection of Conversion and Feeder Equipment

On large 60-cycle converters, approximately seven times full load will cause the rotor to drop back and pull out of step if the load is not removed in a sufficiently short period of time. Obviously the pull-out will occur at much lower load values as the alternating-current voltage is lowered. A synchronous commutator-type machine cannot slip a pole, under operating conditions, without serious flashing. To prevent flashing under the above conditions a quick-acting circuit breaker must operate to relieve the converter of its excessive load before it can drop back to its "pull-out" position. If the resistance of the short circuit path, including the converter windings, is such as to limit the current to less than this value, high-speed circuit breaker protection is not required. Such equipment or resistance is necessary with any arrangement of the converter if interruption to service from short circuit is to be prevented. In general, the same reasoning applies to motor-generator installation except that the motor-generator is inherently more stable and the commutating limits are not so narrow. Slipping of poles in the synchronous motor does not inherently cause a flash on the generator commutator.

When the feeder network is of such low resistance that the short-circuit current will exceed the commutating capacity of the generator, high-speed circuit-breaker or flash suppressor protection is necessary.

In order to secure a quick-acting direct-current breaker capable of opening or limiting the current in such a case, a radical departure from standard breaker design is necessary. Fig. 2 is a schematic diagram showing the arrangement of levers, pivots, springs and solenoids, incorporated in the latest designed high-speed direct-current breaker.

In the open position with all electrical parts de-energized, the opening and closing springs hold the main floating member solidly against stops, causing the plunger to be drawn out of the closing solenoid. When potential is impressed on the closing circuit, the closing plunger is drawn into the solenoid, causing motion of the closing lever around the fixed pivot *A*. By the action of the closing lever the main floating lever is rotated around the upper stop as a center, causing the closing spring to be distended and the sealing armature to come into contact with the magnetic circuit of the holding-in coil. Potential is now applied to the holding-in magnetic circuit. The sealing of the armature makes the pivot *D* a fixed point. Thus when potential is taken from the closing coil the closing spring rotates the floating member around pivot *D* as a center to close the breaker and place the opening spring in tension as shown in an accompanying illustration.

Standard carbon circuit breakers open in from 0.1 to 0.2 second, while a high-speed breaker, to be of any value in preventing flashovers, must open the circuit in the incredibly short period of time required for a synchronous converter to drop back in phase position sufficiently to fall out of step or for the commutator of a motor-generator set to become sufficiently heated to cause vaporization of the copper and the establishment of an arc between brushes of opposite polarity.

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A description of the improved type of Westinghouse high-speed circuit breaker was published in the ELECTRIC RAILWAY JOURNAL for May 29, 1926, on pages 935 and 936.

In the oscillogram shown a direct short circuit was thrown on a 2,000-kw. 1,500-volt synchronous motor-generator set by closing a quick-acting knife switch. Sufficient cable to connect into the circuit the high-speed breaker shunting current-limiting resistance constituted the only external resistance at the time the short was applied. The breaker functioned to limit the short-circuit current to 12,500 amp. in 0.009 second. Complete opening of the breaker and rupture of the arc in 0.017 second inserted the current-limiting resistance to reduce the current to 4,810 amp. The average rate of rise of the short-circuit current during the first 0.009 second was at the rate of 1,400,000 amp. per second.

Direct-current feeder breakers equipped with short-circuit detector relays and service-restoring features, in combination with a high-speed breaker in the machine circuit, make a very flexible type of feeder and machine protective equipment. This type of feeder equipment utilizes the ordinary electrically operated circuit breaker provided with the short-circuit detector relays and automatic reclosing equipment. The circuit breaker is mechanically latched when closed and is tripped by an "impulse coil," which is in reality a through-type current transformer, the feeder circuit being the primary.

The short-circuit detector relay is operated from the induced secondary current of this impulse coil or current transformer. The amount of current induced in the secondary of the impulse coil depends entirely on the rate at which the current is changing in the feeder circuit. The rate of rise of direct-current short circuits depends on the character of the short and the distance from the station bus. A short circuit of trolley to rail just outside the substation constitutes practically a terminal short circuit, and the rate of current rise will be of the order of 3,000,000 amp. per second, depending upon the machine characteristics. Short circuits between the third rail and track, at an appreciable distance from the substation, have been recorded in which the current rise was of the order of 500,000 amp. per second. Under such conditions appreciable current is induced in the impulse coil secondary, causing the breaker to be tripped. Under normal conditions or conditions of slowly changing loads the rate of current change is so small that the induced secondary current is negligible and the breaker is not opened. Therefore, due to its design features, the breaker selects between short circuit the overload, opening only on short circuit.

In situations where an appreciable amount of current may be dropped suddenly, as might occur by the sudden interruption of the current required to accelerate a large eight or ten-car train, the short circuit detector relays are provided with auxiliary windings excited from the station bus when the feeder breaker is in the closed position. The flux set up by this bias winding is in such a direction as to neutralize the flux set

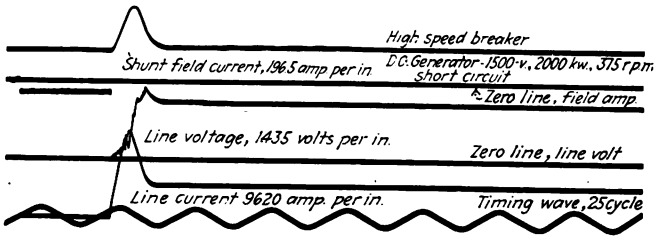

Fig. 3—Oscillogram Showing Voltage and Current Values in the External Circuit of a 2,000-Kw., 1,500-Volt D. C. Synchronous Motor-Generator Set. Type HS Direct-Current Breaker Functioned to Limit the Short-Circuit Current and to Insert Current-Limiting Resistance Between the Terminals of the Generator

up in the detector circuit due to a rapidly decreasing load current. Therefore the detector relay will not operate to open the feeder breaker on rapidly decreasing values of load current.

Fig. 4 shows a single-line diagram of a two-unit automatic substation equipped with a high-speed circuit breaker in the machine circuit, and short-circuit detector service restoring feeder breakers in each of the three feeder circuits.

A short occurring on any of the feeder circuits, through independent means, will trip the high-speed breaker in the machine circuit and the carbon breaker in the feeder circuit. Due to its high-speed characteristics the machine breaker will open first and insert a resistance in the machine circuit to limit the short-circuit current to a value within the commutating limits of the conversion equipment. The feeder breaker, being slower in action, opening on the order of 0.2 second, will then function to open the feeder circuit, disconnecting the conversion equipment from the fault.

As soon as the short-circuit condition has been relieved by the opening of the feeder breaker, the high-speed breaker, through the action of automatic switching equipment, will reclose to establish full bus potential. The feeder breaker is equipped with resistance measuring relays that function automatically to reclose the feeder breaker when the resistance of the

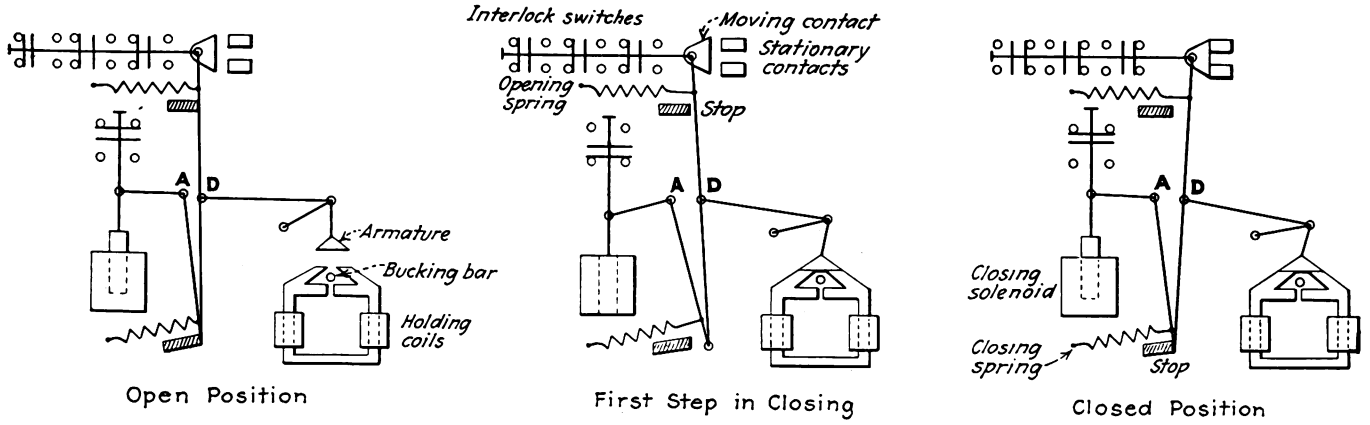

Fig. 2—Single-Line Diagram Showing Pivots, Levers, Solenoids, Springs, Springs, etc., Incorporated in the Latest Designed High-Speed Direct-Current Circuit Breaker

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external circuit is such that the breaker may be safely closed in.

Under legitimate overload conditions, such as often occur from congestion in the downtown district during the rush hour, the feeder breaker and high-speed breaker will remain closed and load will be shifted from the overloaded station by automatically inserting load-shifting resistance between the machine terminals and the bus, thus allowing adjacent stations to pick up the

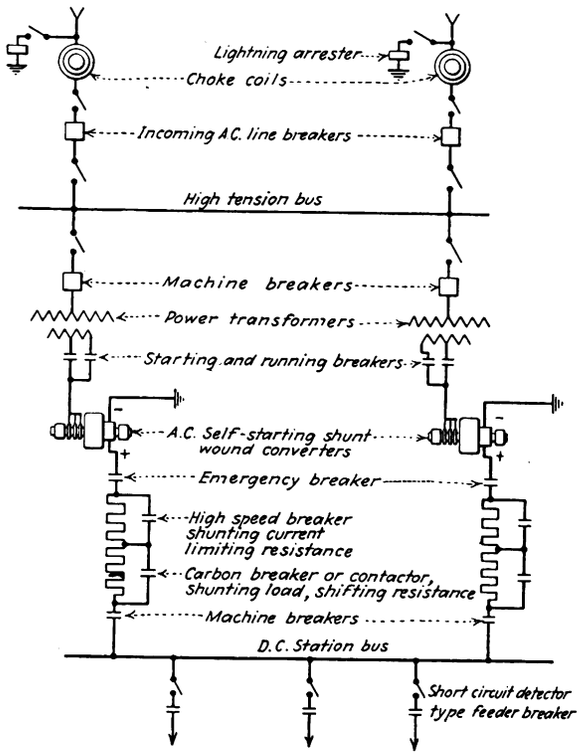

Fig. 4—Two-Unit Automatic Substation Equipped with Shunt-Wound Rotary Converters, High-Speed Breaker Shunting Current Limiting Resistance in the Machine Circuits, Direct-Current Feeder Breakers Equipped with Short Circuit Detector Relays and Automatic Reclosing Features

overload. The feeder breaker is of the "latched in" type and remains closed regardless of the bus voltage. Overload protection on the feeders may be secured by thermostats mounted on the feeder itself. The thermostats allow taking advantage of short time-overload capacity of the feeder, tripping the breaker only when the copper reaches a predetermined temperature.

The application of automatic switching equipment to units in the various substations of railway systems made necessary the development of a new form of communication between the load dispatcher and the substation. This was done so that the automatic operation of the various units in the stations could be under control, that knowledge of their operation and load condition could be transmitted automatically from the non-attended station to the dispatcher whose function is to control and co-ordinate the operation of the system substations, thus securing the most efficient operation under normal conditions and the most beneficial and reliable under conditions of system disturbances.

Various forms of supervisory systems, each with its field of application, have been developed to meet the requirements of different types of automatic electrifications. The Westinghouse synchronous all-relay type of supervisory control uses the principle of step by step synchronous selection. In this type of control a minimum of four wires are used between the dispatcher's office and the substation to be controlled, over which the rotating equipment may be started, stopped or locked out, feeder breakers may be opened or closed, station bus or feeders sectionalized, readings of the station instruments may be transmitted—in fact, any operation may be performed that is usually carried on by the operation of an attended station.

By means of two of the lines and a simple synchronous control circuit, signaling relays in the dispatcher's office and the substation are kept in step and moved from point to point in a definite sequence. The remaining two wires are switched by the step by step action of the synchronous selector circuit from one control and supervisory point to another. Thus when any operation is to be performed a clear metallic circuit is established between the control in the dispatcher's cabinet and the desired apparatus unit to be operated.

The dispatcher's control keys and supervisory signaling lamps are connected to a set of selecting relays while the apparatus units at the substation are connected to a similar set. The selecting relays operate in absolute synchronism at every step or not at all.

Should the dispatcher wish to actuate any mechanism in a distant substation, he operates a key associated with the apparatus unit desired, and then a start key. Signaling relays in the dispatcher's office and distant substation pull up in regular sequence with both equipments in exact synchronism until the required key is reached. The two signaling wires are thus connected to the station battery, through the key associated with the apparatus unit, in the dispatcher's office. Operating current passes from the battery through the operating key circuit and associated selector relay to the signaling wires. At the substation the current flows from the signaling circuit through its associated selector to the desired apparatus unit to initiate the required impulse automatically to perform a given co-operation. This impulse is not in the form of a code and is usually obtained by a contact of the interposing relay making an electrical connection to initiate some automatic operation, such as energizing the master relay of the automatic switching equipment in order to start and connect a rotary converter to the station bus, or to energize the closing motor or solenoid of a circuit breaker from the station bus or battery in such a manner that the breaker will be closed automatically. After an operation has been completed, auxiliary contacts on the apparatus unit transmit the signal back through the same signaling relays and circuits to operate the indicating lamps at the dispatcher's office. The signaling relays are released by the action of the proper answer back or signaling circuit, indicating that the correct operation has been performed. The relays then continue to step up in synchronism until all signaling relays have been pulled up and released, thus completing the chain of operation.

When an operation occurs in the distant station such as opening of a breaker, stopping of a unit due to one of its protective devices, etc., the selecting relay action is effected rapidly and the signaling wires are switched from position to position. When the wires connect the apparatus unit, that has changed its position, to the corresponding signaling equipment at the dispatcher's office the indicating lamps are changed to show the operation that has taken place. The equipment comes to rest immediately after the sequence of operations has been completed, therefore insuring long life of equipment and minimum service from the battery, as

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control energy is used only during the period that the equipment is in operation. There is no counting of impulses, checking back of circuits, or totalizing of impulses to perform an operation. The selecting relays in the dispatcher's and substation equipment operate in absolute synchronism to assign the signaling wires in a definite sequence to the points of control until the desired point of control is reached. The sequence is then stopped until the desired operation has been performed and correct visual answer back received, thus releasing the relays and allowing the chain of operation to continue until all relays have been pulled up and the sequence completed.

The signaling circuit of two wires, which are switched by the signaling relays, provides a clear metallic circuit which may be used for selective remote metering in conjunction with its use for control and supervision of apparatus units. Indications of any character may be secured, such as volts, amperes, watts, power factor, reactive volt-amperes, etc., or any desired indication of electrical or mechanical condition that can be made to operate the remote metering sender. Stop keys associated with each signaling point permit reading any one of the indications for as long a time as desired.

The continued installation of automatic switching equipment in the substations of various railway systems having d.c. trolley voltage from 600 to 3,000 indicates that automatic operation is here to stay and that it is playing a very important part in our railway electrifications.

The most efficient and reliable method of substation operation may be secured by the automatization of the various substation units and the co-ordination of their operation by supervisory control in order that the system as a whole may be operated as a unit. Automatic equipment performs, without error or waste of time, and eliminates the human factor from the switching operations. Automatic operation of substation equipment insures reliability of operation, full protection to equipment, minimum delay in service restoration and economic operation of substation equipment.

Street Cars Advertise Milwaukee

SIGNS teaching safety lessons and to encourage street car riding are displayed on the cars of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. While brevity is essential on signs of this nature, the messages cover a fairly wide range of interesting and helpful suggestions. Here are some examples:

The motorman is doing his part to avoid accidents. Are you?
We appreciate your patronage. Ride again.
Flashing red lights mark street car crossings.
Golf! Go by street car.
Think before you cross ahead of this car.
Ride with us and save the difference.
Progress and street cars go hand in hand.
Your parking problems solved. Ride with us.
Visit the zoo at Washington Park. Take street car.
Play tennis? Take the street car.

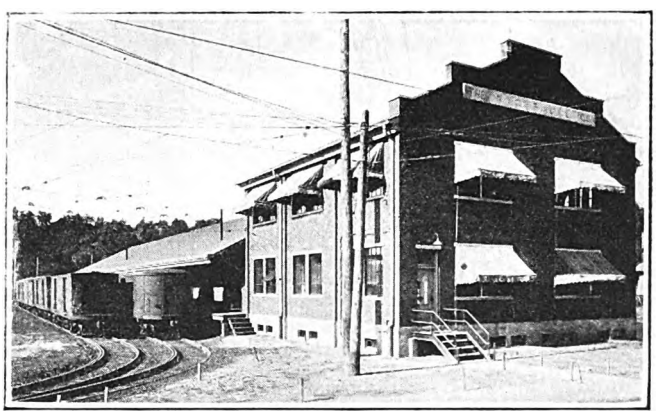
Some of these signs have already been used and a new message is to be broadcast each week.

In addition to the dash signs, the company has cards inside the cars. One that has drawn much favorable attention bore the message: "Thank you! Ride with us again. Use the street car and save the difference." In this card the words "Thank you!" just seemed to pop out of the picture, as if they were spoken.

New Freight House Built at Akron

CONSTRUCTION of a new freight house costing $80,000 has just been completed by the Northern Ohio Power & Light Company at Akron. The new structure is located just east of the old freight house, which will be utilized by the company's line department and for the storage of electrical supplies. The building is of brick and steel construction, 256 ft. long and 45 ft. wide. The front 48 ft. is used for offices and is two stories in height. In that section is housed the freight auditing department, which has been moved there from the company's Terminal building.

Plans for the building were drawn by J. P. Colwell of the Commonwealth Power Corporation, who supervised the construction. The freight room proper is 204x45 ft. of clear space. Rail tracks are on the west side, with a 45-ft. concrete team loading drive on the east side. Double-rail tracks give loading facilities for ten cars in addition to the space provided for through freight trains. The freight room is equipped with the latest type of scales located on the driveway side so that freight may be taken from trucks, weighed and handled through the freight room car loading platform or direct into the cars as desired. A portable office is provided in the main room for the warehouse foreman.



Double Rail Tracks Give Loading Facilities for Ten Cars in Addition to Space for Through Freight Trains at New Akron Freight House of Northern Ohio Power & Light Company

Foundations of the building are of concrete throughout, having a basement under the office portion. The walls are brick with steel roof trusses. On each side of the freight house there are twelve of the latest type rolling steel doors. These are counterbalanced so that they may be raised by one man with little exertion. Doors are located opposite each other on both sides, giving a through route for trucking freight. The floor is of 3-in. planking painted with a hardening liquid which is intended to give long wear without splintering. A 7-ft. platform along the west side is completely sheltered. Special provisions for handling oil at the extreme north end of the building are being provided.

The new house is of fireproof construction throughout, there being little woodwork except the main freight room floor. Stairways are of steel with safety treads. The wall between the office and freight room is so constructed as to prevent fire spreading.

The system of lighting installed is completely modern and is planned to give uniform light on all parts of the working area. The type of unit selected was the Standard RLM Benox type. In the warehouse proper bowl enamel lamps are installed.

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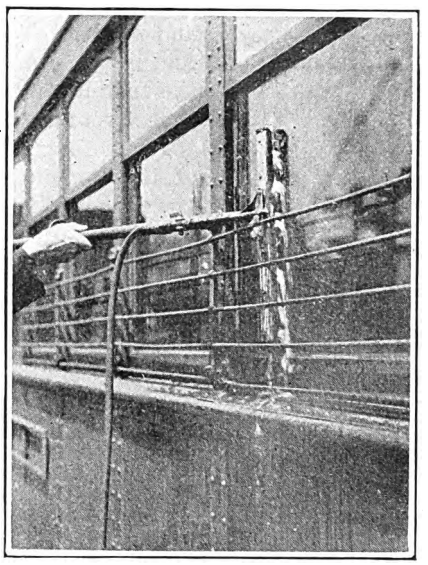
Maintenance Notes

Cars Showered and Scrubbed While You Wait

"HAVE you had your morning shower?" would no longer be an uncommon question could we but know the language of cars. Recent experiments of the Pittsburgh Railways have added to the morning's ablutions an automatic scrubbing process that bids fair to make the modern carhouse take on the aspects of a college dormitory twenty minutes before class time.

The accompanying illustrations show several views of an experimental equipment erected in one of the carhouse yards. This consists first of a shower a car length ahead of the scrubber that thoroughly wets the sides of the car. After this first wetting the windows are washed by means of a hydraulic wiper uniquely designed to slip between the glass of the lower sash and the window guards, thus avoiding the tedious task of unfastening and later replacing these guards. The wiper face consists of a piece of brussels carpet bolted around the surface. Several streams of water are forced through small jets from an attached hose. The whole arrangement is handled by the operator and the windows are cleaned with dispatch.



Hydraulic Window Washer Designed by Pittsburgh Railways

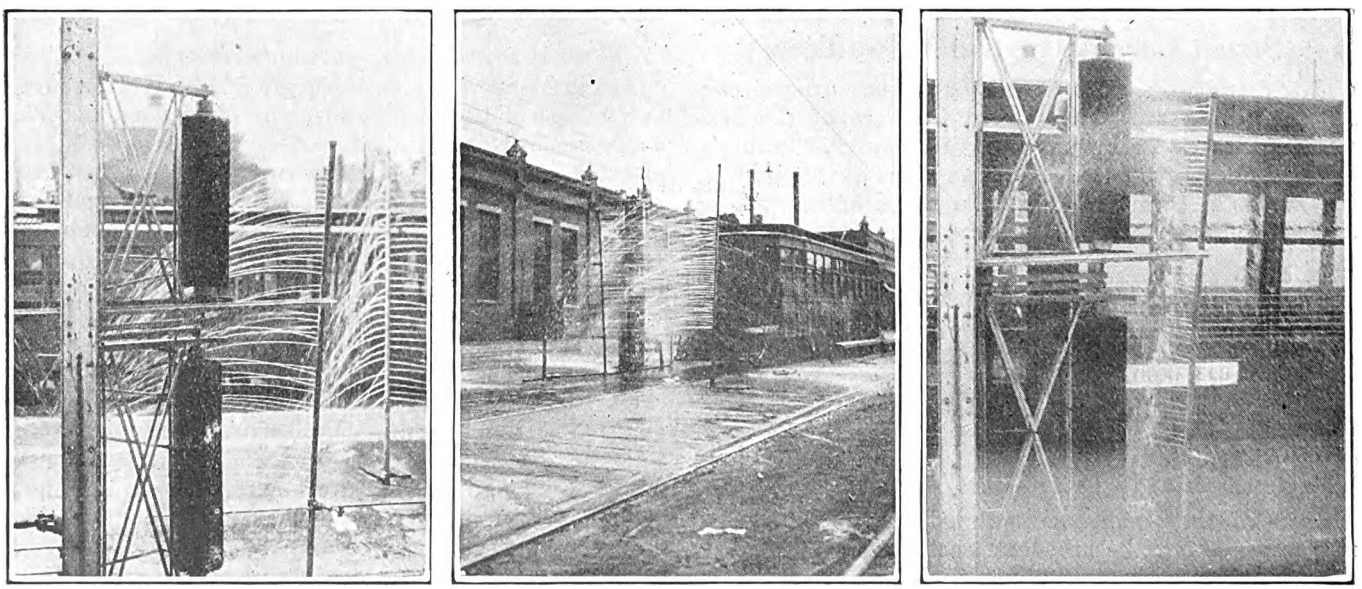
The washer fits between the lower glass and the window guards. This device avoids the task of unlatching the guards and refastening them in place after the windows are washed.

The car then wet, with the dust and dirt well soaked, passes rapidly revolving brushes that are mounted vertically and suspended on a spring arrangement so as to hold the brushes firmly to the car sides. As the car passes through, the remaining dirt is flushed off by the spray at the sides of the brushes and the car comes out as clean or cleaner than if washed by hand.

There is no lack of water in the scrubbing process and the car looks like an airdale pup emerging from a pond. The actual amount of water used is not great, however, as the car passes through the scrubber at a speed obtained by having the controller about on one notch and the water is shut off as soon as the car passes.

Fairly soft bristles are used in the brushes so that no damage is done the paint surface. They are stiff enough, however, to remove the grime that so soon collects on the car surface. The bristles are also long enough to reach between and below moldings, rivet heads, etc. Since this company has adopted the lacquer system of paint there are no resultant scratches from the rapidly-revolving brushes.

So far only experimental equipment has been built for cleaning one side of the cars so as to try out this arrangement carefully. If the com-



Many Jets of Water and Soft Revolving Brushes Perform the Work of Several Men

At the left is shown the trial equipment that scrubs the car sides. Here the shower is running but the brushes are not revolving to illustrate the method of drive. A small 500-volt motor erected to the side in a watertight compartment is bevel geared to a vertical shaft, which in turn revolves the brushes by means of a chain drive. The brushes, mounted on long arms, have springs that hold them against the car sides. The whole structure is supported on a vertical I-beam set in concrete.

In the middle view the car is about to enter the scrubber and the shower. The device was built for one side only. Until a second unit is installed the opposite side is cleaned by hand.

The view at the right shows the car half way through the scrubber, proceeding on one notch of power. Only a few seconds is consumed in the process.

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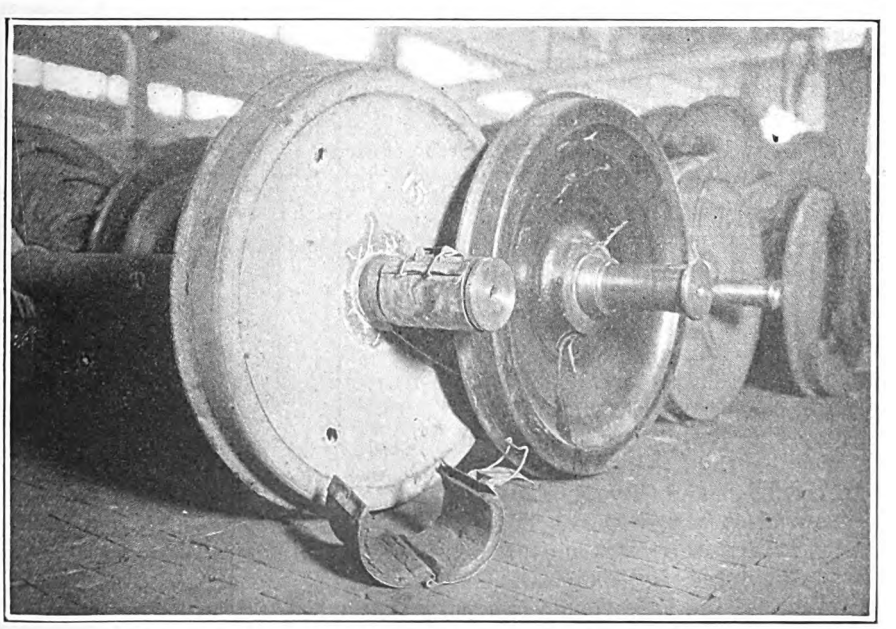
pany decides to adopt this plan a corresponding set of brushes will be erected on the opposite side of the work track and the entire arrangement will be inclosed or placed within a carhouse so that it may be used equally well in winter weather.

Experiments are also being conducted to see if a brush can be developed that will wash the windows behind the guards and thus avoid this hand operation. Also, plans are being developed for automatically scrubbing the car ends which now must be done with hand brushes.

If this device can be perfected it will be an easy matter to run each car through the shower and scrubber every day by the crew that first takes the car out on a run.

Protection for Journals Prevents Damage

FOR saving of space in the storage of wheels when mounted on their axles, it is common practice to have one pair of wheels set with respect to the adjacent pair so that the faces will roll by until the flanges of the wheels come in contact with the axles. If particular care is not used when placing the mounted wheels in position, there is danger that the flanges of one pair of wheels will damage the journal bearings of the adjacent pair. To provide a protection for the journals while handling, transporting on shop cars and in storage, the Department of Street Railways, Detroit, Mich., uses a special covering for the journals.

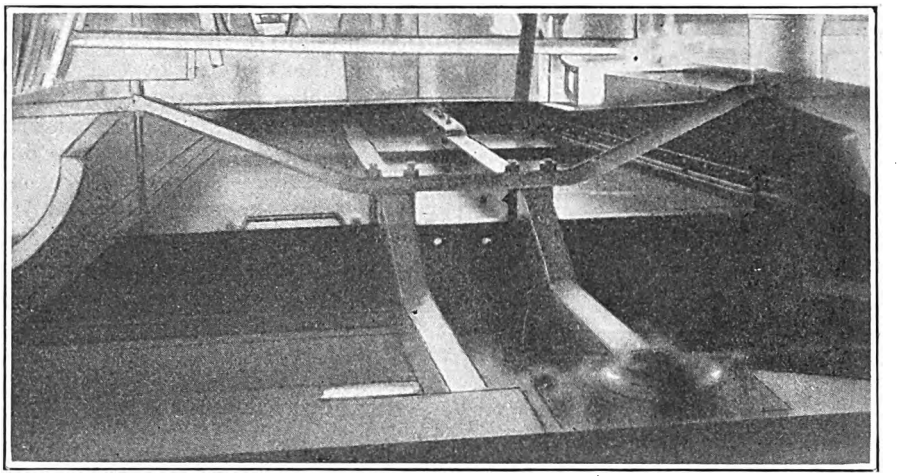


A Special Fixture Placed Around the Journal Prevents Damage from the Flanges of Adjacent Wheels

The covering consists of a $\frac{1}{16}$-in. steel shell lined with $\frac{3}{4}$-in. felt. The shell is made in two parts, hinged along one side while the other is provided with a catch and hasp so that the covering can be held firmly in position. This arrangement provides a covering that can be quickly attached and which is very effective in preventing damage.

Platform Knees Stiffened on Wheeling Cars

CHANNELS of 3-in. section bent to a form shown in the accompanying illustration are used under certain cars of the Wheeling Traction Company, Wheeling, W. Va., to prevent platform sagging. A few cars on this property have long platforms that are supported on long members shaped to slope together toward the front. A slight bump tends to bend these supports inwardly, which in turn tends to cause the platforms to sag.



A Shaped 3-In. Channel Is Used to Strengthen Long Platform Supports on Certain Wheeling Cars. The Firm Anchor to the Center Sections Add Great Stiffness to the Side Members. Drooping Platforms on These Cars Are Thus Avoided

To overcome this trouble the 3-in. channel was cut and shaped and applied in the manner shown. The side members were first spread apart to the normal position by jacks, and while under this pressure the channel was bolted tightly in place. By this means sagging platforms on these cars has been cured and the car is considerably stronger should other bumps occur.

New Equipment Available

Rail Anchor Fits Any Standard Tee Rail

PROVISION for sufficient adjustment to fit rails in any condition and an original design which prevents the two parts of the anchor from being separated are outstanding features of the "Bethco" rail anchor, just put on the market by the Bethlehem Steel Company, Bethlehem, Pa.

While the anchor is of two-piece construction, it is shipped and installed as one piece. The two pieces can be separated only with considerable difficulty and by a very unusual manipulation of the parts. This two-piece construction allows sufficient adjustability to take care of more than one rail section, over or undersize rails, and the increasing tendency of rails to wear thin where they rest on the tie plates or because of corrosion.

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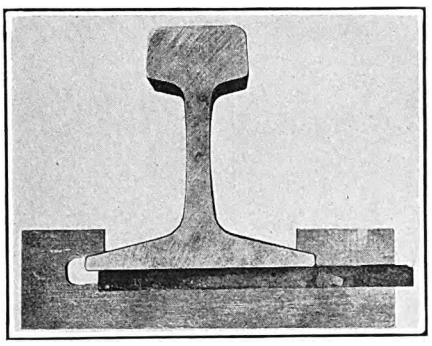
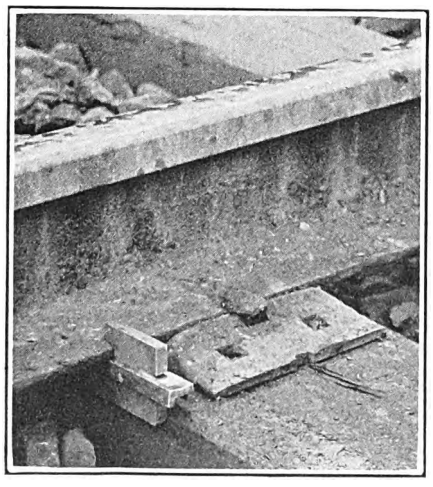


Section Showing How New Anchor Is Applied to a Rail

The anchor consists of a heavy flat yoke which hooks over the base of the rail on both ends and a heavy key which is driven horizontally between the base of the rail and the yoke. This key provides the wedging action to hold the rail in place and can only be removed in a similar manner to the way it is installed. Since there is no force acting upon the key in this direction it will not become loosened while in service. The wedging action of the key is crosswise of the rail, along practically the entire base of the rail. This fact and the channel shape of the key prevent in from being forced sidewise off the yoke.

The working forces are exerted against the anchor at right angles to the yoke and key. The deep, broad surface of the yoke, along its entire length, bears against the surface of the tie, distributing the pressure over a large area, avoiding damage or destruction to the tie after it is in place.

The installation of the anchor is extremely simple. The yoke is hooked over the base of the rail and the key is driven home by means of a hammer, rail chisel or other handy tool. No special tools are required. Since the key cannot be dislodged except by driving, no further attention is required until renewal of the ties or other work makes the removal of the anchor necessary. Slippage of the rail through the anchor can only be accomplished by practically destroying it.



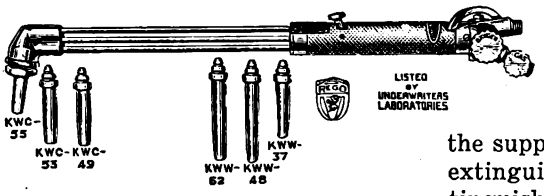
Rail Anchor After Installation

The anchor meets all the specifications of the A.R.E.A. requirements for rail anchors or anti-creepers.

The Bethlehem Steel Company is being assisted in the introduction of this device by Geo. L. Moore, former engineer of maintenance Lehigh Valley Railroad and chairman of the A.R.E.A. rail committee.

Carefully Balanced Torch Makes Handling Easy

CUTTING operations of all kinds on metals up to 3-in. section are taken care of by a light but rugged combination welding and cutting torch designated as Rego KW Medium, which has recently been brought out by the Bastian-Blessing Company, Chicago, Ill.



New Type Cutting and Welding Torch

An assortment of three cutting tips, furnished with each torch, gives ample range for the different classes of work. Three welding tips KWW 37, 48 and 62, illustrated here, will be furnished at extra cost, if specified. Length of the tool is 10 in. and weight 34 oz.

This device, using oxygen and medium pressure acetylene, is said to be so well balanced and easy to handle that by simply changing tips it can be used for making welds up to 1-in. section.

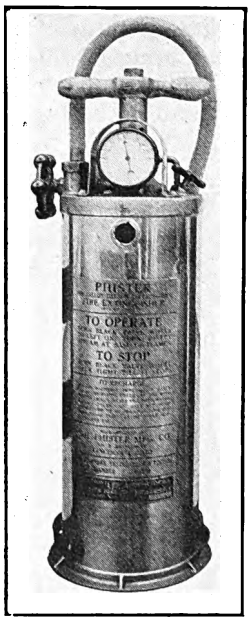
Improved Shape for Mesh of Step Treads

BY GIVING an elongated S curve to the reticuline bar a mesh or opening has been created that is a distinct improvement in step tread construction by the Irving Iron Works, Long Island City, N. Y. With the new mesh there is less opportunity for dirt to collect and painting is facilitated, light diffusion is improved and the long double sweep of the bend makes a better traction surface. The combination of straight and curved lines also gives a more pleasing flooring pattern.

With 7-in. rivet centers this new flooring is known as type M and with 3½-in. rivet centers as type O. Other distinctive Irving features of alternate deep and shallow bars are retained.

One-Gallon Extinguisher for Electric Cars

GREATER capacity than the usual quart size fire extinguisher was found desirable by the New York Westchester & Boston Railway for the size of fire extinguisher to be carried on its cars. As a result, this road has now adopted the Phister 1-gal. carbon tetrachloride fire extinguisher. Another advantage is that it can be pumped up to the desired pressure and kept in this condition ready for use, while with the smaller sizes of other types it is necessary to continue the pumping action while the liquid is being exhausted. With the larger size there is no danger of exhausting the supply of liquid before the fire is extinguished. The cost of this extinguisher, as stated by officials of the railway, is about three times that of the type previously used, but its greater capacity is thought to warrant the increased price.



One-Gallon Carbon Tetrachloride Fire Extinguisher

The extinguisher is recharged by unscrewing the filler cap and filling with carbon tetrachloride solution. The gage at top insures pumping to required pressure and maintaining it.

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Association News & Discussions

Insurance Regulations for Cars and Carhouses*

Excerpts from the Latest Underwriters' Rules Are Given, with Comments on the Way that Some of Them Were Reached

By James S. Mahan
President, Western Section, International Association of Electrical Inspectors

THE present regulations of the National Board of Fire Underwriters for electric railway carhouses and cars is the final outcome of some twelve or fifteen years of rather intensive work by a number of fire insurance engineers having to do principally with public utility properties.

In working out this standard the lessons learned from numerous traction property fires have been considered from all angles, with the idea in view of lessening fire insurance losses on traction property buildings and rolling stock as much as possible. Traction companies may deviate as far as they care to from this standard, but compensation will have to be made in the fire insurance rate; in other words, a property which follows this standard to the letter will receive a minimum insurance rate.

Building Construction

Carhouses should be one story in height, without basement or closed roof spaces. The outside and division walls should not be over 25 ft. in height at the eaves, nor more than 30 ft. at the peak of the roof. Where, on account of the nature of the suroundings, it is absolutely necessary to build carhouses more than one story in height, wall dimensions are given in the tabulation in the standard. This standard, you will find, requires the walls to be of hard burned brick, stone or reinforced concrete of a specified thickness. These types of wall materials have been found to stand up better than tile under severe exposure to fire. Steel skeleton work in the walls does not lessen the required thickness of a wall proper.

Where traction property buildings are near other risks which may expose them to fire from outside sources, it is necessary to parapet the walls, or in other words carry the wall at least 3 ft. above the eaves where the roof is of a combustible material. If the roof, as well as the walls, is of concrete or other such material parapets are not necessary. Walls dividing the risk into fire sections shall be parapeted the same as outside walls and all division walls should project at least 8 in. beyond the outer edge of the cornice. All walls should be provided with a durable incombustible coping.

One of the big contributing factors to the extensiveness of traction fires is the communication of fire from one section to another. To prevent such conditions the standard requires that only one opening, not exceeding 38 sq.ft., may be made in each 100 ft. of wall length. These openings must be protected on each side of the wall by standard automatic fire doors. To control the conflagration feature as much as possible, the floor area of any one section of a carhouse has been limited to 20,000 sq.ft.

Skylights and ventilators are an important feature in the prevention of the spread of fire in traction properties. These devices shall have metal frames and sash, with the frames and other parts riveted or otherwise securely fastened in addition to soldering. They should be glazed with wire glass, or plain glass may be used if protected above with stout copper or galvanized wire screens with mesh not larger than 1 in.

Brick, concrete, stones, cinders, earth or other incombustible material is recommended for floors. However, treated wooden blocks may be used when placed on a concrete base.

Car pits may either communicate or be separate units under each track. Under no circumstances shall they connect under more than four track sections. Pit walls shall be constructed of the same material as other building walls.

Arrangement of the tracks is another important feature in keeping down losses through fires. All tracks should run clear to the street without break or transfer table, and preferably should communicate to the outside at both ends of the building.

Track doors shall be of a type which will readily open in case of an emergency, preferably of the vertical roller type covering not more than two tracks, or they shall be swinging doors made in pairs and opening outward. Certain types of sliding doors should not be used; neither should doors opening in in pairs.

All chimneys and stacks shall be of solid masonry, standard construction.

Building Wiring

Suitable wood troughs should be provided above all trolley wire in the risk. For rigidity of construction it is recommended that T-iron or T-copper be used. Trolley wires, as well as T-conductors, shall have a conductivity of not less than No. 0, B. & S. gage wire. All hangers and supports of trolley conductors shall be spaced so that in case of a break at one of the supports the trolley conductor would not come in contact with the rail.

Where it is necessary to break the continuity of the trolley wire, as at track doors, the wire shall be equipped with suitable sectional insulators. In order to be able to disconnect all trolley wires inside of buildings or yards, line insulators shall be installed with a feed around the insulators controlled by an emergency switch, this switch to deaden all trolley wires leading into the building and within 50 ft. of the building. Feed wire to the building or yards shall be of ample carrying capacity, but not less than No. 0, B. & S. gage. Rails forming the return circuit of a grounded trolley system shall be bonded at joints with not less than No. 0, B. & S. gage copper conductors. Current collectors of all types shall be removed from contact with trolley wires when cars are not in use.

Carhouse Maintenance

Standard carhouse lighting shall be by electricity.

Heat shall be by steam, hot water, hot air or electricity, with all piping well supported and free from woodwork. Boiler and furnaces shall be located in a separate fire section, preferably outside of the main building with all openings into the main building protected by approved automatic fire doors.

A good supply of standard self-closing metal waste cans shall be provided for all oily waste and trash, and should be emptied daily. Approved watchman service shall be installed, with stations well distributed throughout the premises, rounds to be made not less than hourly.

Carhouses proper shall be used only for storage and cleaning of cars and for inspection and replacement of minor parts and minor repairs. General repair work should be in a separate fire section. Premises shall be kept entirely clear of accumulations of trash and rubbish. The use of sawdust and shavings to absorb oil and grease drippage should not be permitted, sand being much preferable.

Smoking shall be prohibited in sections devoted to car storage, with prominent "No Smoking" signs posted throughout the premises.

Wiring and Electrical Equipment of Cars

Lighting circuits for cars may be operated upon potential not exceeding 750 volts maximum. All circuit appliances shall be approved for a nominal rating of 600 volts. For higher voltages not to exceed 1,500 volts, lighting circuits shall be run in grounded rigid

*Abstract of paper presented at meeting of Electric Railway Association of Equipment Men, Southern Properties, Chattanooga, Tenn., July 28-30, 1926.

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conduit with all circuit appliances approved for voltage.

When the circuit has a grounded return conductor, the capacity of the return conductor shall be equal to that of the conductors in the non-grounded side, or shall be adequate for the combined load of all circuits connected to it. Joints in ground wires shall be as required for joints in circuit wires. Ground wires shall terminate in a permanent ground connection to the car driving motors or trucks. It is permissible to run ground conductors bare, except where exposed to contact with unauthorized persons. This does not prohibit the use of the metal members of the car as a ground return for auxiliary circuits.

All conductors shall be stranded and shall have a rubber insulation. Their minimum size is to be as follows:

	Minimum Size
Passenger signal circuits	No. 18 B.&S. gage— 1,624 circ.mil
Lighting circuits	No. 14 B.&S. gage— 4,107 circ.mil
Auxiliary motors and devices	No. 14 B.&S. gage— 4,107 circ.mil
Heating circuits	No. 12 B.&S. gage— 6,530 circ.mil
Motive power circuits	No. 6 B.&S. gage—26,250 circ.mil

In compiling this standard an effort has been made to establish one with a workable basis. In this connection three methods of wiring cars have been provided, leaving it to the choice of the operating company to select whichever it prefers.

Either rigid metal conduits with cable boxes or approved flame-retarding, moisture-repelling non-metallic ducts or cables with approved rubber insulation protected by approved flame-retarding and moisture-repelling outer coverings may be used.

All conductors except those run in rigid metal conduit or cable boxes must be so concealed or isolated that contact cannot be made accidentally with them by unauthorized persons.

Non-metallic ducts and the outer coverings of wires and cables must be constructed to resist mechanical injury. Such cables or ducts must be securely fastened into the cases with approved clamps, to be supported by non-conducting cleats or straps. They must be run in continuous lengths from box to box or from outlet to outlet, unless made-up cables are used, with joints and and taps covered with approved flame - retarding moisture - repelling coverings equivalent to those on the cables themselves.

Provision is also made for trolley leads on car roofs to be raised so as to permit suitable drainage under them. Conductors subject to abrasion through car sills or in other locations must be protected by short lengths of metal conduit with ends bushed. All conductors with inclosures must be kept well away from direct wheel wash, and where this is not possible should be provided with non-corrodible fenders or guards to protect them against such wheel wash.

Wooden cable boxes can be used only on the interior of the car and should be made of not less than ⅝-in. wood lined with ⅛-in. asbestos lumber or similar material. They must be provided with suitable fittings.

All car driving power circuits must be protected by a main automatic circuit breaker located either in the cab or on outside of the car, with a reset control in the cab.

Circuits for other than car driving must be supplied ahead of the main circuit breaker and be provided with suitable fuse and switch protection close to the point of connection.

All switches, cutouts, circuit breakers, etc., having exposed live metal parts, must be inclosed in approved cabinets and be well guarded to prevent passengers or other unauthorized persons from coming into contact with the live parts. Headlight frames must not be used as conductors. Portable headlights must be wired for double plug connection. All plug connections must be so wired that the female end will be attached to the source of energy. (A new device just on the market makes it impossible to pull a plugging device while a circuit is still energized.)

All equipment cases, except car-driving motors, must be constructed so that conductors entering them shall not be exposed. Ducts or coverings of such conductors must be securely clamped to such cases. Where outside connectors are used and wires must necessarily be exposed, they must be properly spaced, and connectors must be insulated equal to the insulation on conductors.

All locknuts and bushings used with conduits must be of such design as to prevent loosening by vibration.

Metal parts of the car extending above the roof, such as smoke pipes, heater expansion tanks, whistle pipes, etc., must either be grounded or insulated. The insulated joints must be located immediately below the car roof. All fuel-burning heaters located inside the car must be well grounded.

Wires connected to different sources of energy must not be cabled together or run in the same duct except in the case of jumper cables between cars.

Resistors must be mounted with ample air space between resistor grids and car body, with heat-resisting barriers of at least ¼-in. fire-resistive insulating material, or sheet metal not less than 0.04-in. in thickness mounted above the resistance and extending sufficiently beyond the resistor supports.

Resistor grids must be thoroughly insulated from resistor frames, and the frames also insulated from supports. The insulation on the conductor to the resistors must be removed at least 6 in. from their terminals. The bared conductor must be filled with solder to make it rigid at the point of connection.

Electric heaters shall be of approved type for use in railway cars. By "approved type" is meant shall bear the Underwriters' Laboratories' label. Branch heater circuits shall be protected by fuses of no greater rated capacity than the normal heater current per circuit. The fuse capacity should be as follows:

Between 0 and 7 amp.	10 Amp.
Over 7 and to 10 amp.	15 Amp.
Over 10 and to 15 amp.	20 Amp.
Over 15 and to 20 amp.	25 Amp.

In this connection it may be of interest to give you a little of the history of this standard. The old standard for car heaters was one of installation; there was considerable discussion as to whether the standard should continue to be one of installation or should be one of performance.

Certain members of the committee insisted that the heater with its inclosing case be treated as a complete unit. The Underwriters' Laboratories and a representative of the Chicago Surface Lines very kindly offered to assist the committee in this connection. All of the heater manufacturers were invited to submit samples of their product for a heat run test to determine which type of installation should be considered as a standard.

The electrical engineer of the Underwriters' Laboratories, using the same temperature limit as is used on numerous other heat devices, set a temperature limit of 90 deg. C. (194 deg. F.) as the maximum temperature to any combustible matter adjacent to the heater (speaking of the heater case and all as a unit). The tests on the heaters submitted were run on regular car seats supplied by a traction company.

It was found that heaters could be manufactured which would be operated successfully below this maximum temperature. The sub-committee having this subject in charge then dictated the standard as it now stands in Sections 20 and 21 of the regulations of the National Board of Fire Underwriters. Later all of the heater manufacturers were invited to attend a conference on

COMING MEETINGS OF *Electric Railway and Allied Associations*

Sept. 17-18 — **Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.**

Oct. 4-8 — **American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.**

Oct. 10-15 — **Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.**

Oct. 25-29 — **Annual Congress and Exhibit, National Safety Council, Detroit, Mich.**

Nov. 16-18 — **Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

November 16-19 — **American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.**

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the subject of the labeling of car heaters by the Underwriters' Laboratories. At this meeting it was definitely decided by them to subscribe to Underwriters' Laboratories' label service, designating that their heaters have been tested by the Laboratories and approved by them.

Wisconsin Utilities Association Studies Ways to Improve Public Relations

MORE than 100 delegates and friends assembled on Aug. 12 at La Crosse, Wis., for the two-day session of the Electric Railway Section of the Wisconsin Utilities Association. Many of the talks made at this meeting discussed the establishment of better public relations. An important note was sounded by C. R. Phenicie, vice-president Wisconsin Public Service Corporation, Green Bay, who said that any attempts of this kind must not be too obvious.

Chairman Nels C. Rasmussen, superintendent railway department, Wisconsin Valley Electric Company, Wausau, estimated the present value of Wisconsin electric railway properties at more than $67,000,000.

A forward-looking report on the subject of noise prevention has been developed by the Wisconsin association. Kent Wooldrudge, fellowship student at the University of Wisconsin, has devised a machine to measure a reverse direction. The noise is picked up in a standard loud speaker, then converted into an electric current which is greatly amplified and read on a milliammeter. Great possibilities are seen in the development of this machine and its application to the problem of noise reduction on electric railways.

Abstracts of papers and a full report of the meeting will appear in the next issue of ELECTRIC RAILWAY JOURNAL.

Shop Records and Their Value*

BY A. TAURMAN
Superintendent of Equipment and Way and Structures, Birmingham Electric Company, Birmingham, Ala.

FOR the proper and economical maintenance of cars and equipment it is necessary that we have adequate records, which should be kept in the simplest form and properly tied in with the records of the auditor and transportation departments, so when taken as a whole they will give a complete record of our activities.

Assuming that the proper records are available as to the type of equipment, date purchased and the manufacture thereof, the auditing department should furnish the shops with the accurate mileage of the individual cars which is obtained daily from the transportation department. This mileage is entered in a loose-leaf binder under the individual car numbers. A simple form is to add the mileage each day to that previously made, so that by simple subtraction the total mileage made between any two dates may be found.

Proper forms should be provided for the inspection, maintenance and complaint reports. Inspection and maintenance should be handled on a mileage basis and the blank forms should not only indicate the various parts of the equipment receiving attention but the workman's name and the dates on which the inspection and repairs are made.

The form for complaints should show the car number and various parts of the car with date and by whom the complaints are made and corrected. These forms should be filed by the car numbers and dates so that they may be easily referred to.

DATES ARE IMPORTANT

In the overhauling and repairing of equipment the dates on which they are made, class of material used and cost of labor should be kept. This is to ascertain if we are using the proper class of material and that the labor costs are not excessive.

When records are kept of the various parts of equipment, any weakness that develops or repeated failures will be called to our attention so that steps may be taken to remedy the defects. Where material is purchased under a guarantee, it is necessary that accurate records be kept as to its performance so the company may be reimbursed for the failure of the product to meet the manufacturer's guarantee.

A card index should be kept of all men employed, the date employed, their past record and present performance.

The shop should have access to the storeroom records of all material purchased, which should give the name of the manufacturer, cost, amount purchased and amount of each type used monthly.

Charts should be prepared showing cost of inspection, maintenance, number of failures, so that a comparison may be made with previous months and years.

Records should be kept of all buildings with their fire protection equipment and when repairs and inspection are made.

ACCURATE RECORDS WORTH THEIR COST

While the records outlined above appear at first glance to be expensive to keep, this is not the case when the proper system is put into effect. The inspection and maintenance of cars on a mileage basis insures that the equipment will receive attention at regular periods after certain service has been performed. The handling of complaints with the above system places responsibility for failures and insures that proper repairs will be made.

The keeping of records on material as to cost and life enables us to make the proper selection when it is purchased. This, in turn, assists in the proper and economical maintenance of our equipment.

Proper records in the equipment department not only help to prevent failures and accidents but materially assist the claim department in adjusting claims when accidents occur and make it possible for the transportation department to give adequate service to the public.

*Abstract of paper presented at meeting of the Electric Railway Association of Equipment Men, Southern Properties, Chattanooga, Tenn., July 28-30, 1926.

American Association News

Noise Reduction

A MEETING of the noise reduction committee of the American Electric Railway Association was held at Detroit Aug. 2, 1926. The meeting was attended by C. Bethel, motor engineering department, Westinghouse Electric & Manufacturing Company; Frank L. Hinman, assistant superintendent of rolling stock and bldgs. Philadelphia Rapid Transit Company, and H. S. Williams, assistant superintendent of equipment, Detroit.

During the year the committee has conducted a series of noise tests with apparatus built specially for this purpose as authorized by the A.E.R.A., the apparatus consisting of a noise pick-up device connected through radio amplification devices with a micro-ammeter giving definite readings, proportional to the amplitude of the noise vibrations. Tests were made on various track constructions and different types of gearing, in which the gears were tested independently of all other sounds.

The committee approved the method of testing and the preliminary tests. Further detailed tests are to be completed for submission with the committee's report to the Cleveland convention. It was decided to request of the association permission to exhibit the noise-measuring apparatus at Cleveland for the purpose of stimulating interest in the committee's work. Future work was discussed and tentative plans laid for further development of the noise reduction problem.

Metropolitan Section Plays at Pelham Bay

IN SPITE of a wide range of weather conditions, beginning with great heat and ending with deluges of rain, all the members of the Metropolitan Section, A.E.R.A., had a good time on their annual outing at Pelham Bay Park on Aug. 11. Golf, baseball, quoit pitching, tug of war and various other sports occupied the early part of the day. Rain in the afternoon caused an interruption to the baseball game between the railway men and the manufacturers. When the rain came the score was tied, but after the end of the storm the game was resumed, resulting in an overwhelming victory for the railway men. Golf enthusiasts were out early in the morning and played till 2 p.m. A new use for the bus was discovered in connection with the tug of war. After exhaustive pulling the supply men and the railway employees each won a heat. The third and final pull was won by the supply men through excellent co-operation with a near-by bus.

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The News of the Industry

Union Organizers Leave Indianapolis

Indications that the International officials of the Amalgamated Association regard the strike of the employees of the Indianapolis Street Railway, Indianapolis, Ind., as lost is seen in the departure of four representatives of the organization from the city. L. D. Bland, national treasurer, and P. J. Shea, member of the general executive board, have returned to their homes in Detroit. Mr. Shea would make no comment on their departure. Mr. Bland, however, said the strikers still had the union's support morally. It was made clear some time before that the International would send no more strike benefits to the Indianapolis strikers. Officers at that time recommended that the strike be called off. Members of the striking local, however, refused to take such action.

John M. Parker and Robert B. Armstrong, vice-presidents of the Amalgamated, were released on bond by Judge Robert C. Baltzell in federal court in Indianapolis following the granting of an appeal of their conviction for contempt of court. Bonds were set at $10,000 each. Parker and Armstrong, organizers of the Indianapolis local of the union, were found guilty of contempt of court a week prior and were remanded to jail until the appeal was filed. They were charged with violation of an injunction which prohibited them from counseling a strike, encouraging strikers or interfering with the operation of street cars.

Edgar Day, a striker, who appealed his conviction of contempt, also was released on a bond of $5,000. Parker and Armstrong received sentences of 90 days in jail. It was announced by attorneys for the two men that the organizers would be withdrawn from Indianapolis by the national officers of the union. Jefferson Fade, another of the strikers, was released on his own recognizance after having been convicted of contempt.

Attendance of strikers at the daily meetings has fallen from about 500 to 100.

Wages Advanced in Memphis

An increase of 2½ cents an hour was awarded to Memphis Street Railway union employees by the board of arbitration in its decision announced on Aug. 6. The award is effective as of April 1 this year, and the accumulated wages held in abeyance pending decision of the arbitration will be paid by the company to the men on Aug. 21.

The increase raised the wages of the men from 45, 50 and 55 cents for one, two or three and more years of service to 47½, 52½ and 57½ cents for the respective periods of service.

Judge M. R. Patterson, Attorney A. B. Galloway and L. P. Miles made the award, the first two voting for it, and Mr. Miles, representing the company, dissenting.

The new contract is effective for two years from April 1.

In an editorial on Aug. 8 the *Commercial Appeal* strongly commended the spirit of the men and the company in arbitrating the issue. It emphasized that public interest is always best served when men are sane and fair.

The editorial said in part:

> The most friendly of relations between company and employees were maintained during the period of controversy. There were no criminations and recriminations. The conflict of views was the result of honest opinion, and each company of disputants showed for the other a consideration that was commendable.
>
> Instead of a disrupted service while the questions was under consideration, regular schedules have not only been maintained, but the service has been improved. This improvement could not have been brought about except for the wholehearted co-operation of employers and employees.

Newark, Ohio, Without Railway Service

Unfortunate Situation Forced Upon Management by Activities of City Authorities Acting Against Wishes of People—Public Relations Good and Loyal Co-operation from Employees Gratifying

AS OF midnight, Tuesday, Aug. 10, the city of Newark, Ohio, is an all-bus town, operated by the newly created independents. For years railway operation has failed to pay expenses. Despite this, service has been maintained through two receiverships and after great effort and absorption of heavy losses a new franchise was granted by the city of Newark which became effective on Nov. 22, 1924. This ordinance relieved the company of certain paving, extended the franchise life for 25 years and allowed the company to charge a fare necessary to pay for the service. It fixed the fare for the first year. The franchise also carried a clause allowing the company to withdraw any portion or all of its rail or bus service if any competitive lines should be granted a permit to operate.

The granting of this franchise was one of the elements which enabled the company to reorganize and emerge from the second receivership. This it did as the Southern Ohio Public Service Company, which operates the light, power and railway in Zanesville, the railway in Newark, and the interurban line connecting Zanesville, Newark and Columbus.

As a part of the reorganization plans the company acquired control of all bus operations in Newark and has been giving the city of Newark a co-ordinated service of rail and bus even at a substantial loss after operating expenses for the combined operation. In accordance with the terms of the franchise, the company asked the Council for an increase in fare to 10 cents cash and four tickets for 25 cents. The Council took no action. After a period of three months the company further, in accordance with its franchise, announced that the new fare would become effective as of March 5, 1926, whereupon an injunction against the increase in fare was obtained, and before final disposition of the injunction proceedings the court declared a vacation.

Not satisfied with this, the Council, contrary to the spirit of the past two years negotiations, has granted a competing franchise for an independent to give service paralleling all the company's rail and bus lines at a 10-cent cash fare and tickets at a reduced rate. Sixty days after this fare permit eight buses appeared on the street.

In view of the lack of faith shown by the Newark City Council and the extensive losses sustained by the company during the past several years the company decided to close down its entire local bus and rail service. On Aug. 9 the company had a meeting with its men and advised them of its intention. The company, however, allowed its men, thus thrown out of work, ten days' wages. On Tuesday night the company ran a full-page advertisement in the local papers outlining the series of events that led to its action and announcing the fact that the service would be discontinued as of that day.

The company's rate has been maintained through the injunction proceedings at a 6-cent cash fare with nine tickets for 50 cents.

The franchise granted by Newark City is similar to that passed by the city of Zanesville at a prior date. The greater faith of Zanesville has resulted in a high-grade co-ordinated bus and rail service in that city at the same fare asked in Newark. Zanesville is pleased with the service and the relations between the public, the Council and the company are excellent.

Council planned a special meeting following the announcement to abandon, but put off action. An indignation meeting of 600 could not be accommodated at the Chamber of Commerce headquarters and moved to the City Hall. Citizens stormed independent buses. Sentiment is strong against the Council for granting the 5-cent bus franchise.

A notice of the company to the citizens of Newark, headed "What more can we do?" signed by R. Z. Zimmerman, vice-president and general manager, follows:

> When the present management took over what is now the Southern Ohio Public

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Service Company's property in Newark it set about to provide a modern and adequate transportation service, in order to render good public service.

With this plan in mind, it proceeded to lay the groundwork for what was believed would best suit the needs of the community.

Accordingly, your City Council was importuned in order that suitable legislation might be enacted, whereby both the company and the city would be protected, and negotiations were carried on for nearly two years, resulting in the passage of Franchise Ordinance No. 3619.

This franchise contract placed upon the Southern Ohio Public Service Company the obligation of furnishing Newark with transportation facilities for a period of 25 years, and believing that the contract was made in good faith, the company proceeded to put into effect the plans prepared for a satisfactory transportation service.

There are few citizens who are not aware of the efforts made to rehabilitate the rolling stock and provide new buses—buses built in Newark, with Newark labor and materials—on both of which were spent large sums of money. As to whether our efforts in this direction were worth while, they who know must be the judges.

One of the vital clauses in the franchise ordinance provides for a fare regulation—upward or downward—as the circumstances warrant, and when it was found necessary to have an upward revision in order to permit the property to continue its usefulness, the city denied the privilege and court action ensued, which added to the burden under which the system was already staggering. Contrary to the intent of the existing franchise ordinance, the city administration encouraged and created competitive operation, allowing a cash rate of fare of 10 cents, which rate of fare was denied our company upon application. Not content with these actions, a bus regulating ordinance is now being considered by Council, which will enable the city administration further to hamper our operations. These actions naturally prevent the company from carrying out its program, and generally makes the situation untenable.

It is an outstanding fact, that when a utility is regulated in its procedure by a duly authorized governing body a duplication of plant and equipment cannot endure.

No business can survive unless it is self-supporting. Our contract with the city provided for one important item, namely, that we should be permitted to earn operating expenses, taxes, money with which to renew worn out plant and equipment and interest on the money invested.

Is there anything fairer than this?

Every business institution in Newark, and elsewhere, was founded and is being operated with the above principle in mind.

Much as we would wish to believe otherwise, we feel that our rights under the contract with the city have not been given consideration by those in authority, and it is with genuine regret, because of our loyal employees and the thinking citizens that have given us their support, that after four years of conscientious effort to serve the people of Newark we are compelled to announce our decision to abandon all city street railway and bus operations in the city of Newark at midnight of Aug. 10, 1926.

Our action is prompted solely by the unfortunate trend of events, and has been taken only after careful consideration of all the interests involved, and we wish to assure every one that it was our wish not to give up until every effort had been exhausted, and only when faced with the task of doing the impossible and we trust the public will be generous enough to see our point of view.

Our announcement would not be complete without an expression of appreciation for the hearty co-operation received from our employees and the citizens, who realize the seriousness of the situation confronting the city and ourselves.

Transportation Survey in Canton

At a meeting on Monday night, Aug. 9, the City Council of Canton, Ohio, engaged the Beeler Organization, New York, to make a complete survey of the railway, bus and traffic situations and to advise the city concerning the question of the renewal of the franchise of the Northern Ohio Power & Light Company, operating in the city under a grant which expires in February, 1928.

Alderman Approve Home Rule Plan for Chicago

A plan which would strip the Illinois Commerce Commission of substantially all of its control over public utilities in the city of Chicago and delegate such powers as the commission now wields to the local city government was approved on July 30 by Mayor Dever's "Home Rule" committee. The resolution creating this committee was introduced by Alderman J. M. Arvey several weeks ago and was referred to in the ELECTRIC RAILWAY JOURNAL for July 17, page 122.

The objective of the committee is to lay plans for submission of the question to a referendum at the Mayoralty election next spring, under the terms of Article 6 of the Illinois Commerce Commission act providing that any municipality may withdraw its utilities from the rue of the commission.

To call the proposed referendum, the committee's chairman stated, it will be necessary to obtain the signatures of 181,000, or 25 per cent of the city's voters. Circulation of petitions for such a referendum was discussed by the members of the committee at their meeting. Under the terms of the article it is also provided that the proposal must receive a majority of the votes cast in the Mayoralty election. If the referendum is successful the decision of the city would still be subject to appeal.

Corporation Counsel F. X. Busch says the article is replete with jokers and ambiguities and that its promise of home rule at the will of the electorate is illusionary. He believes, however, that the hindering provisions are not insurmountable.

Fare Issue Revived in New York City

Controller Berry of New York City has demanded that the Board of Estimate take some definite action toward formulating a policy of financing subway construction and operation. This has lifted the 5-cent fare into renewed prominence in New York politics. The situation seems to be complicated, rather than simplified, by the recent decision of the city government to the effect that it is mandatory upon them to submit to the voters this November the Craig 5-cent fare referendum bill, passed by the Municipal Assembly last year too late to be put on the ballot at last year's election.

Controller Berry started the fireworks in July. At that time he wrote to each member of the Board of Estimate declaring that it was time for a show-down on the city's financial program. The Controller stated that it really costs approximately 7 cents to carry each person on the present subways, and in consequence the city has been forced to make up the deficit by taxation. It costs the city annually $13.845.000 in payment of interest on subway bonds, besides the fact that $300.000.000 of the city's credit is tied up in these bonds. The Controller demanded that it be decided at once whether the deficit should continue to be made up out of the city treasury or the subways be made to pay for themselves by means of an increased fare.

In the meantime, Mayor Walker has flatly declared that he considers himself pledged to the 5-cent fare, which was such an important plank in the platform upon which he was elected. The situation is a ticklish one for the administration, since an increase in fare is sure to meet with opposition from subway riders, whereas an increase in taxation of benefited property is sure to bring forth lamentations from the taxpayers.

In this dilemma the Craig referendum bill offers the administration a Heaven-sent solution, in the opinion of New York politicians. The bill, if approved by the voters this fall, would make it impossible for the Board of Estimate to raise the subway fare until such a move had been approved by referendum vote, and furthermore, the board could not even submit such a change to the public until requested to do so by petitions signed by 15 per cent of the voters of the city. If this bill is approved by the voters this November, the administration will then be relieved of the embarrassing necessity of deciding definitely whether the 5-cent fare is to go or stay.

Paving Question Up Again at Lincoln

In the face of the fact that the voters at an election held a year or so ago refused to relieve the Lincoln Traction Company, Lincoln, Neb., from its liability for the paving of that portion of the street it occupied, the City Council is indisposed to take such action on its own initiative, even though company officers insist that relief of this kind is essential for the company. The city legal department is now working out the status of the pavement where the cars are to be replaced by buses.

City Attorney Peterson says that the situation seems reasonably clear. After pavement is laid or is ordered laid between the rails and 1 ft. on either side the railway must replace the paving and pay for it if it takes up the track. When the paving is done subsequent to the taking up of a track, the company will not be held for any part of the cost, which must be paid by the abutting property owner.

The city takes the attitude that wherever the bus is substituted, which, for the present, will be only on two long suburban lines, the company must maintain without loss of efficiency the services that are now established. The occupation tax is to be extended to the bus lines or, in lieu of that, a license tax will be imposed that will bring about as much revenue to the city. Mr. Chubb for the railway urged that this be abolished, but the city is not inclined to do this. This amounted to $3,120 last year.

Mr. Peterson has recommended to the Council that it continue the occupation tax, as the license system applied to each bus would discourage the company from maintaining an adequate reserve of buses for peak load times and would relieve it from the bonding feature of the existing jitney ordinance.

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Memphis Editor Comments on Street Car Riding

An editorial in the *Commercial Appeal*, Memphis, Tenn., of June 24 set forth the benefits of street car riding over the various other possibilities of traveling to business. It did this in a way that attracted the attention not only of the newspaper readers but of the railway company itself. The editorial follows:

ON STREET CAR RIDING

Came down town on the street car yesterday morning. Often ride the street cars. There were 25 cash fares on the car and two transfers. Half way down six street car men got aboard. The street car company hauled all of us from Peabody, near Cooper, to Main and Madison for $1.75 cash and about 6 cents added cash.

If all of us on board the car had owned automobiles it would have taken 31 cars to haul us. If we had ridden down in taxis, say, two to the taxi, our fares would have been about $17. It would have taken fifteen drivers to bring us down. The fifteen automobiles would have occupied a line in the street of about 20 ft. If we had all ridden down in our own automobiles the investment would have been about $30,000.

Yet, the street car did the entire job for about $1.80, besides hauling six extra men for nothing.

The street car did not take up any more room in the track than two automobiles would have taken.

Street car transportation to the user is the cheapest thing we know of. You step on the car and pay 7 cents, then step off and go about your business. You don't have to hunt parking space. You don't have to carry accident insurance.

And yet the street car business is declining. From a point of economy and efficiency, the business should not decline.

We had a nice time in the street car. It was about 11 o'clock and the car was not crowded. We had a set to ourselves. We read the morning paper and enjoyed Mr. Tracy's story about the mass meeting held at the Chamber of Commerce. Then we read of the prospective golf game which was to take place in England. Then, having a few minutes to spare, we read the Busy Man's Corner and thought on it for a few minutes.

If you can get a seat on the street car and you have something to read, you will not waste any time. If you haven't anything to read, you can look out and see the flowers in the suburbs.

You can look at the fine houses, then look at the humble houses. Then you can see some of the big rich, and see some of the very poor. Then if you begin thinking, you will soon find out that there is very little difference between the big rich and the very poor. If there is a difference, it will not be for long, because all of them will be dead in a few years, and all dead people are alike.

When we finished this, one secretary said: "You didn't tell them how long you had to wait to catch the car."

We caught the car on the minute. Another secretary said she knew the schedule on her line and caught cars as they came along.

All of which means that Mr. Tutwiler ought to put some more cars on some lines. More cars cost a great deal more money. If we had our way about it, we would have double the number of cars and put the present conductors on as motormen.

The Memphis Street Railway reprinted the editorial in its booklet "Trolley Items" with the following comment:

Regarding the foregoing editorial we should like to make two observations:

1. Thirty-two new street cars have recently been ordered and are expected to begin arrival by July 15. All of the new cars should be received within four or five weeks after the first shipment comes in. Thus we are meeting the newspaper editor's view for increased service—at least to the extent of about 20 per cent. No one is more pleased at being able to give good service than are the executives and employees of the street railway.

2. We want to offer a slight correction to paragraph six. It was true for about five years following 1920 that street car business declined. However, about nine or ten months ago the business over the country began to "pick up," and today a healthy increase over the depressed condition that obtained for about five years is evident.

In Memphis our increased patronage and revenues began to be evident along about August, 1925. The increase has been sustained throughout the months since that time.

We are hopeful to believe that the hardest days that the street railway has had to suffer are passed, and that from now on business will be better and better.

This condition is true not only in Memphis but throughout the country.

People have come to understand that street railway service is not only the most economical form of transportation but that it is also reasonably convenient, while being the safest means of travel on city streets.

We are happy to observe that editors of newspapers are manifesting the sane and commendable spirit of fairness toward street cars as that manifested by the editor whom we have quoted.

We appreciate very much his excellent statement of our own case.

The economy of street car riding, as he so clearly shows, is its great appeal. But the street car is a very important servant to every individual in the community, and deserves the cordial spirit of patronage which the writer of the editorial manifests.

Seventy-five and Still on the Job

Sixty years in the service of one company is a long time.

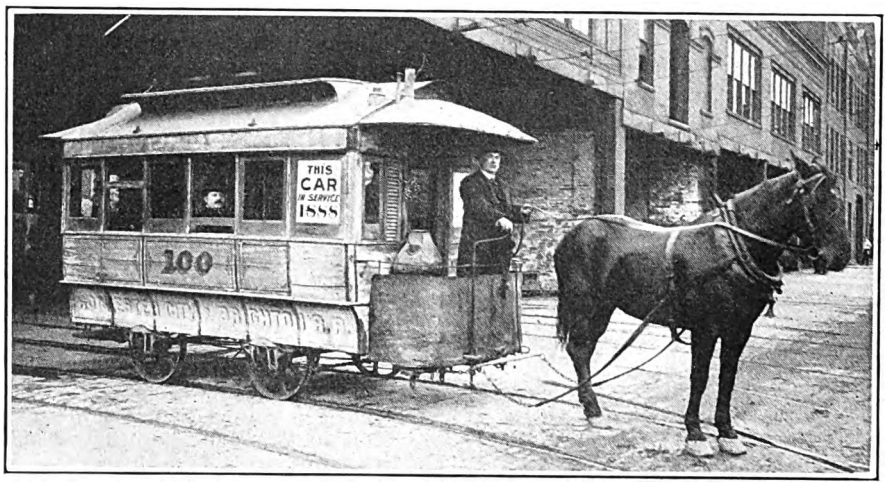
That is the record of Joseph W. Hicks, assistant to the president of the New York State Railways, who on Aug. 10 began his 61st year as an employee of that railway.

Back in 1866, when a lad of fifteen, "Joe" Hicks entered the employ of the company, then the Rochester City & Brighton Company, as "a hillboy," driving extra horses on the trolley cars up the inclines of the city. Then he cleaned lamps in the carhouse and finally got a run of his own as "a motorman" on the horse cars.

His advance was steady to his present high post of assistant to James F. Hamilton, the president of the corporation.

"I have had so many anniversaries that they are getting to be an old story," the veteran railway man told an ELECTRIC RAILWAY JOURNAL representative on his anniversary day. And his 60th anniversary found Joe Hicks, an alert, vigorous figure despite his 75 years, right on the job, putting in a full day's work.

His service record is believed to be without a parallel in the East. It was reviewed at length in an article about Mr. Hicks in the ELECTRIC RAILWAY JOURNAL for Sept. 12, 1925, page 420.



J. W. Hicks, Driving First Horse Car, Celebrated 60th Anniversary in Service at Rochester on Aug. 10

No Parking Rules Save Traffic Situation

In an open letter to the New York newspapers, H. J. Sheeran, chairman of the Manhattan Surface Line Operators Traffic Committee, and president of the New York Railways, has called public attention to one common factor in the emergency regulations governing the increased street traffic which followed the subway strike in New York and by the attendance at the Eucharistic Congress in Chicago—that was the "No Parking" order. He says in part:

In order to meet the emergency, Police Commissioner McLaughlin put into effect an order prohibiting parking on the more important longitudinal streets. The effect was immediate. Our thoroughfares seemed to widen overnight. In spite of the greater number of vehicles in the lower part of the city, traffic moved better than usual. There was less confusion and fewer traffic delays.

The no-parking order, according to Deputy Chief Inspector Coleman, resulted, for all practical purposes, in widening the streets 12 ft. It added a new automobile lane on each side of the streets.

Similarly, it was only through the adoption of no-parking regulations that Chicago was able to transport the huge crowds that attended the Eucharistic Congress. In a three-day period the Chicago Surface Lines carried a total of 15,056,000 passengers, or more than 5,000,000 daily. To appreciate the magnitude of this volume of surface travel, it is only necessary to compare it with the number of passengers carried on our own Interborough subway, which in the year ended June 30, 1925, averaged 2,018,000 daily.

Thus, street cars in America's second city were able to provide an emergency service which carried nearly two and a half times as many people as are carried daily on our far-famed subway system. They were able to do this solely because of traffic regulations which recognize the fact that mass transportation is more important than private transportation.

The New York correspondent of the Cincinnati *Times-Star* wrote to his paper that a miracle occurred. On the first day of the strike, although street traffic must have increased enormously, it moved more smoothly than it had done for years. The police had a great many other and more drastic changes in traffic rules under consideration, but this one change made traffic move so steadily and swiftly that no other was required. "The inevitable conclusion," he says, "is that one-half the ordinary parking is unnecessary, and that it is the unnecessary parking which makes all the traffic troubles.".

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Pay Advance Suggested for San Francisco Trackmen

The Board of Supervisors of San Francisco, Cal., has adopted a resolution urging the Mayor to direct the Board of Public Works to increase the wages of trackmen and others employed by San Francisco Municipal Railway who were not given the 40-cent wage increase granted to trainmen last spring.

Secretary John O'Connell of the San Francisco Labor Council said that the men were entitled to the increase, and that it had been promised them. It is said the trackmen are getting the equivalent of the platform men now, and besides have two days off a month.

Suggestions Sought from Baltimore Employees

The United Railways & Electric Company, Baltimore, has just put into operation a plan of payment for ideas suggested by employees of the company. All employees with the exception of department heads are eligible and the company has announced to them that awards of from $5 to $100 will be made, according to the value of the suggestions. As the plan is not a contest the employees are permitted to send their suggestions to the committee on efficiency awards at any time. The efficiency committee will place a value on the suggestions and the awards will be made by Charles D. Emmons, the president of the company.

All the suggestions made by the employees must be original. The employees need not confine their suggestions to the work of their own departments and ideas may be developed by two or more employees working together, in which case the award will be divided equally. If the suggestion is one that requires time to present in clear, understandable form, the employee is permitted to present a brief written statement of it at once, entitling him to priority in case the same idea is submitted by another employee.

Key System Living Up to Its Promises

Charging that the Key System Transit Company, Oakland, Cal., has failed to live up to its share of the agreements whereby fare increases on street cars and ferries were granted last January, Mayor John L. Davie has demanded that the fare increases be rescinded.

The ELECTRIC RAILWAY JOURNAL of Feb. 20 recorded the agitation aroused when the street-car fare was raised from 6 cents to 7 cents, and ferry rates from 18 cents to 21 cents.

The Mayor asserts that the company agreed to make certain improvements in the way of ferry and pier facilities, purchasing 120 new street cars and constructing new car lines. He contends that the company is purposely delaying the work so that it will not be ready for the continuance of the original rate hearing, set for Sept. 14.

In answer to the Mayor's assertions, G. H. Harris, general manager of the Key system, states that the company is fulfilling every obligation; that it is expending $9,000,000 in carrying out not only the orders of the commission but additional improvements of its own; that two new boats are already under construction; that more than $2,000,000 has already been spent and a reconstruction plan of $2,000,000 is under way.

Electric Suburban Service of Illinois Central Formally Opened

With company officials and 2,000 invited guests abroad, including scores of railroad and steamship executives, the first electrically operated suburban train of the Illinois Central Railroad made a triumphant run of 28 miles from Matteson, Ill., to the heart of Chicago in Aug. 7. Although test trains and a few "off-peak" passenger trains have been operating over a portion of the suburban divisions for several weeks, the day marked the official opening of electrified service on a substantial part of the Illinois Central's nearly 40 miles of suburban system.

More than 100 business and civic organizations of Chicago's south side participated in the mammoth "Pageant of Transportation" in Grant Park which followed the arrival of the first through electric train. Every mode of transportation used in Chicago since the day of Father Marquette was depicted in the giant tableau.

When the changeover to electric operation is completed early next month, the Illinois Central expects to have about 12 per cent more suburban trains in operation and 50 per cent more passenger carrying facilities than in the day of steam operation. Train schedules will be speeded up, it is announced, to save anywhere from 7½ to 30 per cent in the time it now takes commuters to get downtown, the relative saving depending on the length of ride and the number of stops. A two-minute headway will be maintained during rush hours.

On Aug. 9, two days after the formal opening, 250 of the 402 weekday suburban trains operated were electrically driven. The South Chicago branch, 5 miles in length, is completely electrified and all local trains on this line and from Randoph to 67th Streets on the main line are now being operated by electric power. The only steam service remaining is on the through trains between Chicago and Matteson and on the Blue Island branch, and this will probably be fully electrified by Sept. 1.

For electrification and parallel betterments the Illinois Central had spent up until June 30, the following amounts:

New cars and equipment	$11,353,600
Wires, tracks and stations	6,389,000
Elimination of grade crossings	8,127,000
Changing track grades	4,026,000
Constructing Markham freight yard	11,711,000
Other improvements	10,771,000
Total	$52,377,000

Ever since the plans for the improvement were first announced by the Illinois Central the prospective benefits have been reflected in conditions along the entire suburban routes.

Transportation Halted by Severe Storm

One of the severest thunder storms in years was experienced at New York just before the evening rush hour on Aug. 12. The Interborough Rapid Transit lines, both Seventh Avenue and Lexington Avenue routes, were paralyzed by floods at a dozen different points, and in some cases trains were delayed several hours.

The Long Island Railroad was hardest hit, for floods in the East River tunnel completely halted all service, and moreover, prevented the Pennsylvania from keeping up its main line service, since its trains are made up in the company's yards in Long Island City, across the East River. Surface cars managed to keep fairly close to a normal schedule, in spite of the flooded streets.

Re-Electrification of South Shore Completed

With the completion of the re-electrification program of the Chicago, South Shore & South Bend Railroad on July 28, the company's new steel passenger cars began operating over the entire line from South Bend to Kensington.

For a short time South Shore trains will continue to be hauled from Kensington to downtown Chicago, a distance of 15 miles, by Illinois Central Railroad steam locomotives. The Illinois Central, however, will in the near future begin regular operation of its electric suburban trains from Kensington to Randolph Street and then South Shore trains will be run to the downtown terminal under their own power.

While the change-over from alternating to direct current for train operation has been completed, the company's rehabilitation program continues. Improvements are being made in the track, thousands of new ties are being laid, and new siding are being built. Improved service and faster running time are soon to be effected.

Concessions Sought from Railway in Elizabeth

Frank J. Travers and Dennis F. Hennessy have been appointed a special committee to conduct a survey of the transportation service of Elizabeth, N. J., and to recommend a plan for the adoption of a single fare system within the municipality.

The committee intends to confer with officials of the State Board of Public Utility Commissioners and the Public Service Railway in an effort to obtain their consent to the rerouting of certain trolley and bus lines with a view of providing service to permit passengers to travel from the western part of the city to the downtown section for a single fare without being obliged to change cars in Broad Street.

The committee members propose to investigate the situation before deciding the question of employing a transportation expert, as recommended by the Civic Council on Transportation, which was formed recently by representatives of Elizabeth improvement associations and the Chamber of Commerce.

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Negotiations for New Franchise for Sandusky

Negotiations are in progress between the Lake Shore Electric Railway, Cleveland, Ohio, and the city of Sandusky for a new franchise. The one under which the company has operated for 25 years expired on July 30.

In its application the company asks the right to charge a 7-cent fare instead of the present 5-cent fare. The city has indicated through the City Commission, that 7 cents is considered too much.

The city, on the other hand, wants the company to stand a share of the expense of elimination of dangerous grade crossings, and the company has let it be known that it does not favor the proposal.

Grand Rapids Rides in New Cars

An account is given in the July booklet published by the Grand Rapids Association of Commerce of the new cars of the Grand Rapids Railway, Grand Rapids, Mich. Much of the credit for installing these new coaches, selected after much experimenting and comparing as regards convenience, comfort and operation, is given to L. J. DeLamarter, vice-president and general manager of the railway. The president of the Association of Commerce says that there is a tendency on the part of the residents of Grand Rapids to ride in these new cars in preference to taking their own autos to and from business—a great step forward in reducing traffic congestion in the business section of the town.

New Color Standard in Cincinnati

Decision to standardize on a uniform color for street cars and buses has been made by the Cincinnati Street Railway, Cincinnati, Ohio. This will necessitate changing the color of the bodies of the electric cars operated over the system from yellow to burning brush orange. The buses operated by the company are painted in the latter color, trimmed with cream. Walter A. Draper, president of the company, states that the work will be done gradually in order not to interfere with the transportation service. The yellow color has been the standard for the past five years, prior to which time a light lemon shade had been in vogue for approximately 30 years.

Safety Contests at Rochester

To promote safety on the Rochester lines of the New York State Railways, Leon R. Brown, safety director of the company, has started a contest among the divisions, with the leader receiving a banner at the end of each month. For July the State Lake division won the banner, with a record of only one accident for every 19,000 miles.

The banner was presented by Roy R. Hadsell, general superintendent, at a meeting addressed by a representative of the Safety Council of the Rochester Chamber of Commerce.

Mr. Brown said there were 378 men in the company's service with a perfect record so far this year. Those who have no accidents for an entire year are given a $1,000 sick and accident insurance policy as a reward.

The team of ten men with the best safety record for the year receives new uniforms throughout.

By these means, Mr. Brown declared, accidents on the Rochester lines of the New York State Railways have been reduced to a minimum.

Arrangements Made for Milwaukee Traffic Survey

The Common Council of Milwaukee, Wis., has acted favorably upon the recent proposal of S. B. Way, president of the Milwaukee Electric Railway & Light Company, in which he suggested that a thorough traffic survey be made in Milwaukee with the idea of obtaining an impartial insight into street transportation needs. In his letter to the Common Council Mr. Way said the cost of this city-wide survey would be met by the company providing it did not exceed $50,000.

Direction of this transportation survey will be undertaken by the transportation survey committee of the Common Council. One of the first steps taken by the new committee was the employment of McClellan & Junkersfeld, New York, to compile the data upon which the future transportation needs of Milwaukee will be made.

C. U. Smith, Milwaukee harbor terminal director, has been elected chairman of the committee. An executive committee composed of one member from each of four representative groups was appointed. The members named were William A. Jackson, vice-president of the Milwaukee Electric Railway & Light Company; W. H. Damon, resident engineer of the Wisconsin Railroad Commission; P. A. Koehring, president of the Milwaukee Association of Commerce, and Mr. Smith.

The city's contract with the engineering company provides that the committee shall have full authority over the survey work. The Milwaukee Electric Railway & Light Company will have nothing to do with the actual work other than to permit the co-operation of its own engineers. Reports will be made direct to the committee.

Railway Offers Bridge for Detour in Ohio

Engineers of the Ohio State Highway department estimate that motorists using the National Highway through Springfield, Ohio, will be saved nearly $30,000 in the next ten weeks as the result of the action of the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio, offering the state the use of its traction bridge as a short detour while the regular vehicle bridge is being repaired. The state will maintain watchmen to guide traffic and has also agreed to release the company from any liability in case of accident and to see that the company's cars are not delayed. Prior to the offer by the railway the detour used was several miles in length and terribly rough. The traction bridge is planked for the vehicles.

Records Being Made by Wisconsin Interurban

That business on an interurban line can be increased if proper steps are taken to bring such a system up to a degree of efficiency from the standpoint of service, safety and equipment to enable it to compete successfully with the private automobile and bus is shown in the operation of the Milwaukee Electric Railway & Light Company's new high-speed line connecting Milwaukee, Waukesha and Watertown, and covering a route of about 50 miles.

Since this service was started on June 14 patronage on the interurban line has increased fully 40 per cent.

More than $1,000,000 was spent for the construction of 5½ miles of new double trackage cutting through sparsely settled sections west of Milwaukee. Frequent service, up-to-date equipment and operation over a private right-of-way through suburban towns were factors which enabled the company to offer a service equal to or better than the time required to reach these cities by automobile or bus.

Winter schedules are now being prepared. The company expects to continue the present half hour service throughout the year. The present running schedule from Milwaukee to Waukesha is only 35 minutes. It is easily maintained and may be reduced to 30 minutes later.

Action on Paving Relief Delayed at St. Paul

Action by the voters of St. Paul, Minn., on a charter amendment to carry out the suggestion of the Minnesota Railroad and Warehouse Commission that the city relieve the St. Paul City Railway of the cost of paving between its tracks has been delayed to the fall election. The charter commission did not act in time to include the proposed amendment in a special charter amendment election on Aug. 24. In making a valuation of the railway in fixing a reasonable rate of fare the state commission noted that the railway was being too heavily burdened by taxes to be able to make its 7½ per cent return on valuation at the proposed rate of fare. This was last year and action is still delayed, after seven months.

Traction Company Athletes Honored

The Beaver Valley Traction Company and Beaver Valley Motor Coach Company, New Brighton, Pa., celebrated the success of their track team in taking second place in the recent Beaver County Industrial athletic field meet by holding a banquet on July 27. C. D. Smith, general manager, distributed medals to those men who won events. The company's team was the dark horse of the contest and surprised the spectators by carrying off second place. The meet was won by the Babcock & Wilcox Tube Company.

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Weekly Pass in Madison

Daily users of the Madison Railways, Madison, Wis., were offered a bargain during August when the company decided to adopt the weekly pass system as a means of increasing patronage. Passes will be sold for $1.25 and will be good for an unlimited number of rides on all lines during the week for which the pass is dated. Passes will not be accepted on the company's bus line.

Slower Speed Suggested for Schenectady-Albany Service

A further conference between members of the Public Service Commission and representatives of the Schenectady Railway and the cities of Albany and Schenectady over operating conditions between Albany and Schenectady took place on Aug. 11. The report of the engineer of the commission recommends a reduction in the speed of cars between the two cities. Express cars now take 50 minutes and locals 55 minutes to make the 17-mile trip. It was suggested on behalf of the railroad that all cars operate on a 30-m.p.h. basis. The conference was closed pending an order to be made by the commission.

Franchise Action in Kansas City Unlikely Now

Action on the proposed franchise for the Kansas City Railways, Kansas City, Mo., appears unlikely before fall, possibly not until after the November election, as several members of the Council will be out of town during August. The franchise must have three full readings by the Council before any action can be taken. The Mayor has suggested that a sub-committee be appointed to work out a franchise plan that will be acceptable to both the city and the railway.

More One-Man Cars for Milwaukee

The application of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., for permission to substitute one-man cars for two-man cars on its Wells-Downer line beginning Oct. 1 has been approved in a preliminary order by the Wisconsin Railroad Commission. No one opposed the use of one-man cars on this route. The company was notified promptly of the commission's action in order to allow ample time to remodel cars. When the company advises the commission that it has the equipment ready a formal order will be issued to start the service. The company plans to replace ten two-man cars with twenty one-man cars.

World's Playground Plans Added Facilities

Extensions to Atlantic City's transportation system are being planned by a group of local business men headed by B. George Ulizio to serve sections of the city not now reached by electric railway lines.

Present plans, which are based on recommendations made in a survey of the city's transportation needs by Fisk & Roberts, New York, call for four bus routes: A longitudinal line on Arctic Avenue, which runs parallel with the ocean front about half a mile inland; a route from the business section of Atlantic City to Pleasantville, northwest of the city, and two crosstown routes connecting the Boardwalk with the center of the city.

The report of Fisk & Roberts shows that of the 4,832 persons who enter the city during the morning rush hour 78 per cent are carried by the electric railways and 22 per cent by the 200 jitneys which operate on Pacific Avenue.

News Notes

Virginia Electric Only Bidder for Blanket Traction Franchise.—The Virginia Electric & Power Company, Richmond, Va., was the only bidder for the new blanket traction franchise before Common Council recently. That company offered $1,000 for the franchise, and in presenting this bid also filed its certified check for the amount specified, as well as a certified check in the sum of $10,000 as a bond requiring the company to observe the provisions of the franchise. Without debate, and in accordance with the rules, the paper was referred to the streets committee for recommendations.

One-Man Cars for Ohio Line.—One-man car operation has been installed by the Northern Ohio Traction & Light Company, Akron, Ohio, on its Canton-Massillon interurban line. At the same time a new Nachod signal system which it is believed will be an aid to motorists at the crossings was installed. The signal system is known as the three-position following protective system. Green, yellow and red lights are used.

Rail Removal at Springfield Arranged.—The Springfield Street Railway, Springfield, Mass., has agreed to the decision of City Engineer O. E. Parks, Westfield, Mass., to start immediately to take up the rails of the abandoned lines in Westfield. The rails on Mill and Union Streets will first be removed. Officials of the railway have agreed to pay the city 70 cents a foot for replacing the pavement destroyed in carrying on the work. The work is to be done under the supervision of the city.

Railway Opposes Buses in Massachusetts.—The East Taunton Street Railway, Taunton, Mass., is opposing the petition of John J. O'Connor to operate his Taunton Bus Line on a schedule conflicting with the trolley schedule. At a recent hearing before the Public Utilities Commission Mr. O'Connor said that the bus service did not compete with that of the railway inasmuch as the bus company charged a 10-cent fare and the trolley a 5-cent fare.

Baltimore Boosters Club Has Rail Representative.—Raymond S. Tompkins, assistant to the president of the United Railways & Electric Company, Baltimore, Md., has been appointed a member of the executive committee of a commission recently named by Mayor Howard W. Jackson to plan ways and means to attract more visitors to the city. Mr. Tompkins represents the various public utilities corporations on the committee.

Missouri Tariff Regulation Extended for Six Months.—The Missouri Public Service Commission at Jefferson City, Mo., on July 29 extended for a period of six months additional, effective Aug. 1, the temporary tariff authorized on Jan. 25 on the Missouri Electric Railroad, St. Louis, Mo. As reported in the ELECTRIC RAILWAY JOURNAL of Feb. 6, the January order established fare zones between Wellston and St. Charles, a fare of 7 cents for each zone being permitted. This reduced rate, as was hoped, eliminated the independent competing bus line.

Would Force Company to Pave Between Rails.—In an effort to force the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., to pave between its rails in South Fourteenth Street, the City Council at Newcastle, Ind., has passed an ordinance establishing a speed limit of 5 m.p.h., through the city for interurban cars and providing for complete stops at all street intersections. Residents of the street are averse to paying for the paving between the rails. The controversy has existed for more than three years.

Hearing Completed on Abandonment of Utah Line.—The hearing has been completed on the application of the Utah Light & Traction Company, Salt Lake City, Utah, for permission to discontinue service on part of its Third East Street Line and to remove the track. The case was taken under advisement. The company contends that patronage on this route is not sufficient to warrant its continuation and that the territory will be adequately served by other lines. Mention of the company's application to abandon the line was made in the ELECTRIC RAILWAY JOURNAL of July 17.

Approves Transfer Charge.—Approval of a transfer charge of 2 cents per passenger, to be collected from passengers of the Birmingham Electric Company, Birmingham, Ala., transferring from the Mountain Terrace car line to other lines, including the Highland Avenue and Lake View lines, has been granted by the Alabama Public Service Commission. Order of the commission was in response to a petition filed by the company asking such approval.

Six Held for East St. Louis Hold-Up.—Five men and a woman are held by the East St. Louis police charged with participation in the $8,100 hold-up of a car of the East St. Louis & Suburban Railway at Nineteenth and State Streets, East St. Louis, Ill., on July 19 while the car was en route to a downtown bank with fare collections from the previous Saturday and Sunday. The police say they have a written confession from one of the men and an oral confession from another involving all the others held. Some of those accused have denied any connection with the robbery. The money has not been recovered.

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Recent Bus Developments

Action Brought Against Competitor of Illinois Interurban

Charging that the Royal Rapid Rapid Transit Company, which operates interstate bus service between Madison, Wis., and Chicago, Ill., is carrying passengers between points within Illinois without state authority, the Rockford & Interurban Company, Chicago, Aurora & Elgin, Elgin & Belvidere Railroad, and the Aurora, Elgin & Fox River Electric Railway, all of whose lines are paralleled by the present route of the Royal buses, have started injunction proceedings against the Royal company.

The railways maintain that the bus line is picking up and discharging passengers within Illinois cities in violation of the law which allows bus lines to discharge passengers at Illinois points only when they have boarded buses in Wisconsin.

It is reported that application has already been filed by the Royal company with the Illinois Commerce Commission for permission to discharge passengers within the state. The bus line denies that passengers are being taken on and discharged in Illinois cities.

Railway at Akron Largest Ohio Bus Operator

The Norman bus line, operating independently in Akron, Ohio, has been purchased by the Northern Ohio Power & Light Company for the value of the equipment. Five additional buses for city service were secured. The line will be co-ordinated with the company's Grant Street and Firestone Park lines serving the factory district in the southern end of the city. There now remains only one independent bus line in Akron.

In view of the purchase of this line and the success of the company's Grant Street bus line it is probable that the Grant Street car line, which has not been operated for several weeks, will be permanently abandoned. The company at Akron is operating approximately 250 buses in its city and interurban service. It is the largest operator of buses in Ohio.

Buses to Be Run by Nebraska Interurban

The Omaha, Lincoln & Beatrice Railway, which operates between Lincoln and its two northeastern suburbs of University Place and Bethany, college towns, has applied to the Nebraska State Railway Commission for authority to abandon a shuttle service run for the convenience of University Place riders and substitute a 30-minute bus service between University Place and Lincoln. No abandonment of tracks is contemplated and the service on the main line will remain as at present, with a 6-cent fare. University Place riders will pay 10 cents cash with three tokens for a quarter for bus riding, instead of a 7-cent fare as on the cars.

No attempt will be made to invade with buses any of the downtown territory of the Lincoln Traction Company. The buses will traverse the same loop in the business section that the interurban has been serving for years, north of the main thoroughfares.

Co-ordinated Service in Lincoln

The Nebraska State Railway Commission has authorized the Lincoln Traction Company Lincoln, Neb., to make its first installation of co-ordinated bus and electric car service. In addition to abandoning the short line car service in North Lincoln adjacent to the University of Nebraska the commission permits the abandonment of track from Marion and Fourteenth Streets to the state penitentiary, a distance of 2 miles. This will relieve the company of considerable new paving expense. It withholds approval of the removal of tracks to the state hospital for the insane.

The buses will be placed in service on two 5-mile suburban lines, one to the state prison south of the city and the other to the state hospital to the southwest. They will make a loop through the main business streets and use the same south-pointed street for 1½ miles. The buses will operate on the existing car schedule and will transfer and take on passengers from the street cars. They will operate on paved highways all the distance covered.

These cars now operate on South Tenth Street and the same schedule as now will be maintained by adding another car and making the new terminus of all Tenth Street cars six blocks distant from the old. South Fourteenth cars will be made into double-enders and stop at Marion.

The commission says that this may prove to be the solution of the problem of inducing enough persons to ride to produce sufficient revenue to justify continuation of the service.

The fare will be 10 cents cash, with four tokens for 30 cents.

Review of I.C.C. Bus Hearing

Attempt Made to Interpret Testimony Introduced at Chicago by Electric Railways, Steam Roads and the Motor Carriers—Commission Will Have Vast Mass of Facts Upon Which to Draw

THREE hearings have been held by the Interstate Commerce Commission in its inquiry into the motor bus and the motor truck movement. They were conducted at Chicago on July 27, 28 and 29, at St. Paul on July 30 and 31 and at Portland on Aug. 11.

Of course a mass of facts is being collected. Some of them are new, but many are merely reiterative. The record certainly will be complete on which the commissioners will draw in basing their conclusions. Whatever else may go into the record there will be no mistaking the cases of the various interests involved. Each of them —the electric railways, the steam railroads and the motor interests—is taking able care of that. Not only that, but the public has been well represented. As one of its spokesmen expressed it, the public is engaged in choosing the type of transportation it prefers and in fitting the various available means of transportation into their respective fields of greatest utility.

The fact that many of the data are reiterative makes it seem more desirable to interpret the trend of the testimony than to go into the presentations as such. At the outset it is well to bear in mind that the whole series of hearings is an inquiry by the Interstate Commerce Commission based on the cognizance taken by it of the increasing extent to which the motor vehicle is becoming a competition of the regulated carriers. The purpose, of course, is to collect facts to be used in making legislative recommendations to Congress.

It may be jumping at conclusions to say so, but it does appear from the data so far placed in evidence that those electric railways have suffered least which were the first properly to sense the magnitude of this traffic by bus and by truck and to turn these vehicles quickly to their own advantage. So far as the need for regulation goes, the electric railways appear to be very much of the same opinion as the steam railroads, namely, that there should be federal regulation of motor common carriers engaged in interstate commerce.

The bus operators and the truck operators are opposed in some of their views; at least they were at the hearing at Chicago. They do not disagree on the general question of regulation, but they do disagree on just what is best to be done at this time. Some bus operators favor state control only, while others advocate comprehensive federal regulation. On the other hand, the truck interests appear to feel that any sort of regulation at this time is inadvisable. If there must be regulation, then they want it limited to state authority to issue certificates of convenience and necessity and to require prospective operators to make satisfactory showing of financial responsibility for the protection of customers and the public against loss.

These points of view are not new. They were hammered home at Chicago and will likely continue to be hammered home in each of the subsequent hearings. Still, individuals interpret the same set of facts differently. And this is being done quite freely. One commentator said:

"After the passenger business was once taken from the rails by the auto-

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mobile, it was partially recovered by buses but only a small percentage, almost akin to the invisible, was lost directly to the bus.

"When that fact once becomes officially established, it is probable that steam and electric officials will find it convenient and consistent to be pro-rail without being quite so anti-bus, in the same way that the bus industry has always maintained a pro-bus attitude without finding it necessary to adopt an anti-rail policy."

This same man also said:

"The bus only becomes a serious competitor of rails when it bids for the business the rails have already lost."

Railroads, both steam and electric, had their innings on the first day, July 27. Only three spokesmen appeared for the steam railroads, while nine were present representing the electric railways. B. F. Eustice, general passenger agent of the Chicago, Burlington & Quincy Railway, the first witness called for the railroads, confined his remarks to bus operation by his company and that run in competition with it. He explained his railroad was not actively engaged in bus operation. According to him, competition was purely local, confining itself to paved or well-maintained roads between fair-sized towns. The policy adopted by his railroad was to put on bus service where it is demonstrated that it is a cheaper method of performing a given transportation service, and to abandon service, both rail and bus, where the public patronage has decreased to a point where it is not successful.

For the electric railways, C. L. Henry, president of the Indianapolis & Cincinnati Traction Company and counsel for the American Electric Railway Association, related the difficulties of the electric railways in Southern Indiana in combating bus competition up to and after the passage of the regulatory act by the Indiana Legislature. He attributed a drop of approximately 70 per cent in gross income on his own road in the past two years to motor vehicle competition—the majority of this loss to the private automobile. He did not know what percentage could be laid to the bus.

C. K. Jeffries, general superintendent of the Terre Haute, Indianapolis & Eastern Traction Company and president of the Central Electric Railway Association, testified similarly. He stated that his company had purchased an independent competing bus line as a matter of self defense.

F. D. Norviel, general passenger agent of the Union Traction Company of Indiana, explained the scope of bus and truck operation as it affected these lines. He presented several exhibits to be filed with the commission, showing the route of the Union Traction System and those of supplementary and competing bus lines. His exhibit also included a statement of loss in revenue attributable to the motor vehicle, the private automobile being the instrument causing the greatest damage.

Samuel Lipp, Cincinnati, Ohio, bus operator, questioned the statement of Mr. Norviel to the effect that 25 per cent of the gross revenue loss was due to the bus and truck. Charles W. Chase, vice-president of the Chicago, South Shore & South Bend Railway and president of the Gary Railway and the Shore Line Motor Coach Company, gave details of the operation, stating that his company now ran 300 miles of bus route with a total of 6,000,000 bus-miles a year. According to Mr. Chase, it was impossible for him to estimate the loss to the electric railways and steam railroads in interstate traffic between Chicago and Hammond, Gary, and Indiana Harbor, due to bus competition. However, from his own experience in operating buses, and from estimates he has made from gross revenue of competing bus lines, he would say that $2,000,000 a year in revenue was lost to the steam and electric railways operating from Chicago and these nearby points. The entire bus operations by the Shore Line Motor Coach Company had been at a loss, but certain lines, particularly the one into Chicago, which is purely interstate, had shown a profit.

Lack of interstate regulation of buses was deplored by G. W. Welsh, vice-president of the East St. Louis & Suburban Railway. He declared this to be the reason for the competition which his company suffered between East St. Louis, Ill., and communities in the south western part of the state. While no difficulty is experienced in intrastate traffic in Illinois, because of the state law in effect, the company has suffered a loss in revenue because the bus operators are permitted to parallel electric lines and operate across the state line into Missouri. Three years ago Mr. Welsh's company established the Blue Goose Bus Line to operate interstate into St. Louis, Mo. Although this company operates under certificates of convenience and necessity in the State of Illinois, it is unregulated in so far as the interstate operation is concerned. Despite this motor carriers took away a large amount of the business which rightfully belonged to the rail line.

C. F. Handehy, special representative of the Illinois Traction System, explained that except for interstate operators between Chicago and St. Louis his property was free from bus competition. However, injunctions obtained against two of the bus companies between Chicago and St. Louis had prevented these companies from doing intrastate business between points along the electric line and St. Louis, Mo.

C. E. Thompson, vice-president of the North Shore Line, declared that inasmuch as the Chicago, North Shore & Milwaukee Railroad had been alert to provide bus service in its territory where such service was needed the company now had no bus competition. Fares on the 47 buses operated over 200 miles of route by his company are 10 per cent higher than those on the electric line for the same mileage. The buses act as feeders to the two main electric rail lines of the system.

This, of course, is the merest skeleton of the testimony as it affects the electric railways, but it does tend to indicate the extent of their participation in the proceedings, particularly at Chicago, and affords some criterion as to the data that are going into the record.

Approval of Binghamton Deal Sought

The Binghamton Railway Bus Line, Inc., Binghamton, N. Y., on Aug. 9 applied to the Public Service Commission for the right to lease the property, assets, rights and franchises of the Triple Cities Bus Lines, owned by Edward J. Dorey, operating between Binghamton and nearby communities. The stock of the petitioner is owned by the Binghamton Railway, which states that it has amended its certificate of incorporation so that it may operate the bus lines in conjunction with the existing service by the trolley line, if the petition is granted. In the purchase there are included eight buses, which will bring the total number of buses owned and operated by the Binghamton Railway up to eleven. Under the plan, this belt line will be combined with the bus line now being operated by the railway so as to cover more territory.

Mr. Dorey still retains his so-called South Side line in Binghamton and his line to Montrose, Pa.

More Bus Lines for St. Paul

The Twin City Motor Bus Company, St. Paul, Minn., subsidiary of the Twin City Rapid Transit Company, has applied for five local lines in Minneapolis, extension of a suburban line from Glen Lake to Excelsior, and changes in headways of intercity and suburban buses out of St. Paul to White Bear, Bald Eagle and South St. Paul. The Minneapolis permits will cover crosstown connecting lines with transfers to and from trolley lines, and a new line from the Great Northern Railroad station to Lakewood Cemetery, about 3 miles, on which the fare will be 10 cents.

Two New Bus Routes in Omaha.—The Omaha & Council Bluffs Street Railway, Omaha, Neb., announces the addition of two more new bus lines to its service. One route will be between 32d and Arbor Streets and 40th and Marinda, the other between 50th Street and Underwood Avenue and 52d and Franklin Streets. The company has ordered three new 21-passenger buses from the Nebraska Auto & Truck Manufacturing Company, which promises delivery in 60 days, for use on these lines. Adverse conditions confronting the company prevent the starting of several other new routes it had hoped to announce.

Company Would Abandon Indianapolis Bus Line.—The Indiana Motor Transit Company, the bus subsidiary of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., has filed a petition with the Indiana Public Service Commission asking authority to abandon its bus lines between Frankfort and Monticello, Ind. The petition showed that it cost the company 22 cents a bus for each mile, and that for the period from April 14 to June 13 the loss was $3,350. The company therefore believes that the patronage is not sufficient to warrant operation.

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Financial and Corporate

Maryland Company Seeks Modification of Court's Opinion

A motion seeking modification of an opinion handed down recently by the Court of Appeals of Maryland, under which the valuation case of the United Railways & Electric Company, Baltimore, was remanded to the Maryland Public Service Commission, has been filed by counsel for the company. In remanding the case the Court of Appeals held that the easements, which the commission had valued at $7,000,000, had been valued in the wrong manner, but should have been based on value in real estate. It was said by the court that the commission having based its valuation upon the assessments which necessarily include earnings, the method was not in accordance with the law.

In the motion filed by the railway it is claimed that the Court of Appeals was mistaken in its opinion that the commission failed to value the easements as value in real estate.

The motion created considerable comment. It was taken by some of the newspapers as a step on the part of the company to increase fares. This brought about a strong denial on the part of the United. Raymond S. Tompkins, assistant to the president of the company, issued the statement on behalf of the company.

Connecticut Interurban Resold

The Hartford & Springfield Street Railway, Warehouse Point, Conn., was sold on Aug. 10 to Arthur L. Linn, Jr., Newport, R. I., for $190,000. Judge Dickenson of the Superior Court approved the sale and announced that further hearings in the matter would be held for the benefit of bondholders of the Rockville, Broad Brook & East Windsor Street Railway to settle on the amount to be received for the bonds in their possession. A hearing is scheduled for Sept. 17 to arrange this matter.

Payments for the Hartford & Springfield have been arranged in the following manner: $25,000 goes at once to the bondholders' protective committee, $50,000 to Receiver Harrison B. Freeman on or before Sept. 1, $22,000 to the same party by Oct. 1 and $28,000 to Francis B. Cooley, who bought the property at a mortgage foreclosure sale for $10,000 subject to the claims of the receiver, and the balance, $65,000, to be paid Oct. 16.

Expenses and liabilities of the receiver are $137,000. The amount of money represented by bonds of the property is $200,000, of which $181,000 is on deposit at the First National Bank, Hartford. When expenses have been paid it is estimated $20,000 will be divided among the bondholders, about 700 in number. Expenses of appraisers, receivers' counsel and the reorganization committee will be about $10,000.

Lucius F. Robinson, counsel for the bondholders' protective committee, presented the case. Ralph O. Wells was state treasurer's representative for the bonds involved, and Josiah H. Peck appeared for the Windsor Locks Traction Company, a part of the Hartford & Springfield Street Railway.

Immediately after the sale papers were filed with the Secretary of State for the organization of the Hartford & Springfield Coach Company. Arthur L. Linn, Jr., Newport, R. I., president of the Newport Electric Company and vice-president of the Utilities Light & Power Company, was named president of the new bus company. Other officers are: Vice-president and manager, Arthur C. Marshall, Orlando, Florida; secretary, Arthur L. Shipman, Hartford, Conn., and treasurer, Dwight A. Pierce, Hartford.

About a month ago all railway service of the Hartford & Springfield Street Railway was discontinued and bus operation substituted. With the organization of the coach company will come further development and extensions to the bus service.

10-Mile Indiana Road to Be Sold Aug. 27

The Lebanon-Thorntown Traction Company, Lebanon, Ind., will discontinue operation shortly and offer the railway for sale as a whole or by parts. Mention of the company's application to abandon the line was made in the ELECTRIC RAILWAY JOURNAL of July 17. The bids will be received at the office of Rogers & Smith, Lawyers, Lebanon, Ind., by Robert P. Woods, president, at 10 o'clock a.m., Aug. 27. Right is reserved to reject any or all bids.

The property consists of an electric interurban railway operating between the center of the city of Lebanon, and the center of the town of Thorntown, distance of approximately 10 miles. The railway is adjacent to and parallel with the Chicago-Indianapolis Division of the Big Four Railroad.

The railway was opened for service July 4, 1905, at which time the track was fully ballasted with clean gravel. It is a single track with two single-end turnouts. The maximum grade is 1 per cent.

The company owns a right-of-way varying in width from 40 ft. to 50 ft. throughout the length except where operated over streets in the two municipalities mentioned. It owns all of the track, poles and wires throughout, except that of about two-thirds of a mile on the street in Lebanon. The single-track length of the Lebanon-Thorntown Traction Company is about 9¾ miles.

The company owns the two passenger cars, but only one is required in the regular service. The two combination passenger and baggage cars were made by Cincinnati Car Company. Power is purchased.

Mr. Woods may be addressed at 530 Railway Exchange Building, Kansas City, Mo.

Conditional Sale of Morgantown Properties Arranged

Conditional sale of the property of the Union Traction Company, Morgantown, W. Va., to the West Virginia Utilities Company has been announced by R. P. Stacy, vice-president and general manager of the utilities company.

The conditions under which the sale was concluded are that the City Council shall grant a new franchise to the utilities company for the operation of the Greenmont-South Morgantown street car line and that this franchise be approved by the Public Service Commission. Mr. Stacey states that there is little doubt that a new franchise will be granted, since a gentlemen's agreement has been entered into before the negotiations were concluded. He declines to state the purchase price, further than to say "it was considerably higher than we anticipated and more than we felt we could afford to pay."

The transfer includes the 17-acre tract known as the Traction Park, the railway and the carhouse on the southern end of University Avenue. The transfer of the properties will not take place until Council has adopted a new franchise and it has been approved by the Public Service Commission.

Mr. Stacy states that while the details of the operation of the line remained to be worked out, his present intention is to operate the south Morgantown line and the Sabraton line as one.

The new franchise would lighten the present paving obligation.

Directors of Narragansett Company Oppose Merger Deal

No director of the Narragansett Electric Lighting Company, Providence, R. I., although each one is an owner of stock of the company in his own right, has seen fit to deposit his stock under the terms offered by the Rhode Island Public Service underwriters, according to a statement made by the N.E.L. board of directors in advising stockholders of the corporation not to deposit their stock under the merger offer.

The directors declare that the stock has an intrinsic value greater than that offered and they emphasize the point that the offer contemplates a deposit of stock without assurance of the deal going through. They point out that Narragansett stockholders lose their rights as stockholders upon deposit of their stock whether or not the transaction is completed.

The statement points out that although stockholders who deposit their stock under the plan give a control of their voting rights to the Service company underwriters, the plan may be altered in any respect the underwriters desired except as to the price of $86 and may be carried through only as to the Narragansett and not with regard to the United Electric Railways or may be abandoned, and the stockholders have no voice in what is done whatsoever. Not even a definite date is fixed for the return of the stock to stockholders who deposit if the plan is abandoned, it is said.

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Good Showing by Boston Elevated

At the close of the month of June and the eighth year of public trusteeship of the Boston Elevated Railway, Boston, Mass., the system not only emerges virtually without a deficit, but makes a further payment of $22,304 to the cities and towns in the commonwealth that were placed under contribution by the Legislature to meet a deficit of $3,980,151 in 1919.

In exact figures, the excess cost of service above receipts for the twelve months was $10,054, against $31,284 for the twelve months ended June 30, 1925.

The remitting of a check by General Manager Edward Dana on July 23 to the state treasurer makes the total repayments to the municipalities $1,674,640 since the first one of $517,196 in July, 1922. The repayment at this time last year was $20,581, while the largest repayment was of $1,114,557 in 1923.

Practically 70 per cent of the repayment goes to the city of Boston. The remainder is distributed among Cambridge, Somerville, Brookline, Medford, Malden, Everett, Watertown, Arlington, Chelsea, Newton and Belmont and to the commonwealth, which assumed the assessments of Quincy and Stoneham in 1919.

The total number of revenue passengers carried during the year was 368,932,079, almost 2,000,000 fewer than the preceding twelve months, but the total of passengers paying the full 10-cent fare was 303,148,232 in the year just ended, which was about 12,000,000 more than in the previous year. The total revenue from fares during the year that closed the end of last June was $34,165,255, against $33,444,502 during the year closing June 30, 1925.

In giving out the figures showing the financial results of operation during June and also during the twelve months including June, General Manager Edward Dana explained that but for an item of snow-fighting last winter of almost $500,000, the repayments to the cities and towns would have been very much increased. Last winter was exceptional. During a normal winter the cost of snow removal is usually somewhat less than $100,000.

A graphic chart showing the allocation of the cost of service was prepared by General Auditor J. H. Moran for the twelvemonth. It showed that the average receipts from each revenue paying passenger were 9.511 cents. Almost exactly half of this, 4.753 cents, went for labor. The costs per passenger were divided thus: Labor, 4.753 cents; interest on bonds and notes, 0.687; rent of subways and tunnels, 0.600; rent of leased roads, 0.838; coal, 0.305; depreciation, 0.687; damages, 0.206; material and other items, 0.924; taxes, 0.439.

The largest item of expense in the cost of service was $11,777,399 for transportation expenses, which included wages of car service men. This was about $17,000 more than the previous twelvemonth. There was no increase in the basic wage during the last year, merely a small increase in the differential paid to operators of one-man cars.

The total cost of service for the 12-month period was $35,097,900, against total receipts of $35,087,845. There were certain profit and loss credits which came to $32,359 which enabled the repayment to the commonwealth and towns and left the sinking fund of $1,000,000 intact.

Three Miles of Westchester Line Abandoned

The Public Service Commission by order on Aug. 2 approved a declaration of abandonment by the Westchester Electric Railroad of that part of its line on the White Plains Road in the towns of Eastchester and Tuckahoe. The abandonment was occasioned by the fact that Main Street and Midland Avenue in Tuckahoe are to be paved, and due to the narrow streets and traffic congestion it was considered advisable to remove the tracks and substitute bus service. The estimated cost of the paving to the railway was $8,000.

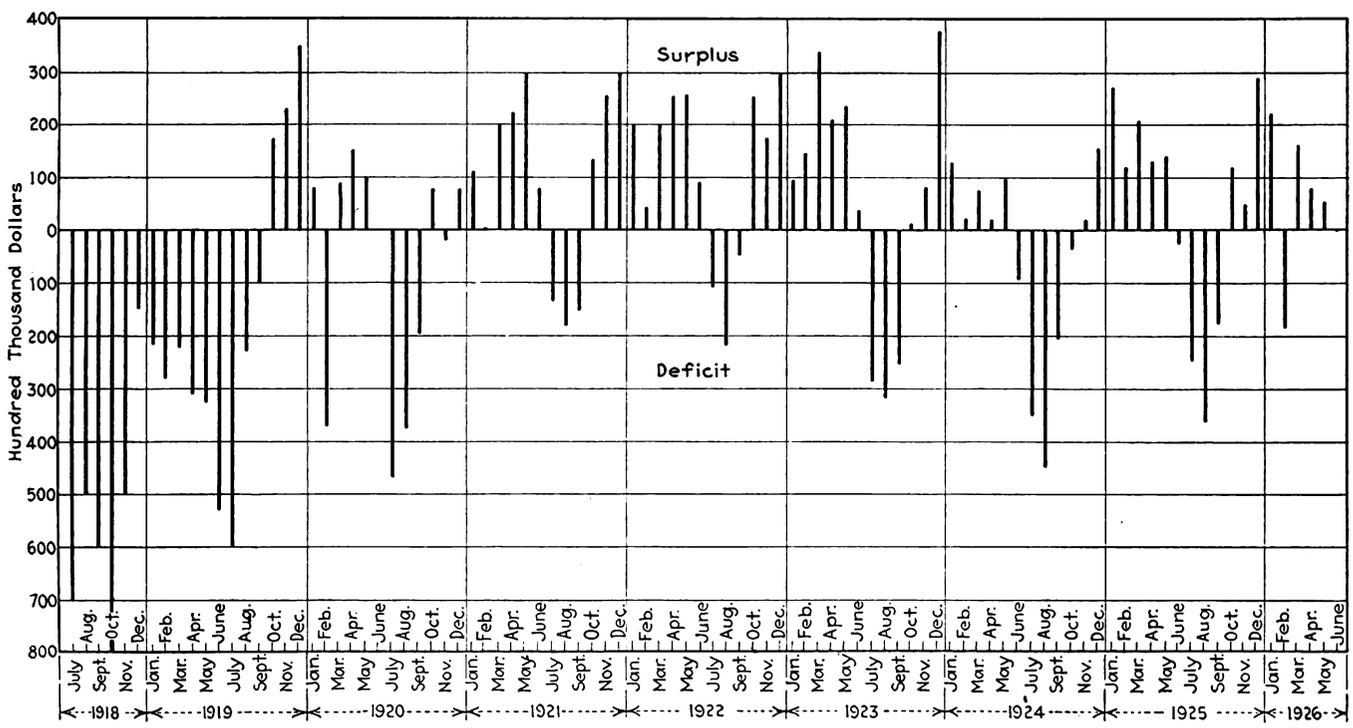
The company also granted a certificate to the Eastchester Transportation Company to operate a bus line in the territory which is now served by the railway. It will operate two 21-passenger buses on a fifteen-minute headway with a 10-cent fare and transfer privileges to the cars operated by the Westchester Electric Railroad and New York, Westchester & Connecticut Traction Company over their lines. The new company is a subsidiary of the Third Avenue Railroad, which operates other bus lines.

Before Commissioner Van Namee the company submitted figures covering yearly operations of its various properties since 1921. The loss in 1925 on the system was $136.017 and for the first three months in 1926 the loss was $30,924.

CHANGES IN THE BOSTON ELEVATED RESERVE FUND

Fiscal Year 1924-25 July 1, 1924, $1,000,000				Fiscal Year 1925-26 July 1, 1925, $1,000,000			
July	$353,245.79*	Jan.	$269,649.08†	July	$249,477.93*	Jan.	$223,301.09†
Aug.	445,820.47*	Feb.	118,183.05†	Aug.	367,593.94*	Feb.	185,989.63*
Sept.	207,334.30*	Mar.	211,955.71†	Sept.	176,763.97*	Mar.	161,772.65†
Oct.	36,155.55*	April	130,636.68†	Oct.	117,703.96†	April	77,031.69†
Nov.	15,031.47†	May	139,081.44†	Nov.	45,265.00†	May	57,010.06†
Dec.	152,527.52†	June	25,792.94*	Dec.	289,347.71†	June	1,662.18*
Profit and loss credit	$51,865.43			Profit and loss credit	$32,359.07		

* Excess of cost of service over revenue. † Excess of revenue over cost of service.



Financial Story of Boston Elevated Railway Under Public Control Told in Graphical Form

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Suit to Foreclose Brought Against Massachusetts Road

The American Trust Company, Boston, Mass., has filed a bill in equity against the Milford & Uxbridge Street Railway, Milford, Mass., to foreclose a mortgage made by the Milford, Hollis-ton & Framingham Street Railway in January, 1898, to secure a bond issue of $180,000. The bill also asks for the appointment of a receiver to take over the property of the Milford & Uxbridge Railway. The Milford & Uxbridge company was organized and took control of the Milford, Hollister & Framingham Street Railway on July 10, 1902. The bond issue referred to in the petition was payable on Jan. 1, 1923.

Walter L. Adams, Milford, Mass., has since been appointed receiver for the Milford & Uxbridge company. He has been superintendent of road for many years. The appointment is the result of a bill in equity filed by the American Trust Company.

Balance in Fort Wayne Higher

For the year ended Dec. 31, 1925, the Indiana Service Corporation, Fort Wayne, Ind., reports a balance to surplus of $179,940, against $154,623 for the year 1924. Passengers carried on the company's transportation lines totaled 25,648,155, compared with 25,-327,227 in 1924. Expenditures totaling $1,814,766 were made during the year for additional plant and property needed to meet the development of the company's business. Approximately 6

INCOME ACCOUNT OF THE INDIANA SERVICE CORPORATION

	1925	1924
Operating revenue	$3,855,888	$3,639,423
Operating expenses	2,537,961	2,577,996
Net operating revenue	$1,317,927	$1,061,427
Other charges, including taxes	263,587	245,659
Net operating income	$1,054,339	$815,767
Other income	13,844	.....
Total income	$1,068,183	$815,767
Interest on funded debt	719,799	661,145
Net income	$348,383	$154,622
Dividends declared	168,443	.....
Balance to surplus	$179,940	$154,622

miles of new track was laid, bringing the total length of track operated up to 242 miles. Fifteen new passenger cars were purchased, which gives the company a total of 176. The company sold $1,229,110 of its preferred stock during the year under the customer-ownership plan.

Seattle Passes Railway Budget

Indicating possible net revenues of $9,914, for next year's operation of the Seattle Municipal Railway the City Council has passed the railway budget, which had been reduced to $5,733,805, against estimated receipts of $5,752,725, leaving an estimated profit of $18,919. City Treasurer Terry ordered the addition of $9.000 to meet assessments against railway property.

D. W. Henderson, superintendent of railway, said that while the reduction in budget was heavy, the department would be able to proceed without curtailing service. The total reduction was $884,600, brought about by drastic cuts in expenditures for operating and maintenance. The budget as it now stands does not make allowance for any increase in wages, although increases which would total $150,000 a year are being asked by trainmen, shopmen and track employees. The City Council took the stand that the budget must be kept within the estimated earnings for the coming year, even if it was necessary to curtail service.

Commission Asked to Approve Kansas City Transfer

Approval of the Public Service Commission for the formal transfer of the properties, franchises and other assets of the Kansas City Railways, now in the hands of receivers, to the Kansas City Public Service Company, is sought in an application filed on Aug. 6.

Bennett C. Clark, attorney for William G. Woolfolk, president of the Kansas City Public Service Company, filed the application.

The commission has not yet set a date for hearing of the proposal.

Securities for New Buses at Toledo Authorized

The Community Traction Company, Toledo, Ohio, has been authorized by the Ohio Public Utilities Commission to issue notes for $99,952 to finance the purchase of new bus equipment for the Front Street line. No securities will be sold on the market. The buses are purchased under a lease-purchase plan. Twenty-four new buses are being purchased. Half are Mack chassis and half White chassis, both types fitted with Kuhlman bodies.

The new vehicles will go into operation within a few days to replace street cars.

Preferred Stock Called for Redemption

The first step in the proposed reorganization of the North American Light & Power Company, Chicago, Ill., in order to simplify its corporate structure was announced on July 30 with the calling for redemption on Oct. 1 of all of the company's $4,307,800 of 7 per cent cumulative preferred stock at $105 and accrued dividends.

Details of the proposed readjustment plan have since been revealed. This plan includes the issuance of $15,000,-000 of 30-year 5½ per cent debentures, and a block of new preferred stock. In this connection the North American Company and the Middle West Utilities Company will acquire a large portion of the common stock of the North American Light & Power Company.

Lines of the North American Light & Power Company's subsidiaries, including the Illinois Power & Light Corporation, will be interconnected with power lines of subsidiaries of the Middle West Utilities Company, with the possibility of certain interconnections with the North American Company's lines.

First Report of Engineers Public Service Company

A balance of $2,528,971 available for reserves and for 777,979 common shares of stock was realized by the Engineers Public Service Company, New York, for the twelve-month period ended Feb. 28, 1926. This company recently acquired the Virginia Electric & Power Company, the Key West Electric, Eastern Texas Electric, El Paso Electric Company, and the Savannah Electric & Power Company.

The operations of the company's subsidiaries are supervised by Stone &

CONSOLIDATED INCOME STATEMENT OF THE ENGINEERS PUBLIC SERVICE COMPANY AND SUBSIDIARY COMPANIES

(Twelve Months Ended Feb. 28, 1926.)

Gross earnings		$23,108,937
Expenses:		
Operation	$10,377,083	
Maintenance	2,186,596	
Taxes	1,734,455	
Total operating expenses and taxes		$14,298,134
Net earnings		$8,810,803
Interest, amortization and lease rentals		2,944,324
Balance		$5,866,479
Dividends on preferred stock subsidiary companies		1,293,254
Balance for reserves and common stock		$4,573,225
Deduct proportion of balance applicable to common stock of subsidiaries in hands of public		188,057
Balance applicable to reserves and to Engineers Public Service Company		$4,385,168
Dividends on preferred stock of Engineers Public Service Company		1,856,197
Balance available for reserves and for 777,979 common shares of Engineers Public Service Company		$2,528,971

Webster, Inc., as executive manager. It is the policy of the company to have its subsidiaries maintain adequate reserves for retirements and replacements and for other purposes. The combined reserves and surplus of the subsidiaries as of Feb. 28, 1926, amounted to 80 per cent of the annual gross earnings and 16 per cent of the book value of the properties. These statements were made in the first annual report of the company, which contains a record of activities for a portion of 1926 as well as for the six months of 1925, during which the company was in operation.

The accompanying income statement includes the operation of the five previously mentioned subsidiaries combined with the Engineers Public Service Company on the basis of its ownership or control of common stock as of April 12, 1926. It includes a full year's dividend on the preferred stock of the Engineers Public Service Company used in the acquisition of these subsidiaries' stocks, and also estimated operating expenses of the Engineers Public Service Company for a full twelve months.

No Par Value Stock Plan. — The Ninth Avenue Railroad, New York, N. Y., has filed a certificate in the office of the Secretary of State changing its capital stock from 8,000 shares $100 par value to 8,000 shares of no par value.

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Book Reviews

The A.B.C. of the Electric Car

By J. S. Dean, Westinghouse Technical Night School Press, 83 pages. Price 50 cents.

This is a neatly bound booklet setting forth in easily understandable language the elementary facts of electric railway operation. The text was first published as a series of articles in *Aera*, the official publication of the American Electric Railway Association. There appears to be real justification for the assertion of the publisher that the book contains just the information needed by many in the employ of electric railways who are either directly or indirectly concerned with the operation or maintenance of the electric car, but who have not had the advantage of a technical education and do not understand the fundamental principles of the electric motor or its operation. Numerous simple illustrations and the use of a water analogy successfully explain and make the subject clear.

Facts and Figures of the Automobile Industry

National Automobile Chamber of Commerce, New York, N. Y. 96 pages.

This annual review presents, in ready reference form, essential data on the development and present standing of motor transportation. Comparisons of production and registration between the United States and the rest of the world are shown graphically. Nearly five-sixths of the cars registered in the world are owned in the United States, and tables of this registration are given in detail. Much space is devoted to highway and traffic conditions, with maps and diagrams to illustrate regulations to avoid congestion. Statistics show the growth of the use of motor trucks and buses by both the steam railroads and the electric railways to supplement their service. The booklet uses 22 charts to make comparisons and analyses more striking, as well as numerous cartoons. Those interested in concise facts concerning the status of the automobile industry in 1925 will find information on every point from the raw material used in manufacturing to the licensing and registering of private motor cars.

Effect of Surface Materials on Steel Welding Rods

Prepared by the Research Bureau of the Chicago Steel & Wire Company, Bulletin No. 2.

A concise and accurate account of the manner in which steel welding rods are affected by materials adhering to their surfaces is given in this bulletin. The technical information contained therein on the subject of gas welding and metallic arc welding is sufficiently complete to meet the needs of practically any industrial welder and it is presented in a manner which is easy of comprehension.

After making a thorough investigation as to the effect of surface materials, it is the contention of the Research Bureau that these substances, chiefly lime, iron oxide and copper, play a very important rôle in determining the quality of both gas and electric filler rods. For gas rods a clean metallic surface seems essential, while for metallic arc welding the presence of non-metallic materials on the surface is required. The statement is made that surface materials constitute the real difference between gas and electric filler rods.

In publishing its series of bulletins on fusion welding the Research Bureau of the Chicago Steel & Wire Company takes a broad general position with regard to the subject as a whole and no attempts to advertise the particular products of the company are made. Believing that the properties of welding rods are a considerable mystery to those concerned with welding and that much interest is centered around this subject, the Research Bureau publishes its findings as a contribution to the industry. It is undoubtedly true that lack of exact scientific knowledge regarding welding rods is probably holding back the expansion of welding in practically all cases of metal joinery. Booklet No. 2 deals in large part with figures and facts rather than theory.

Bothering Business

By H. A. Toulmin, Jr. B. C. Forbes Publishing Company, New York, N. Y. 57 pages.

Most men, according to Mr. Toulmin, who have had experience with the Federal Trade Commission are convinced that that body should be done away with entirely and at once. He, however, does not recommend a course so drastic, but, after listing the alleged chief faults of the commission, suggests a procedure that would make that body effective. The five chief faults of the commission are:

1. Giving widespread publicity to complaints before sufficient testimony has been taken.
2. Persisting in activities that the courts have already held to be illegal, and in prosecuting concerns for doing things that the courts have held to be legal.
3. Complicating the procedure unnecessarily.
4. Carrying on work that is properly the activity of some already existing government department.
5. Prosecuting and hearing cases that should be handled by the courts.

To do away with these evils, Mr. Toulmin advises that the commission cease making economic and statistical investigations, that it leave to other government departments and to the courts all cases that do not involve whole industries and broad principles of public welfare. In short, that it do only the work for which it was orginally intended.

According to the author, conditions in the patent office do more to discourage invention than to help it. Such long delays are frequently met on application for a patent that a concern may starve to death while waiting to manufacture some article that would have saved its life. On the other hand, patents are at times granted without sufficient investigation having been made so that a manufacturer may find he is violating the rights of a previous holder of a patent after he has made a considerable expenditure of time and expense. To combat these conditions Mr. Toulmin would, in the first place, have Congress appropriate considerably more money for the patent office, to give it better quarters, increase the number of employees and increase their salaries; then the methods within the department should be improved and simplified so that engineers and lawyers could use the files for investigation and study, and thereby guard against duplication.

Can We Compete Abroad?

By C. C. Martin. National Foreign Trade Council. New York, N. Y. 155 pages.

Actual experience and practice are narrated in this book, which answers the title question by quoting the opinions of the traders of other countries. It does not attempt to discuss the technical or economic problems of foreign trade. The stories and comments are taken from foreign consular reports and foreign trade journals, from speeches, interviews, confidential reports and the debates of foreign parliaments. They indicate that the American trader makes a greater effort to study the conditions and requirements of the country in which he wishes to sell his goods than do his competitors.

Analyses made of trade reports indicate fuller co-operation between the manufacturing plant and the American salesman, so that where speed in filling an order is a determining factor he has an advantage. Just as advertising is carried on much more extensively and elaborately in the United States than in any other country, the American manufacturer has advertised his goods more widely in foreign countries than others; he makes a greater effort to create a demand. Not so many years ago the American manufacturer believed that it would be impossible for him to compete with the lower wages and cost of production abroad, but now American products are known throughout the world, American business methods are approved and adopted on every hand and American capital is invested in every country.

In conclusion, Mr. Martin says: "Though we wish and shall have our fair share of world trade, we do not wish a share that will deprive others of what they need and should have. Our trade flourishes as much by selling to countries which are our competitors as by selling those who do not compete with us; England is our chief competitor and our largest overseas customer. These countries need foreign trade as much as we. A monopoly of world trade for us would be an unmixed disaster."

Mr. Martin is well known as a writer and speaker on foreign trade. He has been actively engaged in business in every country of western Europe and has traveled extensively in Latin America and elsewhere. He has contributed widely in United States and Europe to economic and financial publications, and his book on "Packing for Export" is a standard work on the subject.

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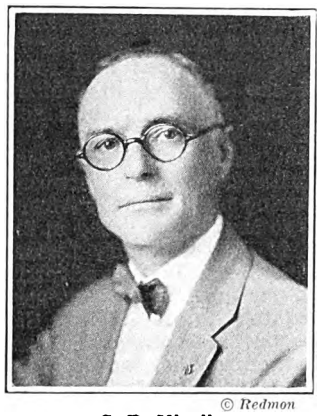
Personal Items

G. D. Nicoll, General Superintendent Ohio Interurban

G. D. Nicoll, recently appointed general superintendent of the Indiana, Columbus & Eastern Traction Company, with headquarters in Springfield, Ohio, has been engaged in electric transportation work since his school-days were completed. Since his latest traction advancement, he has also been named general superintendent of the Dayton & Columbus Transportation Company, the bus subsidiary of the railway.

Mr. Nicoll was born in Iowa and spent his early boyhood in that state. After leaving school, he entered the transportation field in a minor capacity in Illinois. He was quick to seize opportunity and his progress was rapid. He engaged in railway work in New York, Indiana and Pennsylvania successively and entered similar work in Ohio for the first time in 1911, when he was appointed superintendent at Zanesville of the former Ohio Electric Railway. Six years later he was transferred by the company to Dayton. There he served as superintendent until 1918, when he removed to Springfield to become assistant chief engineer. A few years later the Ohio Electric Railway system was dissolved, but Mr. Nicoll remained with the Indiana, Columbus & Eastern Company as assistant chief engineer, the latter having been a part of the Ohio Electric system.



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G. D. Nicoll

He was promoted to chief engineer by the company in 1922 and retained this post until he was named general superintendent of the company on July 1 of the present year.

Brooklyn Official Advanced

James C. Hunter, who was acting division superintendent at the East New York depot of the Brooklyn-Manhattan Transit Company, Brooklyn, N. Y., since last December, has been appointed division superintendent in charge of that depot by William Siebert, superintendent of surface transportation. He succeeds the late Charles V. Hogberg. Mr. Hunter was appointed a conductor on Feb. 21, 1905, at the Canarsie depot. Three years later he was transferred to night transfer clerk, but after five months returned to his run as a conductor. A short time later he was appointed extra inspector and from that time advanced steadily through the various grades in the operating department to his present one. Before going to East New York during the absence of Mr. Hogberg because of illness, Mr. Hunter was supervisor of revenue inspectors for five years. He is 42 years old.

F. L. Blanchard Heads Utilities Advertising Association

Frank Leroy Blanchard is the new president of the Public Utilities Advertising Association. He is often spoken of as "the dean" of American advertising, owing to his long service and experience in this field. After graduating from Bates College, Mr. Blanchard received his first assignment as a reporter on the New York *Tribune*. He soon progressed to the city editor's desk on the New York *Morning Telegraph*, and then for two years was assistant editor of the *Evening Telegram*. The *Evening World* then received the benefit of his abilities, and for three years he remained on the editorial staff of this newspaper, nearly a world's endurance record, as reporters' jobs went in those days.

It was after his connection with the *World* that Mr. Blanchard launched the *Editor and Publisher* for J. B. Shale, then president of the Publishers' Press Association. Mr. Blanchard was its first editor, a position he held until the advertising field attracted his attention.

Mr. Blanchard's entrance into advertising was through the Hampton and Seaman agencies. He early became a student of advertising as well as a practical advertising man and his thoughtful articles in advertising periodicals attracted wide attention among business men. He soon accepted an offer to become managing editor of *Printers' Ink*.

Probably Mr. Blanchard's greatest single contribution to the cause of advertising was his inauguration, in 1904, of the first oral course in advertising to be established anywhere in the world. This course was held, and continues to be held, at the Twenty-third Street Y. M. C. A. For twenty years Mr. Blanchard actively directed its destinies.

Mr. Blanchard's standing in the advertising field brought him to the attention of Henry L. Doherty, who invited him to enter the Doherty organization in 1922 as director of public relations for the utility and oil properties of the Cities Service Company. At that time, too, he became one of the charter members of the Public Utilities Advertising Association.

Since his connection with Mr. Doherty, Mr. Blanchard has been active in all branches of public utility advertising work. He is a member of the Advertising Commission of the International Advertising Association, chairman of the publicity and advertising section of the American Gas Association, and is a member of similar committees in the American Electric Railway Association, the National Electric Light Association, and the Society for Electrical Development.

G. W. Kalweit, Milwaukee Auditor, with Holding Company

George W. Kalweit has resigned as general auditor of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to join forces with W. N. Albertson as vice-president and treasurer of the newly organized Central West Public Service Company. He is especially well fitted to perform the duties required in his new work by his long and broad experience in the field of accounting, to which end of the business practically his entire business career has been devoted.

Mr. Kalweit was born in Germany in 1880 and came to the United States with his parents as an immigrant at the age of six years, settling in Milwaukee. Upon completion of his education in the schools of Milwaukee his first position was that of office boy with the Milwaukee Electric Railway & Light Company, the service of which he entered Jan. 31, 1898. By January, 1904, he had worked his way up to the title of assistant bookkeeper. On March 26, 1906, he was advanced to the post of acting auditor and then to auditor on Jan. 1, 1907. He continued as auditor until March 1, 1916, when he was appointed general auditor of the Milwaukee Electric Railway & Light Company, which office he filled until he resigned to take over his new duties with the Milwaukee holding company.

G. W. Kalweit

In addition to his other duties, Mr. Kalweit figured prominently in the organization of the Employees' Mutual Benefit Association of the Milwaukee Electric Railway & Light Company, formed in 1912 for the purpose of amicably adjusting differences which arose from time to time between company and employee. He was director and general auditor of this association until 1921.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Brake Shoe Does Well During First Six Months

American Brake Shoe & Foundry Company has enjoyed a half year of considerable prosperity, according to the *Wall Street Journal*. There seem to be good possibilities that the net for the year will considerably surpass the $13.57 share earned on the 156,093 common shares of the company stock in 1925. The paper goes on to state:

Brake Shoe has a consistent and excellent earning record. In 1923 the net per common share was $13.35, in 1924 it was $11.36 and the average for the past three years is $12.79.

In view of this steady earning power if 1926 earnings come up to present indications it is likely the directors will declare something special in the way of dividends at the December meeting. The company could easily pay a 50 per cent stock dividend and maintain the present rate of $6 on the new stock. The 156,093 common shares are carried at $7,880,650, or $50 a share, and the surplus at the close of last year stood at $8,119,314. However, the question of dividends has not yet been considered by the board and any suggestions at present as to the December possibilities must be somewhat in the nature of conjecture.

Standardization Movement Shows Healthy Growth

Representative trends toward standardization of industrial products have been considerably extended during the past year and savings from standardization work are constantly growing in magnitude, according to the Year Book of the American Engineering Standards Committee, just issued. More than 200 definite standardization projects are in process or completed under the auspices of the A.E.S.C., and 365 national trade associations, technical societies and government bureaus are co-operating in the work.

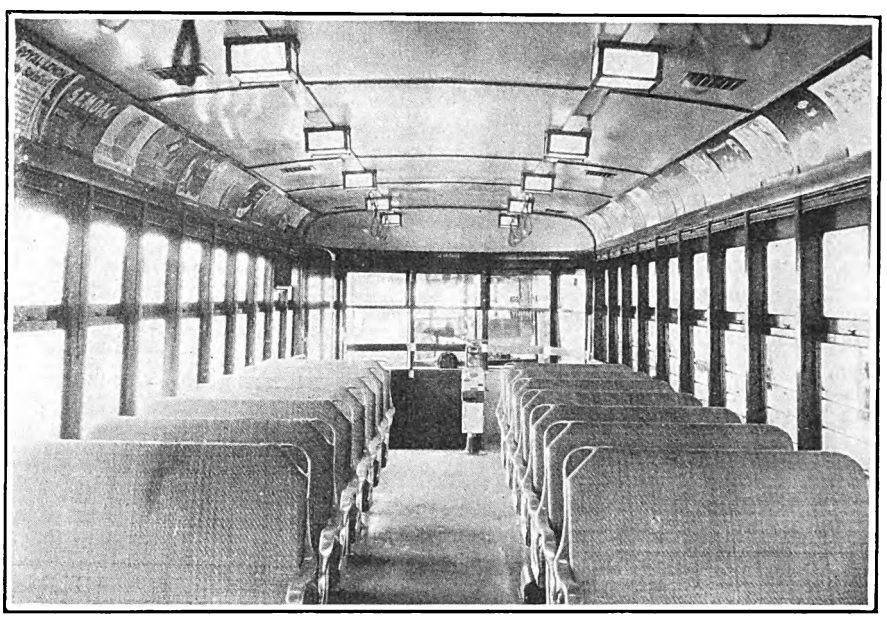
The standardization of drafting room practice and of methods of graphically presenting facts are two projects of interest which will be undertaken by a committee of experts that will shortly be organized. Much work has been done during the past year in establishing a comprehensive system of limit gaging, which, if generally adopted, can produce savings for American industry approaching a billion dollars a year, it was stated.

U. S. Steel Tells About Its Personnel Work

A comprehensive picture of the work which has been done by the United States Steel Corporation in furthering the welfare of its employees is given in a profusely illustrated booklet just issued to commemorate the 25th anniversary of the founding of the corporation.

All manner of subjects relating to employee problems are pictured and many ideas may be obtained, in looking over this book, for personnel work in other types of industry. A few pages of historical information is given on the astonishing progress which has been made by the United States Steel Corporation since its inception, and there is also included a letter from James J. Davis, Secretary of the Department of Labor, complimenting Judge E. H. Gary upon the excellent records which have been made in the matter of accident prevention and safety work in the intensive campaign carried on by the company.

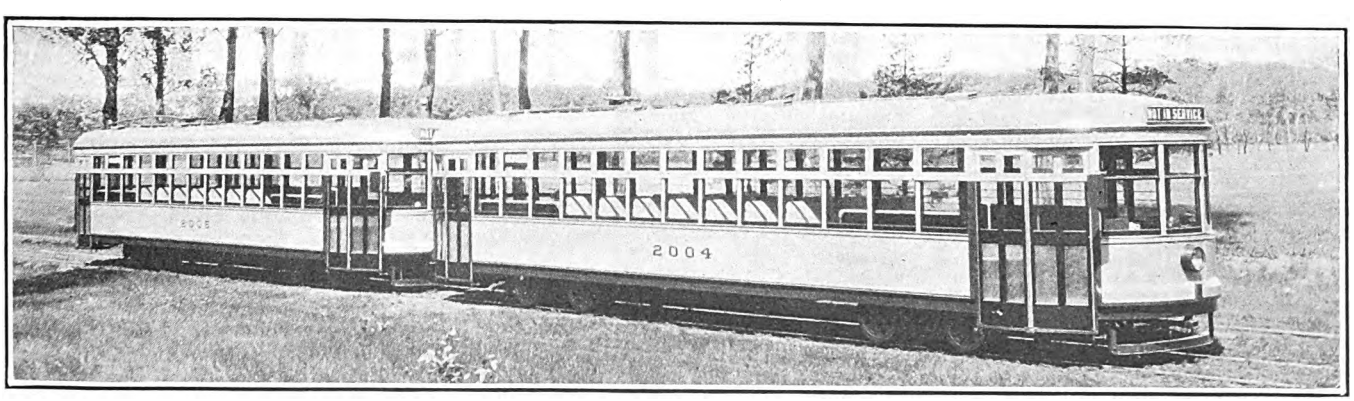
Comprehensive Tests Being Given Two-Car Trains in Twin Cities



Interior of the New Twin City Car, Showing Type of Lighting Fixtures Used

As was briefly stated in the issue of ELECTRIC RAILWAY JOURNAL for Aug. 7, the streets of Minneapolis and St. Paul, Minn., are being used as laboratories for the testing of a two-car train unit recently constructed by the Twin City Rapid Transit Company. It is desired by the company to know how effectively the double unit may be employed in handling the peculiar rush-hour traffic problems which are encountered in the communities which it serves.

A number of unusual features are embodied in the construction of the trial cars. The lighting fixtures shown in the accompanying interior view provide an exceptionally good illumination and the extra window space also adds to the brightness of the cars.



Two-Car Train Now Being Operated by the Twin City Company to Determine Its Feasibility for Permanent Adoption

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Bus Business Normal, Mack Official Declares

Bus production, delivery and demand are equal to last year, indicating that the business has become stabilized and settled down to a normal basis, according to Roy A. Hauer, manager of the general bus department, Mack Trucks, Inc., New York City. This assertion was based on business statistics compiled in the several divisions of the Mack organization. Mr. Hauer declared that the Mack company has added nineteen traction companies and sixteen railroads to its business list since last year, indicating that traction and steam railroad companies are realizing more fully today than ever before the economic status of the bus in transportation systems, not only as an auxiliary service, but for complete co-ordination with fixed lines of transit.

Rolling Stock

Indiana Service Corporation, Fort Wayne, Ind., recently received five interurban motor passenger cars and two combination buffet and parlor cars, also for interurban service, from the St. Louis Car Company, St. Louis, Mo. The order for these units was placed in September, 1925. The seating capacity of the straight passenger cars is 50, while the parlor-buffet will accommodate 29 passengers.

Specifications on the passenger cars are given herewith:

Weight:	
Car body	59,000 lb.
Trucks	27,000 lb.
Equipment	14,000 lb.
Total	100,000 lb.
Bolster centers	38 ft. 6 in.
Length over all	61 ft. 6 in.
Truck wheelbase	7 ft. 0 in.
Width over all	8 ft. 9 in.
Height, rail to trolley base	12 ft. 10 in.
Body	All steel
Interior trim	Steel, mahogany finish
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse
Armature bearings	Sleeve type
Axles	Standard Steel Co., heat treated
Bumpers	12-in. channel with Hedley anti-climbers
Car signal system	Consolidated
Car trimmings	St. Louis Car
Center and side bearings	Stucki-Roller side and Baldwin center
Compressors	General Electric
Conduits and junction boxes	Crouse-Hinds
Control	Westinghouse HL
Couplers	Tomlinson No. 13
Curtain fixtures	Railway Supply & Curtain Co.
Curtain material	Pantasote
Destination signs	Hunter
Fenders	Steel pilots
Finish	Pratt & Lambert Vitralite enamel
Gears and pinions	Nuttall, grade B, helical
Heater equipment	Peter Smith hot water No. QC2 and Railway Utility electric
Headlights	Golden Glow
Journal bearings	Standard M-C-B
Journal boxes	Symington
Lightning arresters	Westinghouse, condenser type
Motors	Four Westinghouse 333 VV6, inside hung
Sanders	Knight pneumatic
Sash fixtures	O. M. Edwards
Seats	St. Louis Car Co.
Seating material	Mohair, striped plush and leather
Springs	Standard Steel Works
Step treads	Feralun
Trolley retrievers	No. 5 Knutson
Trolley base	U. S. No. 13
Trucks	Baldwin 5½-in. x 10-in. journals
Ventilators	Railway Utility
Wheels	Standard Steel 37 in.
Special devices, etc.	1.5 kw. motor-generator set with 200 amp.-hr. battery for 32-volt lighting system
Energy-saving device	Economy meters

Data on the parlor-buffet cars is also appended:

Weight:	
Car body	57,000 lb.
Trucks	27,000 lb.
Equipment	7,000 lb.
Total	91,000 lb.
Bolster centers, length	38 ft. 6 in.
Length over all	61 ft. 6 in.
Truck wheelbase	7 ft. 0 in.
Width over all	8 ft. 9 in.
Height, rail to trolley base	12 ft. 10 in.
Body	All steel
Interior trim	Steel, enamel finish
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse
Armature bearings	Sleeve type
Axles	Standard Steel Co., heat treated
Bumpers	12-in. channel with Hedley anti-climbers
Car signal system	Consolidated
Car trimmings	St. Louis Car
Center and side bearings	Stucki-Roller, side and Baldwin, center
Compressors	General Electric
Conduits and junction boxes	Crouse-Hinds
Control	Westinghouse HL
Couplers	Tomlinson No. 13
Curtain fixtures	Railway Supply & Curtain Co.
Curtain material	Pantasote
Finish	Pratt & Lambert vitralite enamel
Gears and pinions	Helical
Hand brakes	None
Heater equipment	No. 5-H Arcola hot water and Railway Utility electric
Headlights	Golden Glow
Journal bearings	Standard M-C-B
Journal boxes	Symington
Lightning arresters	Westinghouse, condenser type
Motors	Two Westinghouse 333 VV6, inside hung
Sanders	Knight pneumatic
Sash fixtures	O. M. Edwards
Seats	Club chairs
Seating material	Spanish crush gray leather
Springs	Standard Steel Works
Step treads	Feralun
Trolley retrievers	No. 5 Knutson
Trolley base	U. S. No. 13
Trucks	Baldwin 5½-in. x 10-in. journal
Ventilators	Railway Utility
Wheels	Standard Steel 37 in.
Special devices, etc.	1.5 kw. motor-generator set with 200 amp.-hr. battery for 32-volt lighting system
Energy-saving device	Economy meters

Iowa Public Utilities Company, Centerville, Iowa, operating the Ottumwa Street Railway, Ottumwa, Iowa, has purchased three 25-passenger Mack city type buses, to replace street cars operating in that community.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., has ordered ten two-section articulated motor trains of the de luxe type. These will be operated on the route between Baltimore and Washington. The order has been placed with the J. G. Brill Company. The Maryland Public Service Commission has approved an application made by the company to enter into the contract for the new equipment, which is to cost about $400,000. Authority also has been granted by the commission for the railroad to issue 120 lease warrants with a total face value of $468,900.

Butte Electric Railway, Butte, Mont., has ordered a street car type Fageol bus, equipped with air brakes, for city operation.

Union Traction Company of Indiana, Anderson, Ind., has filed a petition through its receivers for authority to buy 20 freight cars at a cost of $3,000 each. Authority to proceed with the purchase was given by the court. A report on freight traffic showed that receipts from that source in 1925 were $681,288, and in the first four months of 1926 the freight traffic income was $207,161. It was stated that the Union Traction Company could increase its freight receipts if it had more cars. The terms of purchase on the freight cars, which will be of the standardized design adopted some time ago by the Central Electric Railway Master Mechanics' Association, are one-third payment on delivery and the balance in monthly installments.

Scranton Railway, Scranton, Pa., will spend approximately $250,000 for the purchase of twelve new cars and the rebuilding of ten others. Each new car will cost $17,000 and the improvements to the old cars will amount to about $45,000. The new equipment, which will be ready by December, will make it possible to operate one-man cars on all urban routes.

Metal, Coal and Material Prices

Metals—New York	Aug. 10, 1926
Copper, electrolytic, cents per lb	14.45
Copper wire, cents per lb	16.25
Lead, cents per lb	8.925
Zinc, cents per lb	7.65
Tin, Straits, cents per lb	65.875
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.075
Somerset mine run, Boston, net tons	1.875
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.825
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.50
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	12.3
White lead in oil (100-lb. keg), N. Y., cents per lb	15.50
Turpentine (bbl. lots), N. Y., per gal	$1.04

Trade Notes

American Brown Boveri Corporation, New York, N. Y., has opened a district sales office in Philadelphia, Pa., at 922 Witherspoon Building. Louis T. Peck will be in charge of this office.

Graybar Electric Company, Inc., New York, N. Y., announces the consolidation of its three New York City offices, to be located in the largest office building above ground in the world. The structure will be known as the Graybar Building and is being erected at Lexington Avenue and 43d Street. The fifteenth floor will be devoted almost exclusively to private offices for executives of the company.

State Law Reporting Company, 233 Broadway, New York City, has twenty field offices, from each of which shorthand reporters are sent out to cover hearings of the Interstate Commerce Commission. It furnishes the only official report of the commission proceedings under terms fixed by the commission. The official minutes of the present bus investigation, therefore, are available to those who wish to secure them. These hearings, to which reference has been made before in the ELECTRIC RAILWAY JOURNAL, are scheduled to take place at thirteen different points in the United States, with the concluding hearing at Washington, D. C., on Sept. 29.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Deformation of Bearings Causes Trouble

WEAR on the sides and tops of journal bearings and on pedestal jaws and wedges permits the bearings to twist from their normal position. Light construction allows deformation under load and results in a non-uniform bearing surface. Loosely fitting covers for journal boxes permit water, snow and dirt to enter and the oil to leak out. These are some of the troubles that the German State Railways have attempted to overcome, as described in an article by Erich Schulze in this issue.

Probably the most interesting conclusion shown by the extensive investigations is the extreme variation in pressure on the bearing surfaces. It was found that the maximum pressure of the ordinary journal bearing was not at its center but at the two ends and that instead of coming directly on top of the axle that the line of greatest pressure was displaced about 5 deg. against the direction of rotation. When bearings run hot the heating was found to begin at the ends. Evidently a construction that will provide uniform pressure throughout the length of the bearing will decrease troubles from hot bearings.

The author states that investigation is being made toward producing a metal for bearings that will provide some lubrication even when hot. Tests with the new design show that the bearings will operate for a limited time even though lubrication is stopped. That is a material improvement over types of journal bearings now in use.

The Hand of the Blacksmith Seldom Produces a Work of Beauty

MANY shop-made devices and home-made improvements to electric cars and shop equipment are described in the issues of ELECTRIC RAILWAY JOURNAL. As a rule these are very ingenious and frequently they produce substantial savings in both time and labor. Few of them, however, have the finished and attractive appearance of a factory-made product. The advantage which results to the railway from the use of such devices is almost entirely utilitarian. Care should be used particularly not to apply these to some of the modern cars in such a manner as to detract from their appearance.

Everyone is talking about "de luxe" cars as a factor toward producing better public relations and increased patronage. If the modern car is to perform effectively in a competitive field it must wear good clothes without obvious patches. If there must be rough parts they should be covered or blended into the whole so that they do not appear patchy.

Of course on cars of older design, such shop-made equipment is less out of place because such cars were more a blacksmith job. But rough, exposed parts have no place on modern cars. While they may serve their purpose mechanically, they detract from the effect of the complete ensemble.

To obtain the proper balance between utility and beauty is only one of the problems of the equipment man. It is an important feature of ride selling. The vehicles used must perform in every sense of the word and a definite part of the performance is appearance.

Standardization May Be Carried Too Far

STANDARDIZATION is the order of the day. That it has resulted in enormous savings in industry no one can deny. It has reduced duplication and has paved the way for simplification of manufacturing processes, of sales methods and of storeroom practices. There is still a great field for further development of standards and reduction of waste, particularly in the electric railway field.

Like all good things standardization has its limitations. Adoption of a single standard for a property may lead to excessive costs, with continuing fixed charges that cannot be justified economically. An instance of this sort is in track construction. One large property, for instance, adopted a standard track design and has since used it for all new work and reconstruction. The design is excellent, and is suitable for the operation of the heaviest cars used on the system and the most frequent headways.

But there are suburban sections in and about this city where cars of a lighter type are used and where the headways are much less frequent than in the central business district. A much lighter track would be ample and it will be many years before the growth of the community would render it inadequate. Yet in order to maintain the standard, track suitable for the heaviest city traffic is laid.

Whether it is essential to carry a standard to this extreme is debatable. Of all parts of a railway, the track is one of the most permanent, and is disturbed the least after it is once installed. Unless the saving due to standardized design and construction methods is such as to bring the cost down to that of a lighter track, there is considerable justification in the adoption of at least two types—one for heavy traffic on congested thoroughfares, and the other for lighter suburban service.

The subject is of sufficient importance to make it well worth consideration. In the final analysis it is a problem in economics, and a definite solution can only be arrived at for each specific case. But a general treat-

This is the issue in August that is devoted essentially to maintenance subjects

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ment can be made that permits of ready adaptation. Such a treatment would be a valuable addition to electric railway knowledge.

Underwriter's Label on a Completed Car an Asset

IT IS now possible to obtain an underwriters' label for a complete car. James S. Mahan, president of the Western Section, International Association of Electrical Inspectors, in a talk before the equipment men at Chattanooga spoke of the value of such a label to railway companies.

In discussion, it was brought out that the saving of insurance premiums per car would be from $7.50 to as high as $20 a year, depending on the conditions on the property. At least the saving is more than the initial cost of inspection and label, which is $5 per car. It would be difficult to find a better investment for $5 than this service will bring.

At least one car builder has said that the cost of car construction need not be any higher to comply with the Underwriters' standards than for any other good construction. It does mean, however, that the customer specifying materials must not insist on non-approved materials.

There was a time when the restrictions of the underwriters required certain types of construction that did not meet what many master mechanics believed to be good practice. Metal conduit was not entirely satisfactory. Condensation of moisture proved a nuisance. With the manufacture of new materials the underwriters have broadened their requirements to include flexible wire covering.

It is now quite possible to specify that the entire car shall be so constructed and equipped that it will pass the underwriters' inspection and still include the equipment and construction preferred by the customer with but very few exceptions. To gain the advantage of this approval it must be specified in advance.

New Truck for Electric Cars Offers Many Interesting Possibilities

CARS bought by electric railways during recent years have been largely of the double-truck type. The reasons for this lie in the demand for a larger car body than can be installed satisfactorily on the usual type of single-truck and to the easier riding qualities of double-truck cars. As far as the loads carried by electric cars are concerned, there is no reason why a car should have more than four wheels.

Tracks in city streets necessarily have many short radius curves, which limit the length of wheelbase that can be used under single-truck cars of the usual type. The length of the car body that can overhang the truck is another limitation that must be considered or the side sway and teetering action will be excessive.

An interesting development in car construction is the attempt made in Switzerland to provide a long wheelbase truck for electric cars and still retain the advantage of light weight which goes with a car having a four-wheeled truck. The construction is described elsewhere in this issue. In addition to providing a long wheelbase the experimental truck does not use the axle-hung suspension for the driving motors, but mounts them on a small four-wheeled truck located between the two driving axles. The motors are thus spring supported and their weight does not come as a dead load on the axles.

By use of a cardan drive through bevel and spur gearing from the motors to the axles several important results are accomplished. The gearing is inclosed in an oil-tight casing so splash lubrication can be used and there is no danger of dirt or dust getting in. Gears are located equidistant from the center line between the wheels, preventing any tendency for the axle to be forced out of alignment and reducing the wear of bearings and gearing. The axle for a pair of wheels is cut in two, each half being fitted with a spur gear, which in turn is driven from a jackshaft and bevel gearing. This allows each driving wheel of the corresponding axle to displace itself with regard to the other wheel and makes it easy to negotiate sharp curves. The tendency for one wheel of a pair to slip is also done away with so there should be less wear on rails and wheels. By using a gear ratio between motors and driving wheels about twice as high as with ordinary axle-hung motors smaller and lighter motors can be used.

The new truck construction has a flexibility that will appeal to the mechanical men of electric railways and presents many ideas in design that may suggest ways to improve on present trucks.

Revival of Hudson River as Traffic Artery Suggested

RIVER transportation, fed by crosstown buses, is suggested to the New York Transit Commission to relieve congestion in New York City as a result of a survey made for the commission during the recent strike of subway motormen on the Interborough Rapid Transit Company. The plan advanced contemplates the use of high powered boats to transport persons up and down the North River with bus lines feeding the boats at such points as 125th Street, 96th Street, 42nd Street and Rector Street, with a possible stop at or near 14th Street.

With the coming of the bridges over the East River and the tunnels under both the East River and the Hudson River, many of the ferries fell into disuse. However, the only means of communication with Staten Island is by ferry from New York, Brooklyn and New Jersey and a goodly business by ferry is still done on both the East and the Hudson Rivers by high-speed boats operated at frequent intervals. The suggestion now made, however, contemplates longitudinal traffic on the river from uptown New York to midtown and downtown New York. The likelihood of fogs and of floating ice in the winter are, of course, hazards, but they operate against the present ferries. Greater obstacles appear to be that the river is congested with craft at present and that the proper berthing accommodations might be difficult to secure.

Although the scheme might seem to be a throwback, it has several novel features. Paris presents an instance somewhat akin to the one the author of the present plan apparently has in mind. There, under the Department of the Seine, 130 surface car routes, 53 motor bus routes, 4 railroads operated over private rights-of-way and a steamboat line are all tied in together. On the Seine, in recent years, 40 boats, each of a capacity of 400 persons, were being run as part of the system in which all water and surface transportation facilities are a unit. It is not planned to extend the

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river transportation, and reports state that when the present boats wear out they will not be renewed. Furthermore, they have been laid up for some four months the last few winters. This would indicate that in Paris the plan has not been entirely successful under modern conditions.

No matter what the obstacles may appear to be to the suggestion just made in New York, the problem of transporting the millions of the metropolis is too grave and the reputation of the author of the plan as an engineer is too good airily to dismiss the recommendation as impracticable or beyond the realm of realization.

Maintenance Men Have a Part in Creating a Friendly Public

GOOD maintenance as a valuable asset in the establishment of friendly public relations was the essence of E. D. Reed's talk before the Southern Properties' maintenance men at their recent Chattanooga meeting. Good maintenance, of course, helps to make service reliable—and this is essential. But clean cars and the quick repair of little things is what counts in gaining direct public approval. On many small lines, requiring only two, three or four cars, a loose window, a torn seat or broken hardware soon becomes noticeable. It becomes a distinguishing mark for that car. In the end, the part may be repaired or replaced, but delay creates a bad impression in the minds of many people.

If, on the other hand, repairs are made promptly, an eyesore is removed. This requires careful inspection and quick repairs. The result is not only better service but a better public impression. Public relations is a real, though intangible thing to which live maintenance men are giving attention. The operations of all departments affect directly or indirectly a company's relations with its public. But those charged with maintenance responsibility play a leading part in this work. Good housekeeping attracts riders. "A stitch in time" is an important rule of the good housekeeper.

Public Is Getting One-Sided View in I.C.C. Inquiry

FAULT is found with the steam railroads because the only side that the public is hearing in the I.C.C. inquiry into the bus and freight business is the bus and truck side. The *Railway Age* says that the industry it represents has responded nobly in answering the questionnaire and that this is perhaps the best possible witness, but it laments that so far as the picture is concerned that is being presented to the public at the hearings the questionnaire is silent. This criticism also holds true of the electric railways. They are understood to have replied liberally to the questionnaire, but despite persistent urging the hearings so far held, except the one at Chicago, give the idea that they, too, are largely content with the silent presentation of their case.

Of course it is imperative to convince the commission that the situation as it exists contains elements that the railways feel should be corrected, but it is highly desirable for the railways so to present their case that the public may know the full legitimacy of such suggestions as they offer. Electric railway men have attended the hearings, but except at Chicago they have been inarticulate. On the other hand, the public presentation of the side of the motor carriers goes on in a stream almost endless. It is not that the motor carriers are better fortified with facts than are the steam railroads and the electric railways, but that by the very nature of the business in which they are engaged the motor interests are able to judge better the value of their material in helping to create favorable public opinion through the newspapers and in sustaining such opinion once it has been created. They are shouting their case from the house tops. This may be a method in a proceeding of this kind not regarded by those in steam and electric railway work as consonant with their ideas of the dignity of the proceeding, but the railroads and the electric railways may well sacrifice some of their dignity in order to use as effectively as the motor interests are doing the opportunities offered to present their case to the public.

Philadelphia Gets After Bus Parked in Public Streets

LEXICOGRAPHERS may quarrel over the derivation of the word bus-caneers, invented recently in Philadelphia, but the menace intended to be described by the appellation certainly is a serious one. Buscaneer is said to have had its inception in the realization on the part of its originator of the likeness of the bus operator who hogs the street to the old-time buccaneer. Be that as it may, Philadelphia is up in arms against the buses engaged in sight seeing and in touring service that make a parking place of the public streets, and it has ruled against them to the extent that not more than one such vehicle shall be parked on either side of the street in any one block for loading at one time.

As many as eleven buses are said to have used one block at one time in Philadelphia. The idea of the police was that this was nine too many. And public sentiment appears to agree with that decision. Streets so cluttered up became almost impassible for other vehicles, and this is what happened in Philadelphia. So far the disposition of the owners of the vehicles affected has been to comply with the regulatory measure put into effect by the police, but it appears that the Department of Public Safety, as the police of Philadelphia are known, is prepared to make good its threat to compel the operators to observe a degree of order that shall take into account the rights of other users of the streets. In this connection it is interesting to note that Atlantic City, into which buses pour every day in an almost endless stream, has taken similar action.

In the past there have been a few sporadic efforts of this kind at regulation, but none that had behind it the apparent determination of the public officials shown in these instances. A nuisance may be merely a nuisance by inference. On the other hand, a nuisance may grow out of a practice which in its singleness has no earmarks that stamp it as beyond the realm of the reasonable, but becomes objectionable by mere numbers or by the repetitive process. This is what has happened in the case of the bus that parks in the public streets. It has become a nuisance and menace by its numbers. So again it may be said that the word buscaneer may not have its roots well grounded in good usage, but in the sense that the term is being used in Philadelphia it does personify a pest.

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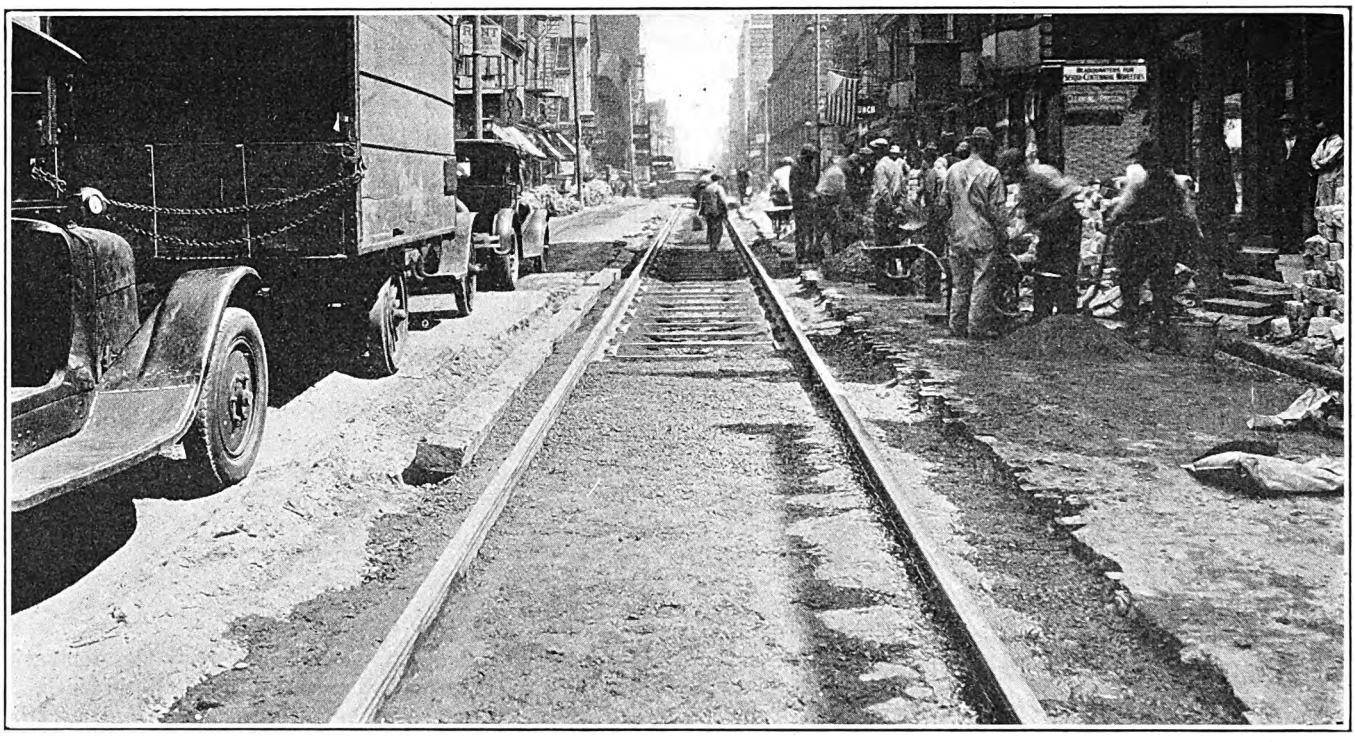

In the Foreground the Paving Base of Concrete Has Been Poured. Ahead of This Work Is the Twin Steel Tie Construction Thoroughly Tamped with a Dry Mix of Lumnite Cement and Traprock screenings

Modern Methods Used in Reconstructing Track Under Traffic

The Philadelphia Rapid Transit Company Recently Completed Three Blocks of Track Reconstruction Under Heavy Traffic Conditions, and with Vehicles Using One Side of Narrow Street—International Steel Twin Ties Supporting 7¼-In. Girder Tee Rail, Thermit Welded Joints, and Lumnite Cement All Helped in This Rapid Work

BY USING the old track substructure with twin steel ties supporting a 7¼-in. girder tee rail, the Philadelphia Rapid Transit Company was able to reconstruct three blocks of track on Eleventh Street, immediately north of Market, without interrupting traffic for longer than one period of from 30 to 50 minutes in each block. The street is very narrow, being used for one-way traffic only, with a single track in the center, and is normally greatly congested with vehicular movements, of which about half are of commercial vehicles. The city, desiring to keep the street open, had insisted before the work began that the roadway on the west side of the track should be left unbarricaded.

The work on these three blocks was done in three sections of one block each, one at a time, and was in the nature of a trial to determine the feasibility of two slightly different plans employed.

The old track was built many years ago. It consisted of two concrete stringers running lengthwise directly under the rails with a concrete paving base in between the stringers to support the paving. Imbedded in these stringers at intervals of approximately 5 ft. were cast-iron chairs, on which 9-in. grooved girder rail was supported and held in place by clips. The theory of this early construction was that new rail could easily be relaid by removing the clips and placing the new rail on top of the old chairs. With the passage of time, however, the entire track, stringers and paving base had settled under the weight of traffic in an irregular manner from 1½ to 3 in., depending on the density and nature of the sub-base in the different portions of the street. In order to use the old concrete stringers the new track had to be brought up to grade.

The differences in elevation due to settling, added to the 1¾ in. difference between old and new rail heights, made necessary the use of a tie that could meet the following specifications: extreme shallowness, satisfactory bearing area for the rail base, largest possible bearing area of the tie on the concrete, and reinforcement of the whole concrete structure. For this reason the company's engineers decided to use International steel twin ties.

The First Block

After the paving contractor had finished the work of removing the old granite blocks between the rails, and for a distance outside of the rails that would allow for the installation of ties, engineers took numerous elevations to determine the amount of chipping that would be necessary to install the steel ties. The chip-

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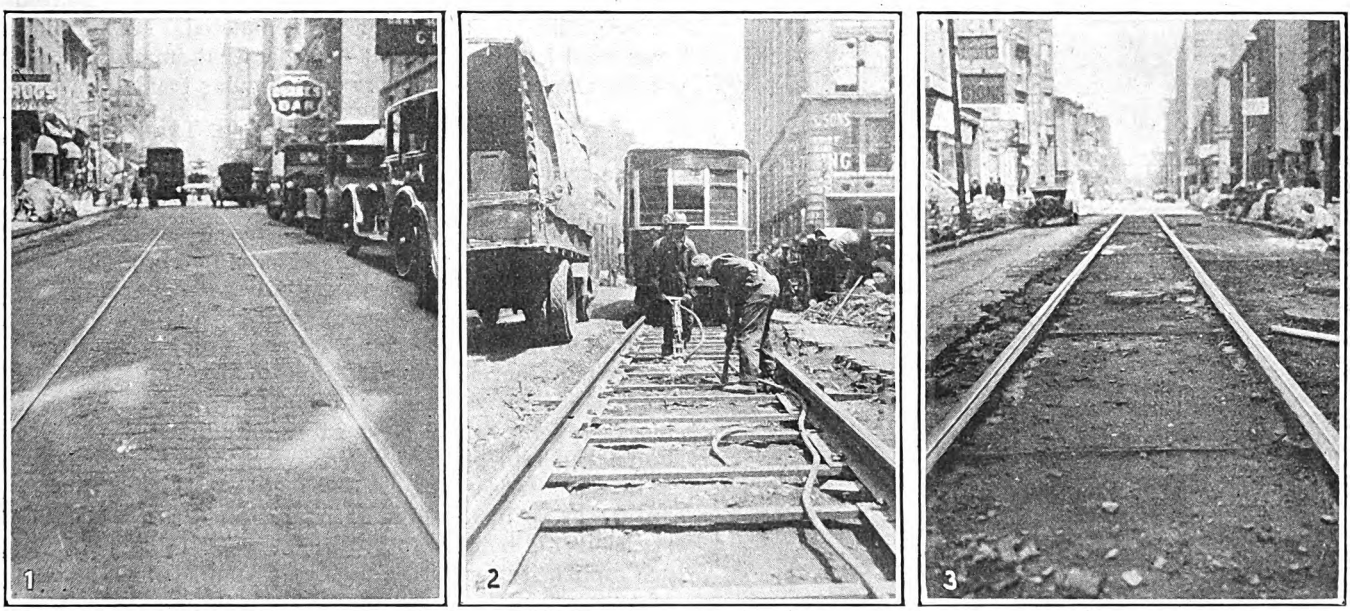
ping of the concrete was done with pneumatic tools in a comparatively short time because the track had settled considerably in this block and only a few spots remained high.

The new rail, a 7¼-in. girder tee section, was then distributed end to end along the side of the street reserved for the track-work, and all joints were thermit welded prior to fastening the rail to the ties. Rail clamps were used to hold the rail ends for welding. At the end of each block of welded girder tee rail, a 5-ft. section of 9-in. girder rail was welded to make a compromise joint. The outer ends of the 9-in. girder sections were drilled for bolting to the old rail at the intersecting streets. When the welding and drilling were completed there were two continuous sections of rail, each as long as the block, lying on the shoulder of the street ready for placement.

After the trench was prepared and the rail welded, were laid on a dry sand and cement cushion on the old concrete stringers. At the same time that the blocking was in progress, the balance of the steel ties were hooked to the rails. Side blocking was also used to maintain the track alignment.

Holes were then made in the plates of the twin steel ties to correspond to the holes in the old cast-iron chairs, and bolts were placed from the chairs through the tie plates so that the track could easily be held down by tightening up on them. The track was then brought accurately to grade by wedging under the rail on the wood blocks in the cement and sand cushion and pulling down on the anchor bolts fastened to the chairs. All this was done under a traffic which varied from 56 cars per hour during the rush period to 40 cars per hour during the non-rush period.

Due to the uneven settlement of the old concrete stringers, there was a space under the bottom of the



Rapid Work Characterized This Philadelphia Track Reconstruction

No. 1. The first block completed made an excellent job.
No. 2. No time to waste. After a car passes, workmen pick up their tools and proceed. Here men are removing a few remaining high spots with pneumatic picks.
No. 3. The third block stripped of paving between the rails and to the curb on one side, ready for the replacement of new rail.

preparations were made to cut in the new track at night, this being the only operation contemplated to interrupt traffic. At each end of the block the rail heads of the old track were saw-cut for the connection, the rest of the cut being done by torch. When the old rail was burnt into convenient lengths and removed, 4-ft. pieces of old wood ties were placed in the trench on about 20-ft. centers, and the steel ties placed on 5-ft. centers to correspond with the locations of the old chairs. The long sections of welded rail were then pulled by means of a chain attached to the draw-head of a street car, about 15 ft. up the street to a point exactly opposite the cut-in joints on the old track. They were immediately snaked into position to approximate gage, the short pieces of old wood ties acting as supports. As soon as the end joints were partially bolted and a few steel ties hooked to the rail to hold the gage, traffic was resumed. The balance of the construction was done under traffic.

At this point the short pieces of wood ties were removed, and in order to get approximate grade were replaced by wood blocking 6 in. x 9 in. and from 2 in. to 4 in. thick every 5 ft. under the rail. These blocks twin steel tie plates varying from 4 to 6 in., this being greater than desired for proper concrete tamping. In order, therefore, to provide a tamping pocket from 1½ to 2 in. deep under the plates of the tie and under the rail, a layer of concrete was poured on top of the old stringers and half way up the channel of the tie, mixture of 1:2½:5 being used. This concrete was poured at night from 11 p.m. to 2 a.m. and was made with Lumnite cement so that it could acquire its initial hardening under traffic on the night schedule of about a twenty-minute headway. At 9 o'clock that same morning, this concrete was apparently as hard and strong as portland cement would have been in two weeks, and, since it covered the bottom leg of the channel of the ties, it acted as an additional hold down for the track.

After carefully observing the track for any deflection due to imperfections in this partial concreting which gripped the tie, the tamping process was started. A 1:3 mix of Lumnite cement and traprock screenings was shovel-mixed and hand-sprinkled, wet enough to stick and pack hard, but not sufficiently so to puddle any free water when tamped. This tamping material was placed under the plates of the steel ties and under the

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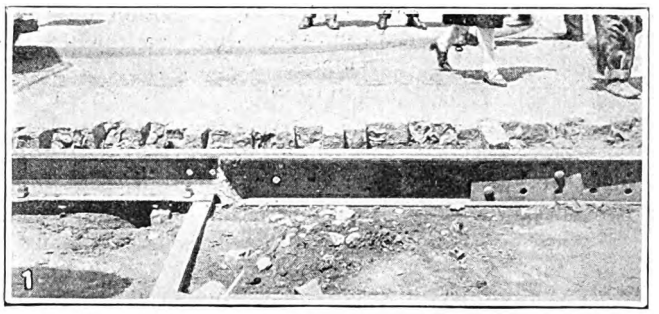

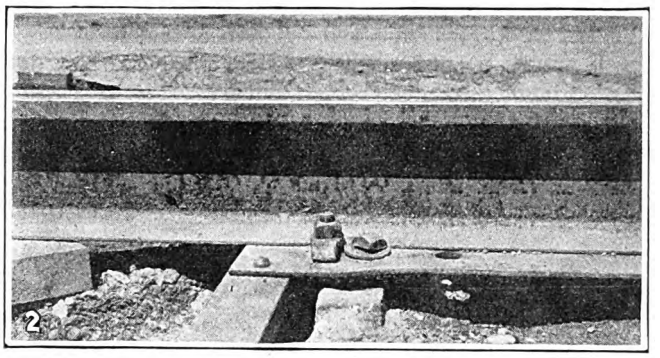

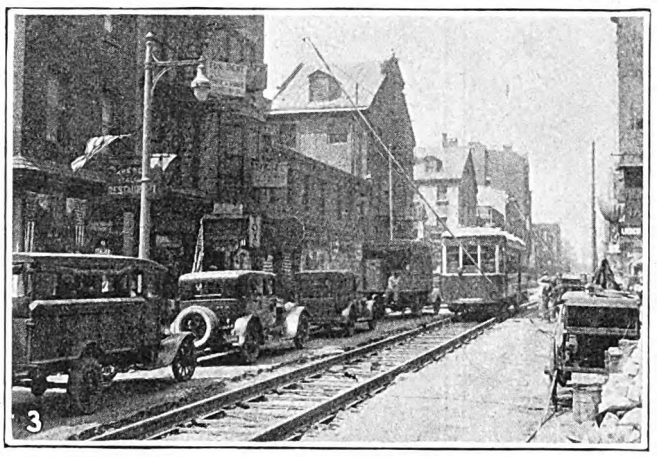

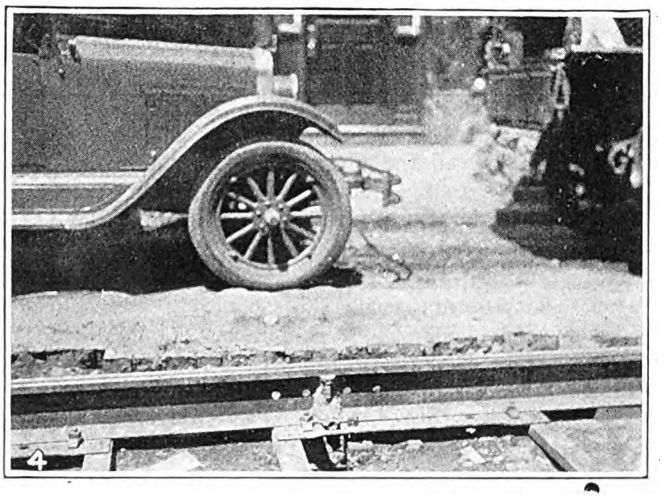

Extremely Shallow Ties Were Essential in Expediting the Reconstruction and Utilizing the Old Concrete Foundation

No. 1. Five-foot section of 9-in. girder rail thermit welded to the end of the new stretch of 7½-in. girder tee-rail, thus making a welded compromise joint.

No. 2. Method of holding down twin steel tie to cast-iron chair of the old substructure.

No. 3. Rebuilding a block of track under severe traffic. Every few seconds a car passes and a steady stream of vehicles is always moving on the open shoulder of the street, which was at all times open for traffic.

No. 4. Where a thermit weld, a cast-iron chair and an International steel twin tie meet. The tie plate was cut out slightly to allow the weld projection to drop below the plate.

rail itself throughout the entire length of the track. It was both hand-tamped and power-tamped. The tamping was a comparatively simple process, being immediately understood by the crews, who were familiar with the use of pneumatic tampers. The entire block was done between 10 a.m. and 5 p.m. despite heavy car and automobile traffic on the active side of the street.

The job was left in this condition for a day to observe any deflections that might take place, but none were found. After a final inspection the usual 1:3:6 mixture of foundation concrete was poured over the old concrete stringers and ties, and brought up to the level desired for the paving base, which was 6 in. below the surface of the rail. This base allowed for a 1-in. sand cushion and a 5-in. layer of granite block. A sufficient number of blocks were nose cut for use in providing a flangeway along the gage line. After the blocks were firmly set on the sand cushion, a hot mastic filler, 50 per cent asphalt and 50 per cent sand, was poured between the blocks and the job completed. Mastic filler was used instead of grout in order that immediate use of the street could be made by vehicular traffic.

THE SECOND BLOCK HAD MORE TRAFFIC

The second block adjoining the first had even heavier traffic conditions, as far as the frequency of street cars was concerned, and the transportation department again allowed only 40 minutes in which to remove the old rail and place new rail in position ready to run. The paving was removed from the track area in a manner similar to the first block. The new girder tee rail was previously thermit welded, compromise joint sections were made on the ends similar to those in the first block, and the whole block of rail thus made ready to be snaked into place.

Because the concrete stringers had not settled to such an extent as in the first block, the steel ties were constructed in a manner to give them less depth. This was accomplished by riveting the cross channels flat, instead of vertical, making a total depth of tie of only 1¾ in. This saved considerable chipping of concrete.

In order further to economize on the time allowed, and resume traffic at the earliest possible moment, full-length old wood ties on 20-ft. centers were used in this block for spiking the rails temporarily to gage. As another means to save time, the holding-down bolts on the old rail were burnt off and the rails snaked out in single lengths a block long onto the vehicular side of the road, which was closed for a few of the early morning hours. The rail was then cut with the torch into 30-ft. lengths and hauled away. Traffic was resumed at this point and the work of hooking on the steel ties, blocking up the track, removing the temporary wood ties, etc., was carried on as before.

As there was less settlement in this block it was not necessary to construct tamping pockets, since the intervening space between the top of the old concrete stringers and the undersides of the tie plates was about correct. Because of the lesser settlement in this block the tie channels of the steel ties were bolted to the plates on the flat side of the channels, thus making the depth of the tie only 1¾ in. In this way considerable chipping of the old base was avoided. As soon as the track was firmly bolted down to the old chairs and brought up to grade, power tamping of the Lumnite cement and traprock mixture was carried forward. After letting the track remain in this condition for a

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day to observe possible settlements or failures, the paving base concrete was poured and the paving laid. In this block the paving base concrete was made of Lumnite cement instead of portland.

THE THIRD BLOCK

The third block was handled in the same manner as the second, as this method proved to be the faster and allowed for greater salvage of the old concrete base.

The foregoing experience in track renewal work has proved to interested parties that wherever there is an old concrete base on which track can be built of steel ties and Lumnite cement, economical reconstruction of track is possible under heavy traffic conditions without disturbing the operation of cars for more than one short period at night.

The several views reproduced show the work in its various stages and indicate the possibilities of such reconstruction methods under dense traffic conditions.

Accident Prevention Bonus for Brooklyn Trainmen

AN ACCIDENT prevention bonus plan under which motormen, conductors and safety car operators will receive a bonus of $5 for each 30-day working period in which they operate their cars without an accident has been established by the Brooklyn City Railroad, Brooklyn, N. Y.

The awards will be distributed to employees on Dec. 15 of each year, so that motormen, conductors and safety car operators with clear records for one or more 30-day working periods will collect Christmas dividends on their records for safe operation.

The rules governing the accident prevention bonus plan were announced by C. E. Morgan, vice-president and general manager of the company, as follows:

The Brooklyn City Railroad will on Dec. 15 of each year pay to each conductor, motorman and safety car operator in service on that date the sum of $5 for each 30-day working period complete on or before Nov. 30 of each year during which such employees operate their cars without an accident.

It is understood that the term 30-day working period does not mean a calendar month, but refers to days actually worked (excluding days off). To receive credit for a working day, conductors, motormen and safety car operators must work at least eight or more hours. Further, such employees will only be entitled to bonus money earned since last date of appointment or reappointment.

In case conductors or motormen or safety car operators have accidents occurring in, on or around their car and fail to report same as required by the operating rules, any conductor, motorman or safety car operator who becomes involved in such no report case shall automatically lose the bonus for the particular period of 30 days in which the date of the accident is contained, in addition to being subjected to other disciplinary action.

On two-man operated cars the conductor and motorman, as far as accidents are concerned, will be considered a crew. Any accident of any nature in which their car is involved during their tour of duty will be charged against both the conductor and the motorman in charge of such car.

All accidents of whatever nature occurring in, on or around their car will be charged to conductors, motormen and safety car operators except such accidents as can be clearly defined as not being the result of any action or lack of attention to duty of such conductor, motorman or safety car operator. This responsibility to be finally determined by the management after full investigation of the accident and contributing causes thereto.

It is therefore important in all cases that employees secure the names and addresses of all possible witnesses, as the statements of these witnesses will be one of the large factors in determining the responsibility for the accident.

Various Stages in the Rebuilding of the Track on North Eleventh Street, Philadelphia

No. 1. Old rail on North Eleventh Street, Philadelphia, ready for removal. On the right may be seen the new rail thermit welded ready to be placed. The change was made at night almost between two owl cars, the delay to street car traffic while the old rail was removed and the new rail installed being only 30 to 50 minutes.

No. 2. With the new rails and twin steel ties in place, the track was brought to line and grade. The tie plates were bolted down to the cast-iron chairs of the old construction, and held up by blocking and wedges every 5 ft. Alignment was obtained by blocking aginst the highway road shoulders. Due to the fact that this old street surface had sunk several inches, the steel ties channels were bolted to the plates on the side of the channels the normal construction of this tie.

No. 3. In this block the old street surface had not sunk so far, and the tie channels were bolted on the flat side to avoid excessive chipping of the old sub-base. The job as illustrated is ready for the tamping of the dry mix, under the steel tie plates to align the track.

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Buffalo & Erie Demonstrates Magnetic Brake

Railway Executives, Public Officials and Manufacturers' Representatives Witness Tests on Single and Double-Truck Cars

DEMONSTRATIONS of the effectiveness of the new type magnetic brake which has been applied to all of its cars by the Buffalo & Erie Railway Company, were made in a series of tests on Tuesday, Aug. 17, at which approximately 60 railway executives, public officials and manufacturers' representatives were the guests of the Buffalo & Erie property. This brake, which is operated by direct trolley voltage in combination with the safety devices air equipment, was described in detail in ELECTRIC RAILWAY JOURNAL for July 17, 1926. The development is the result of an effort by the railway to increase the factor of safety in its operations while at the same time maintaining maximum possible speed with light, economical and comfortable equipment. On the Buffalo & Erie property, fast operation is complicated by numerous grade crossings and many miles of trackage either on or immediately adjacent to a heavily traveled highway.

Ability to stop a car in minimum distance and time without serious inconvenience to the passengers has been considered the most effective means of increasing safety without sacrificing the all important element of speed. Results obtained during a period of a month since the magnetic brakes have been applied to all of the company's cars indicate the value of the improved brakes in actually reducing vehicular accidents. During this period since all of the cars have been equipped, there have been only two such accidents—comparatively minor in nature. In the corresponding period last year, there were seventeen accidents of this character.

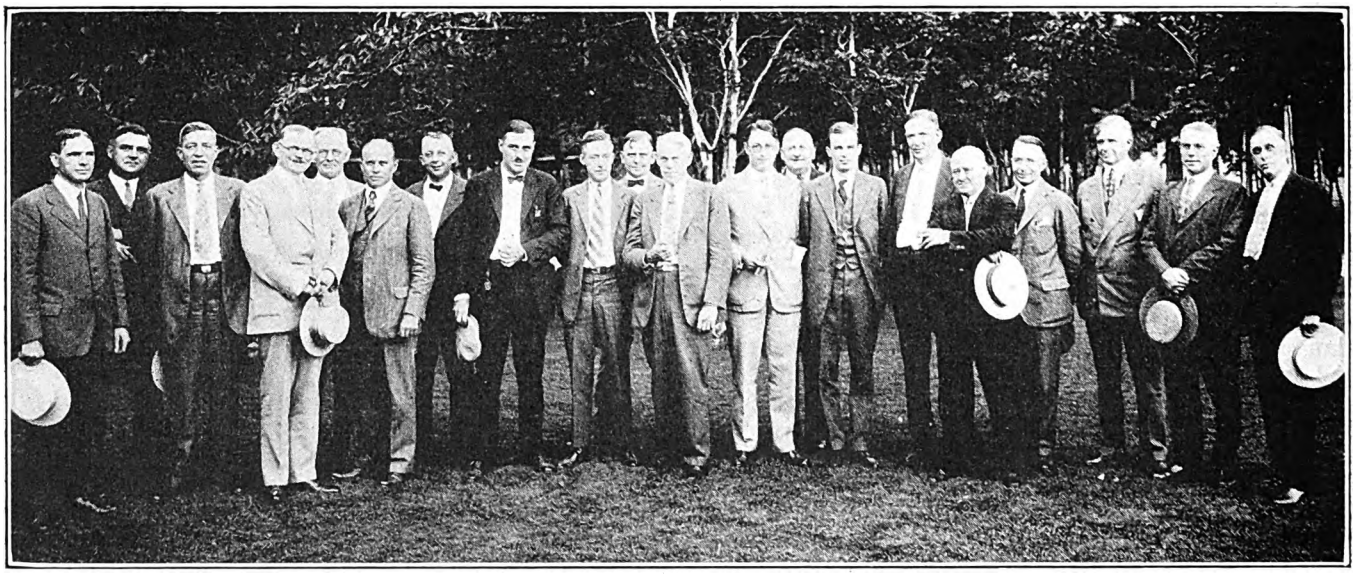
Three sets of demonstration tests were made for the visitors. In each case measurements were made of the stopping distance and stopping time for emergency air brake applications alone in comparison with the combination of air and magnetic brakes. The tests were carried out on a single truck car and on a double truck car of the company's standard type, weighing approximately 37,500 lb.; first, with normal rail and then with 1,075 ft. of both rails covered with oil. In all cases, reservoir air pressure was approximately 70 lb. Results of the test are as follows:

BUFFALO AND ERIE BRAKE TESTS

Car	Brake	Rail	Speed-m.p.h.	Time to Stop Seconds	Dist. to Stop Feet	Reduction Time	Reduction Dist.
Single truck	Air only (emergency)	Normal	21.4	7.4	141.0	....	.....
Single truck	Air and mag (emergency)	Normal	22.0	4.8	97.0	2.6	44.0
Double truck	Air only (emergency)	Normal	48.0	17.0	685.0	....	.....
Double truck	Air and mag (emergency)	Normal	47.1	12.2	493.0	4.8	192.0
Double truck	Air only (service)	Oiled*	47.1	32.5	1475.0	....	.....
Double truck	Air and mag (Service)	Oiled*	45.4	20.2	761.0	12.3	714.0

No sand used during tests.
*Both rails oiled for 1,075 ft.

At the completion of the tests, the visitors were entertained by the railway at the Shorewood Country Club. F. C. Bacon, vice-president of the International Utilities Corporation, owners of the property, and George MacLeod, vice-president and general manager Buffalo & Erie, acted as hosts. Commenting on the significance of the tests, Mr. Bacon pointed out that ability to control rapidly moving equipment at various speeds is a vital factor in the continued improvement of railway service. He explained that a careful analysis of accident statistics on the Kentucky Traction and Terminal property had shown that front end accidents could be reduced 72 per cent, provided the braking rate could be increased from 30 per cent to 35 per cent. It was this study, he said, which led to the present improvement. Mr. Bacon complimented the Cincinnati Car Company and the General Electric Company for their co-operation in working out the new equipment.



Some of the Electric Railway Executives and Manufacturers' Representatives Who Witnessed Demonstration of New Combination Air and Magnetic Brake Developed by Buffalo & Erie Railway

Reading from the left to the right: F. A. Nichols, general manager, C. G. & P. Railway; W. W. Oskert, Buffalo & Erie Railway; W. G. Stuck, superintendent of equipment Kentucky Traction & Terminal Company; A. L. Kasemeier, vice-president Cincinnati Car Company; C. M. Harrison, superintendent Northwestern Electric Service Company; F. W. Bacon, vice-president International Utilities Corporation; K. Connor, superintendent of equipment Jamestown, Westfield & Northwestern Railroad; A. Davis, air brake engineering department General Electric Company; J. P. Vernor, Westinghouse Electric Company; R. B. Miller, Stark Electric Railroad; R. W. Palmer, General Electric Company; C. J. Ellis, Cincinnati Car Company; W. R. Goodknight, master mechanic Buffalo & Erie Railway; E. W. Sweezy, Stark Electric Railroad; G. J. Baker, superintendent Buffalo & Erie Railway; P. J. Wood, master mechanic Erie Railways; Leon Johnson, general superintendent Jamestown, Westfield & Northwestern Railroad; George MacLeod, vice-president and general manager Buffalo & Erie Railway; Daniel Durie, West Penn Railways; Henry Bush, superintendent of transportation, Kentucky Traction & Terminal Company.

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Choosing Materials for Railway Motor Commutators

Use of Hard-Drawn Pure Copper Bars and Mica Strips With a Dry Bond Are Two Essential Factors That Helped to Solve the Problem of Preventing High Bars

By Jesse M. Zimmerman
Renewal Parts Engineering, Westinghouse Electric & Manufacturing Company

IN THE early days of railway motor manufacture, a world of grief was experienced with commutators and commutation. When the motors were placed on test, some commutators developed high bars. Then the motor had to be dismantled, the commutator tightened, and the face "re-turned" before the machine could be put into service. Sometimes the commutator had to be tightened two or three times. The unfortunate part was that some of the motors developed high bars after they had been in service but a few months. Those who passed through these days of trial considered them as a real "Waterloo" for railway motor commutation.

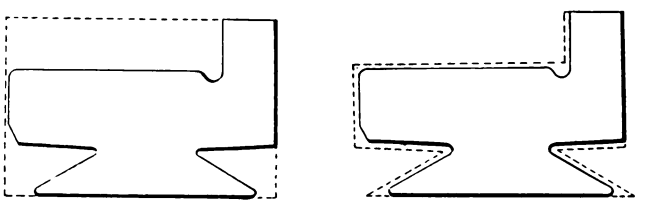
Our failures and difficulties made us search ways and means to overcome them. This search has resulted in five superior features in manufacture, namely, mica strips with a dry bond, hard-drawn pure copper bars, correctly molded mica V-rings, increased mechanical strength of the spider and details and an increased knowledge as to the accuracy required to machine commutator Vs.

Poor Mica Strips Caused High Bars

In the early commutators, the mica strips were made of mica plate having a high bond content. The mica plate was made of high-grade mica splittings, but the methods of making mica plate were less advanced. During this same period, the commutators were made arch-bound. When the commutator was going through the seasoning period, the bond oozed out from between the bars. This caused the mica to shrink, relieving the arch-binding between the bars. The seasoning process did not harden the bond completely. Therefore, the bond continued to ooze out when the motor went into operation. Due to the centrifugal force, the bars rose where the bond had oozed out excessively. It was evident that one of the difficulties was due to the mica strips.

Design engineers made a search for an insulating strip which was adapted for commutator service. Asbestos was one of the numerous insulating materials tried. It was found that a mica plate with a low bond content which was properly seasoned was superior to all other materials tried. The mica strips used in the present-day railway motor commutators should be made of mica plate described as follows:

The mica plate is made from selected pure white splittings, usually about 1 mil thick, free from clay spots, metallic spots, cross grains, heavy edges and heavy pieces. They are held together with a minimum quantity of dry bond, which will flow at a medium temperature. The advantage of the "dry method" is that it permits the use of a bond which does not contain alcohol as a solvent. Alcohol is dangerous because it does not evaporate completely. When mica plate containing alcohol is used in a commutator, the alcohol may evaporate and migrate to some part of the commutator and condense. This sometimes occurs at the point of the Vs producing a weak spot in this location.



Mica Strips as They Are Most Conveniently Supplied for Repair Purposes. At Left, Rectangular Piece Sawed to Length. At Right, Punched Mica Strip

Great care is taken during the pressing operation to insure uniform density. Special pads are placed between plates to obtain this result. The mica plate must pass through a seasoning operation which serves to make the bond infusible. It is milled with an allowable variation of plus or minus 0.0010 in. If the variation exceeds this value, the distance from any bar to the corresponding bar under the next pole may vary more than plus or minus $\frac{3}{32}$ in. Mica plate will compress a certain amount when the assembled segments are heated and drawn tight with the clamping ring. This compression factor must be taken into consideration when milling the mica plate.

All finished mica plate should have a surface coat of pure orange shellac. It has the following advantages: (a) It prevents flaking and scaling of the mica splittings in handling and storage. (b) It keeps the mica plate free from dirt and moisture while in storage. (c) It tends to reduce oil and moisture absorption when the commutator is in service. The shellac cements the adjacent bars to the mica strip, thus reducing the creepage of oil and moisture along the copper bar. (d) It facilitates assembling. By heating segments before the Vs are machined the shellac glues the segments together. Therefore, when the banding wire is cut they remain in a firm body and will not fall apart. This makes it possible to assemble the parts of a V-bound commutator without skewing the bars.

Mica plate should not absorb more than approximately 0.75 of 1 per cent of its own weight of oil when placed between two commutator bars under working pressure and immersed in oil for 24 hours. It should

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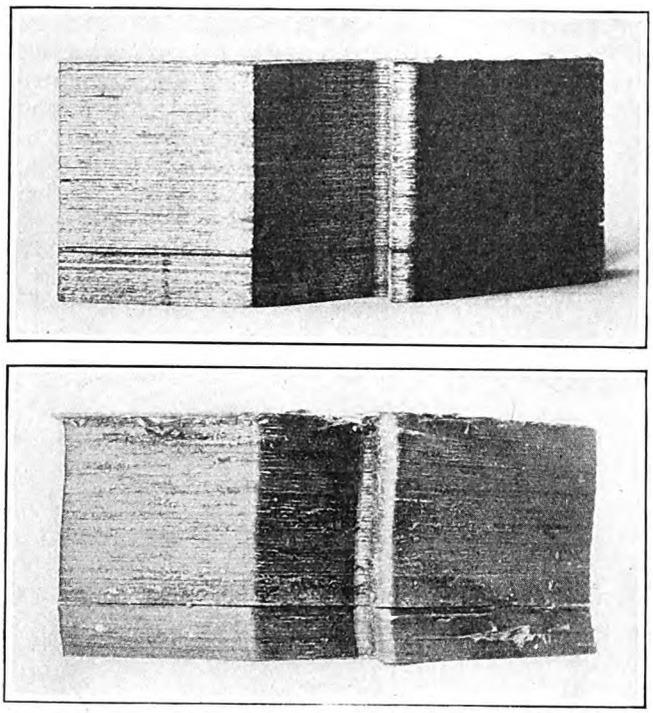
also stand a pressure of 10,000 lb. per square inch when heated to 150 deg. C. without showing a slippage of mica or squeezing of the bond.

A good means for testing mica strips, to determine whether the bond has been properly seasoned, is to place a dozen strips between two parallel steel bars which have a bolt at each end to exert a clamping action. The steel bars should be strong enough so that they will not bend. After the strips have been placed between the bars, under pressure, their thickness should be measured cold. Then they should be heated to at least 150 deg. C. A flame should not be allowed to strike the strips, as it will consume the bond. When they are thoroughly heated the bolts should be tightened to the same pressure as that originally used and the whole should then be allowed to cool. The thickness of the assembled strips should again be measured to determine the amount of compression. Absence of slippage of mica or oozing of bond is an indication that the bond was properly seasoned. If the bond squeezes out, the strips are not fit to be used in a commutator.



Two Sets of Mica Strips After Having Been Heated and Pressed Under Identical Conditions

Those above show that the bond was properly seasoned and that the slippage of mica and the oozing of bond was negligible. Those below show visible signs of slippage of mica and oozing of bond. This is an indication that the bond was not properly seasoned.

A photograph was taken to show two groups of mica strips after they had been under identical tests. Group No. 1 shows no effect due to compression because the bond was properly seasoned. Group No. 2 shows the slippage of mica and the oozing of the bond. This is an accurate illustration of how the two types of mica plate will act after they have been in the commutator. It is well for railway operators to give mica plate the test outlined before it is used for repair.

The question of how to order mica strips for repairing commutators has been asked by many railway operators. The manufacturer of the original commutator will supply mica strips either punched to an unfinished size or in rectangular pieces. When the Vs and necks of the copper bars are punched for manufacturing purposes, the mica will be punched in the same manner. This mica die will leave $\frac{1}{16}$ in. material on each side of the V for finishing purposes.

When the mica strips are received in punched form, they can be finished very easily by pasting the strip to the copper bar with shellac. When the shellac is dry, the two should be placed in a vise with the mica strip toward the workman. The Vs can be cut to the same size as the copper Vs. In cutting, the stroke of the knife should be toward the copper. In this manner the mica will cut without tearing. It may be necessary to take a finishing cut with a knife file. If so, the file should be handled in the same manner as the knife.

When the sale of a certain commutator is small, it does not pay the manufacturer to make a die for punching the Vs and neck in the rough, for it is cheaper to make the commutator from the rectangular copper bars and mica strips than to make a set of punching dies. Where this condition exists the mica strips will be rectangular for repair purposes. When rectangular mica strips are received it is best to paste each to the bar with which it will be used. The V can then be cut.

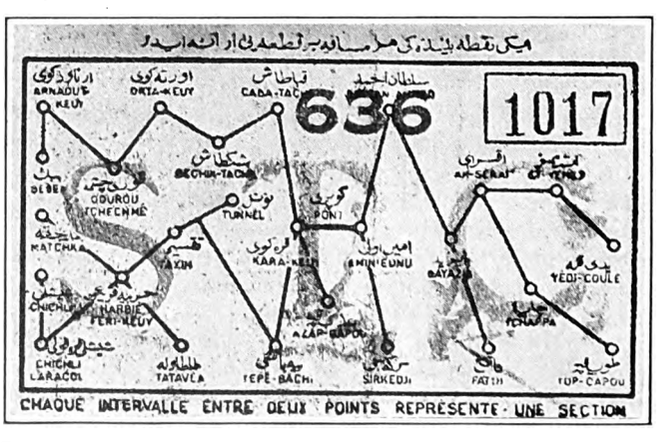
It is impracticable to finish the mica strips to exact size because it would have to be done by hand to template. Since the method of finishing them, when the finished bars are available for use as a template, is so simple, the extra cost for labor would not be warranted.

When a complete commutator is to be refilled, a set of mica strips will be required. It is best to purchase the mica in either of the previously mentioned forms.

After the Vs have been finished the mica strips should not be removed from the copper bars but assembled while they are stuck together. After the commutator has been assembled cold the bars should be aligned properly and the commutator heated to a temperature of from 125 deg. to 150 deg. C. While hot and under pressure the tightening can be done satisfactorily.

System Map Shown on Transfer

BECAUSE of the cosmopolitan nature of the population of the city, the Societé des Tramways de Constantinople, Turkey, has found it desirable to print on the face of its transfers a complete map of the system, rather than to rely solely upon a list of transfer points. Zone fares are charged as is common on European tramways, and the limits of each section are indicated on the transfer by small circles, as shown in the accompanying illustration. Names are printed in both French and Turkish.



Layout of the Entire Tramway System of the City of Constantinople Is Shown on the Face of the Transfers

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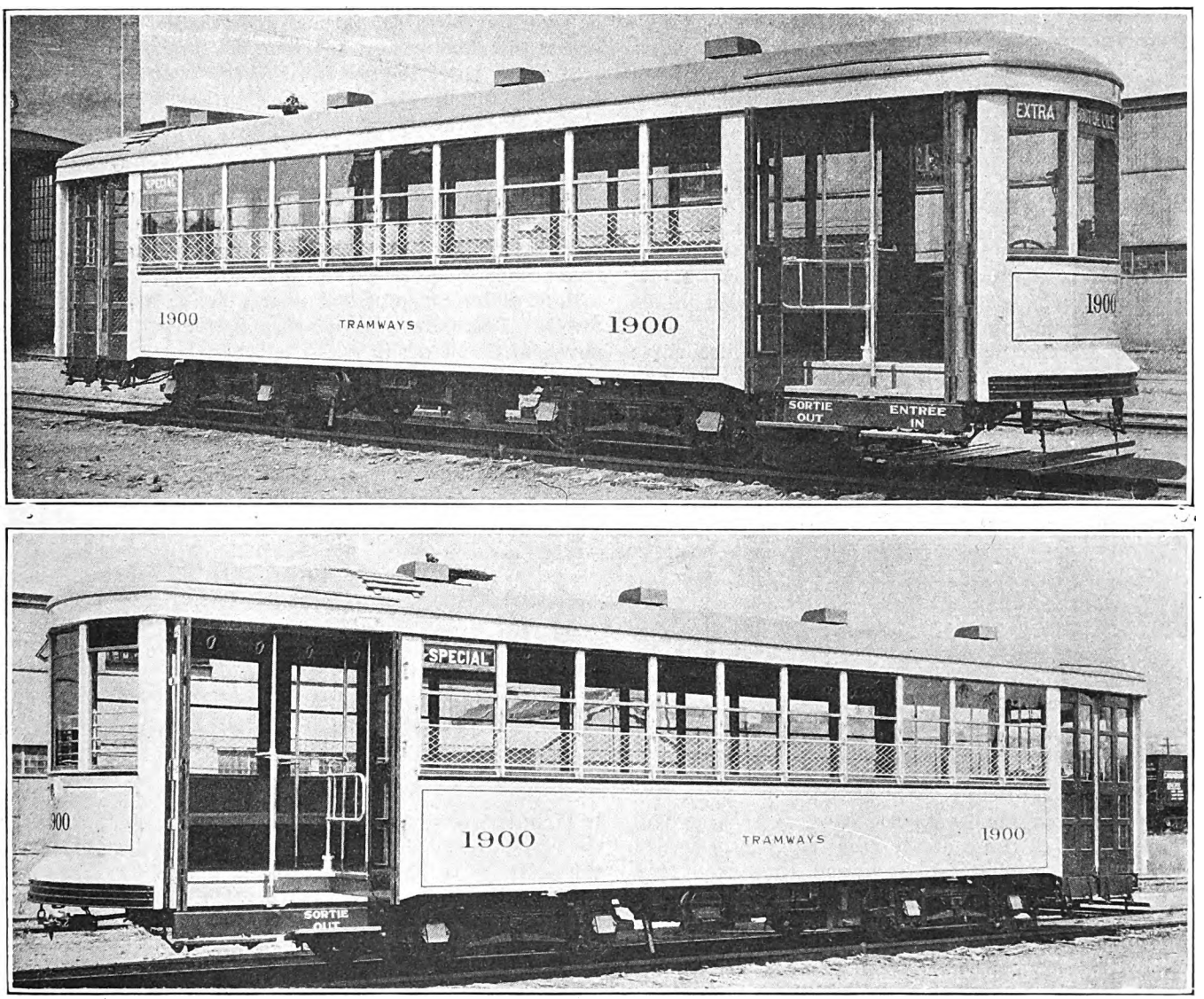
Four-Door Single-Ended Car for Montreal

An Interesting Type of One-Man, Two-Man Car with Special Provisions for Operating in Very Cold Weather—These Include Side Construction with Steel Plates on the Inside and Plymetl Outside for Insulation, a Different Door Combination for Cold Weather, Etc.



Each Platform of These Cars Has a Door for Entrance and a Door for Exit, but the Rear Door on the Rear Platform Is Used Only with Two-Man Operation

FIFTY cars of a novel type for single-end operation are being put in service in Montreal by the Montreal Tramways. The first car of this order was completed by the Canadian Car & Foundry Company toward the end of last month and appeared on the streets in Montreal a few days later. Delivery of the other cars on the order will follow shortly.

The chief objects sought in this car were as follows:

1. Minimum weight, consistent with sufficient strength and rigidity for long life under general service conditions.
2. Minimum deterioration and low maintenance cost.
3. Large seating capacity with comfortable, sanitary seats.
4. Easy riding qualities combined with freedom from noise and vibration.
5. Automatically regulated heating equipment, full safety devices and automatically controlled braking apparatus.
6. Attractive external appearance with noticeable color feature to distinguish this type of car from others in service on the same route.
7. Full provision for one-man operation in regular service, with rear vestibule construction to permit of rapid, inexpensive adoption for standard two-man operation, if required.

The principal dimensions of the new cars are given in the table on page 294.

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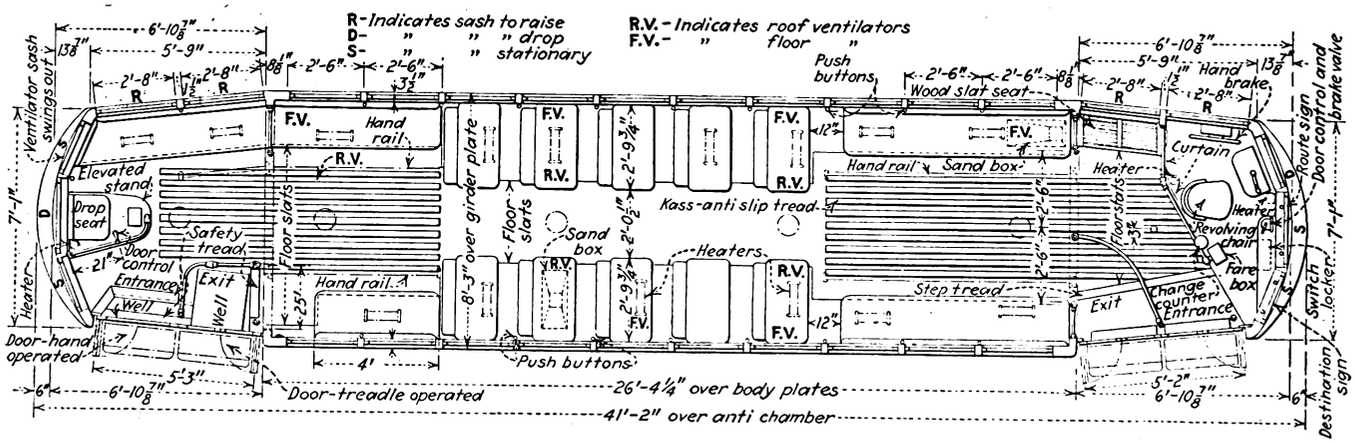
PRINCIPAL DIMENSIONS OF MONTREAL ONE-MAN, TWO-MAN CARS

Length over all	41 ft. 2 in.
Width over all	8 ft. 3 in.
Truck centers	17 ft. 7 in.
Wheelbase of trucks	5 ft. 4 in.
Diameter of wheels	26 in.
Distance top of rail to top of step	15 in.
Distance top of step to top of step well	11 in.
Distance top of step well to top of car floor	6⅜ in.
Height top of roof above top of rail	10 ft. 8⅝ in.
Weights:	
Car body	15,200 lb.
Trucks	10,000 lb.
Equipment	8,800 lb.
Total	34,000 lb.
Seating capacity:	
One-man	45
Two-man	44

UNUSUAL DOOR COMBINATION

The most striking feature of the floor plan of this car, which is single ended, is the use of four doors, two at each end, one for exit and the other for entrance. Three of these doors are air-operated, but the rear door on the rear platform is hand-operated, being limited in its use to providing an entrance only when the car is being operated by two men. At that time, the conductor occupies a position on the elevated stand shown at the rear of the car. A portable fare box is placed in the holder directly in front of him.

Since these cars will be known by their distinctive color as one-man front-entrance cars, passengers will be accepted at all times at the front end. At crowded corners where loading is heavy and time is of importance, passengers will be invited by a street supervisor or inspector to board the car at the rear end.



Plan of Four-Door Single-Ended Car of Montreal Tramways

The exit door on the rear platform is treadle operated at all times. The mechanism is so arranged that it cannot be operated until the air brake valve is in "door open" position. The motorman's light signal is controlled by the rear doors only, and if a motorman should attempt to start his car when a rear door is open the brakes are automatically applied in emergency position.

The aisles leading to the exit doors on front and rear platform are protected in each case by an outwardly swinging gate to be described later. All barriers are of aluminum piping with wood filler.

DESIGNED FOR ONE-MAN OPERATION

The company expects that the usual operation of the car will be by one man only. Two-man operation may be adopted for one or two trips per day during the rush hour on certain routes. The management believes that the only assistance that need be given to the operators of these cars when in one-man service is the use at four or five congested points of ground men or street supervisors, whose sole duty will be to invite transfer passengers to enter the car at the rear. Having no other duties to perform, such men can quickly and efficiently examine and collect transfers, relieve the operator of this work and provide a short-cut to that part of the car which is usually the least crowded. It is believed that such an arrangement will result in quicker handling of passengers than is now accomplished by regular two-man operation.

At terminals also where there is a prepayment area or where there are street collectors, passengers may be admitted to the car through the rear door. At other times, the rear door of the rear platfom is closed and passengers enter the car through the front door of the front platform. The fare box is on the barrier on the side nearest the operator. There is also an aluminum change plate on the barrier and a lamp to illuminate the change plate at night.

Passengers in one-man operation can leave through the doors adjacent to the body on either the front or rear platform. The latter, as already explained, is treadle operated. Each of these exits is protected by a light aluminum pipe swinging gate, as already mentioned. This gate is fitted at the bottom with a closing device with oil dashpots. The lower bar of this gate is 17 in. above the floor and the upper bar 14 in. above the lower bar. On the outside of the gates are the words, in three lines, "No passage defendu." This is to warn boarding passengers that this passageway is for exit only. Incidentally, it might be said that all car signs in Montreal have to be in both English and French, and in this expression the middle word, fortunately, belongs to both languages, so that it does not have to be repeated. On the inside of the gate are the words "Exit; sortie." All doors are of the double folding type and all except the rear door on the rear platform are pneumatically operated. The car framing is arranged so that this rear door can be equipped with a door engine later, if it should be found desirable.

The door control is entirely under the direction of the motorman and is interlocked with the motor control. The combinations possible are:

1. Only the front entrance door open. This is used when there are no alighting passengers.
2. All three pneumatically operated doors open. This is the usual combination with one-man operation.
3. The entrance door and rear exit (treadle) door open. This combination is used with a lightly loaded car during very cold weather as the car is less chilled with two doors rather than with three doors open.

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4. All four doors open. This combination is used with two-man operation or with one-man operation only at the end of a route, at a prepayment terminal or when there is an inspector at the rear entrance door.

A special valve has been put on the door engine operating the rear treadle door so that the door will not close until the step is in a vertical position. This avoids any possible danger of the car starting when a passenger has one foot on the step but is resting most of his weight on the ground on the other foot.

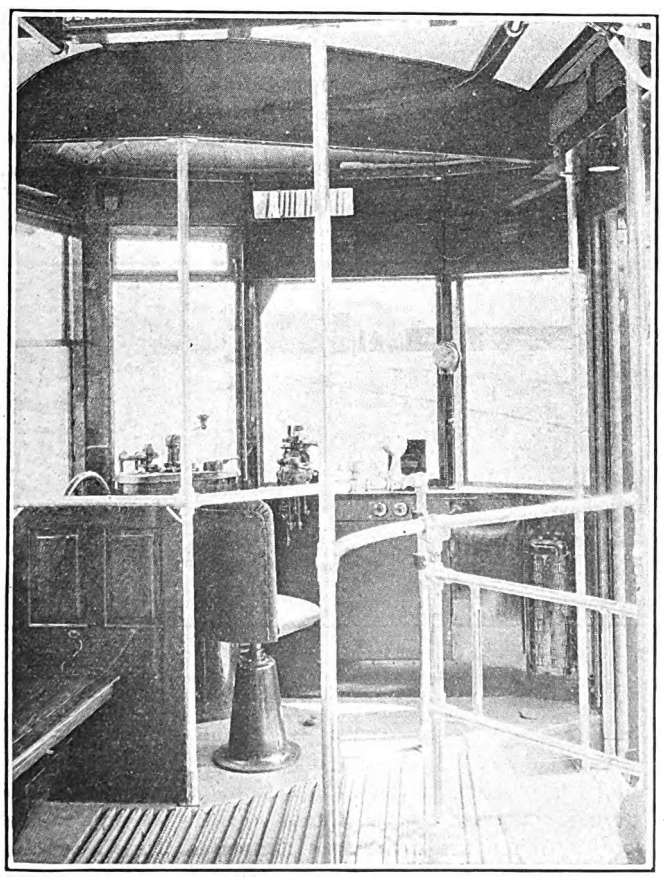
Interior Arrangements

The seating arrangement, as shown in the plan, provides for five cross seats on each side of the middle of the car and longitudinal seats at each end. The seats are of Hale & Kilburn make. The floor with the exception of the step wells is level from one end of the car to the other.

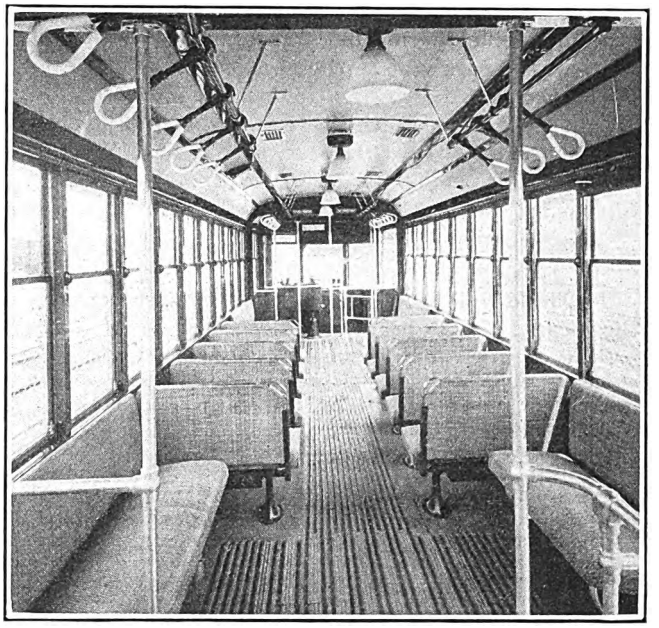
The flooring in the aisle and in front of the longitudinal seats is of maple strips, with Kass 2-in. anti-slip strip coverings over two of every three adjoining maple strips.

The motorman's seat is upholstered in leather and is of the revolving type. The piping and other operating equipment in the front vestibule are inclosed in a cabinet, leaving only the handles and switches visible. The hand brake is at the left so as to be entirely out of the way of entering passengers. A mirror above the center sash gives the motorman a full view of the car interior. The light switches are within easy reach of his position. One reason for this arrangement of light switches is that a number of the cars pass through a tunnel, and the motorman has to be in position where he can turn the lights on and off quickly.

The interior of the car is finished in cherry with green enamel headlining. The handholds are of the sanitary retrieving type. All steps have Kass non-slip treads. The sash is of brass and the ventilators are protected on the inside with a polished brass grill.



On the Front Platform All Piping Is Incased so as to Be Out of Sight. The Motorman Has a Comfortable Revolving Chair



With Exits at Each End This Car Unloads Very Quickly

Construction Details

The body construction is unusual because the steel side plates are on the inside instead of the outside of the car. The outside of the car is ply-metal sheathing and the space between this sheathing and the steel plates is filled with ½-in. Salamander heat insulation. The purpose of this form of construction is twofold. One object is to reduce corrosion, because with the low temperatures experienced in Montreal it was found that with the steel plates on the outside condensation would form on the inner side of the plates. The second expected result from this form of construction is that there will be less noise.

The color selected for the exterior differs from that used on the other Montreal cars, which is green with fawn-colored side posts and maroon trimming. The purpose was to make them more conspicuous and immediately recognizable as "front entrance" cars, so the body color selected was cream with maroon trimmings and light brown roof. The lettering on the exterior is kept to a minimum, as the only word used is "Tramways." As this word is the same in both English and French it answers for both languages.

Trucks and Equipment

The trucks used were built by the Canadian Car & Foundry Company and are very much like those on the previous Montreal cars, but with some modifications. The changes introduced have been directed primarily toward reducing the number of parts, especially the wearing parts, and keeping down the weight.

The cars have Westinghouse equipment, including variable load brakes, four 510-A 35-hp. motors and K 35-HH controllers. Other equipment, not already mentioned, includes Electric Service Supply Company's compensated lighting fixtures, Cleveland fare boxes, H. B. lifeguards, National Pneumatic door mechanism, Peacock hand brakes, Railway Utility ventilators, Faraday signal system, Rico grab handles, Whipple bump-

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ers and Consolidated thermostatic control, with the latest type of visible thermostat. The heating equipment on forty of the cars will be the open coil type of heater of the Consolidated Car Heating Company. Five of the cars will be fitted with the new type of Consolidated inclosed heater with G.E. sheath wire heating unit and five cars of the 50 on order will be equipped with Chromolox heaters of the Railway Utility Company.

SPECIFICATIONS

The following are extracts from the specifications for these cars:

Body Construction.—1. The body construction throughout shall be such that no closed unventilated or undrained pockets or recesses will be formed where moisture can collect or water stand.

2. The surfaces of all wood or metal, whether exposed or hidden, in contact or otherwise, shall be thoroughly prepared and properly protected from rust and decay by the application of protective coatings in the manner called for in that section of these specifications covering the painting of these cars.

3. Both internally and externally the cars must have an attractive appearance. All external contour lines should be as nearly continuous as possible from end to end of car. Offsets should be avoided as much as possible. Roofs shall be plain arch design with hoods tapering gradually to give a pleasing appearance.

Care must be taken to see that main side girder is straight and true and that exterior ply-metal panels on sides present, after completion, a true and uniform appearance perfectly free from waves or buckles.

Front Vestibule.—As these are the first cars of this type to be operated in regular service on the Montreal Tramways system particular attention is to be given to the design of the front or motorman's vestibule with a view to the comfort of the operator who is to be called upon to perform extra duties. This part of the car shall have the following features:

1. Portion of vestibule floor as shown by one of the drawings shall be on the same level as car body floor, the remaining portion being 8 in. lower, forming a well at both entrance and exit doors.

2. A comfortable revolving seat shall be provided for motorman and so located that he shall have perfect vision and can, if necessary, comfortably and efficiently discharge all duties of his position without rising from his seat.

3. All piping, valves and hand brake apparatus in front vestibule shall be completely inclosed so as to obtain a neat clean appearance and so that only operating levers, gages and other necessary apparatus shall be visible.

4. All electric switches shall be completely inclosed in suitable steel fireproof box. Switches shall be fully insulated from the box and from each other and properly marked.

5. Provision must be made for sufficient heating in this part of the car to enable the operator to discharge all duties in comfort.

6. Center front and right front windows shall be fixed and all windows of front vestibule shall be permanently weather stripped.

Bottom of pockets for drop sashes fitted with rubber cushions for windows to stop against.

Rear Vestibule.—Rear center sash drop into pocket to facilitate handling trolley from inside of car. All other sashes shall raise.

Headlining.—Headlining to be ¼-in. Agasote regular lining in one piece from advertising molding on one side to advertising molding on opposite side and in sections in car length.

Headlining of vestibules shall be in one flat piece from top of door engine box to opposite side of vestibule.

Inside face of headlining shall be painted before erection.

Seats.—Seats shall be Hale & Kilburn stationary, pressed steel, with 10-in. pedestal rattan covered, to meet the following requirements:

(a) Rattan must be of best commercial quality obtainable.

(b) Springs shall be of first quality, steel, uniformly tempered, properly and accurately spaced and securely fixed so as to exert a uniform pressure at all points on the covering.

(c) Filling and rattan must be carefully placed and securely fastened with uniform tension.

(d) A uniform even appearance of car seats is required and the manufacturer shall agree to guarantee the seats supplied for a period of two years of regular service from date of their going into operation.

(e) In order to assure comfortable seats, the angle of the back and shape of seat for all longitudinal and semi-circular seats shall be carefully determined and approved before seats are fabricated.

Car Lighting.—Cars shall be lighted with one circuit of five 94-watt type "K" compensated lamps in series.

Route and destination signs and front steps shall be lighted by one circuit of five 36-watt lamps in series.

Heating.—Cars shall be heated by electric heaters with thermostatic control. There shall be three circuits of six heaters each located as shown on blueprint. Each heater shall have a capacity of 400 watts with a rating of 4.4 amps. at 90 volts. The equipment shall include thermostatic regulators and knife switches and fuses in enclosed box on slate panel.

All heater cases shall be properly grounded.

Insulating Lining.—Between ply-metal outside sheathing and steel side girder there shall be a two-ply thickness of Salamander car insulation securely fastened to suitable supports.

All wiring shall be installed in galvanized steel conduit except the following:

Cable from trolley base to line switch which shall be in flexible galvanized steel conduit where necessary.

Push button wiring in post grooves.

All conduit and condulet fittings shall be of approved type and perfect in all respects.

All conduit shall be grounded with approved clamp terminals.

All conduit must be securely fastened accessible at all points and capable of being quickly and easily disconnected. It must be installed to permit proper draining.

Splicing of cable will be allowed at junction boxes only.

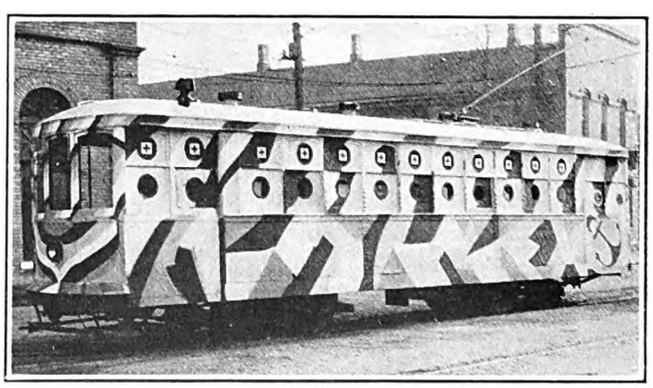
Motor leads must be securely cleated to body of car as close as possible to bolsters.

Motor leads shall be soldered into brass sleeves which shall fit into screw connectors of approved type.

Favorable Publicity from Red Cross Drive

DURING a recent Red Cross Drive in Saginaw, Mich., the railway company took a prominent part with the camouflaged car shown in the accompanying illustration. As a result of this participation in the community activity much favorable publicity and comment was obtained.

On the whole, the work of preparing the car was



Water Colors Were Used to Prepare This Camouflaged Car for a Red Cross Drive in Saginaw. Afterward the Paint Was Easily Washed Off

comparatively inexpensive. A double-truck passenger car was used. This was brilliantly painted in water colors as shown in the illustration. After the parade the car was used by Red Cross workers as a recruiting booth. When the drive was completed the water color paint was easily washed off and the car returned to regular service.

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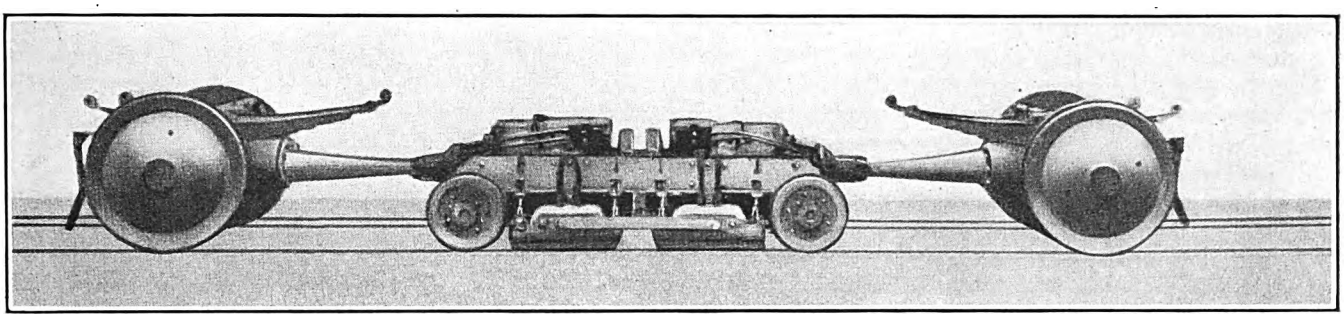


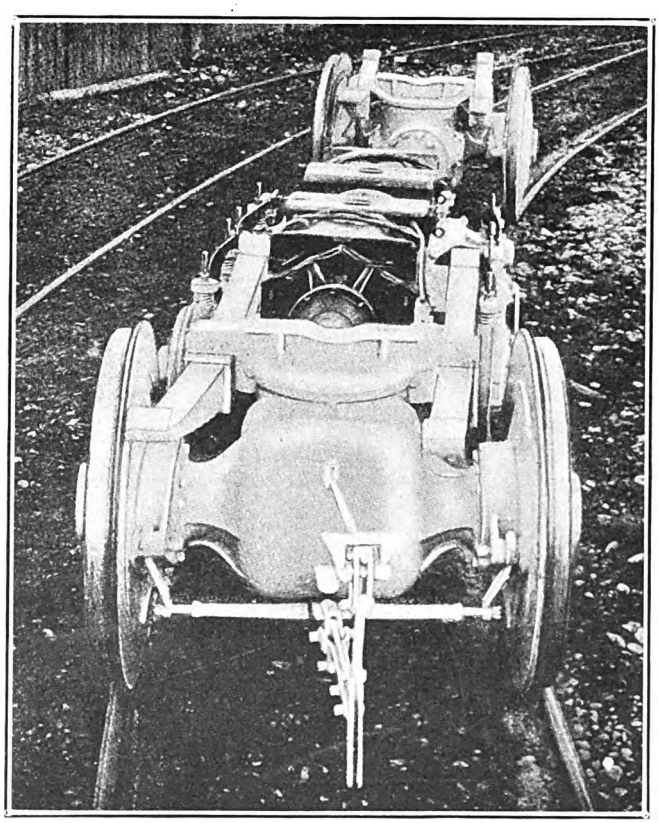
New Type of Electric Car Truck with Cardan Drive

New Theories in Truck Design for Electric Cars Being Tried

The Motors Are Mounted on a Small Four-Wheel Truck Located Between the Two Driving Axles—Cardan Drive Is Used—Axles Are Divided in the Center so a Wheel Can Revolve on a Curve Slightly More than Its Mate

A NEW truck for electric cars recently placed in service by the Städtische Strassenbahngesellschaft of Zurich, Switzerland, was described in the *Tramway and Railway World* for June 17, 1926. The wheel axles and guiding trucks were built by the inventors, the Swiss Locomotive & Machine Works. Motors and other electrical equipment were furnished by the Oerlikon Machine Works. The car body was built by the Swiss Coach Works at Schlieren. The truck, which has but two driving axles, is provided with cardan drive. A small four-wheel guiding truck is inserted between the two driving axles. This guiding truck supports the two driving motors with a spring suspension. The motors are bolted securely to two longitudinal beams which rest on helical springs arranged above the axle of the truck. The outer motor-bearing shields form a ball-and-socket union together with the radial arm of the driving axles. Small wheels are used on the guiding truck.

With this arrangement the driving wheels accommodate themselves to curves to a degree not possible when motors are suspended from the axles themselves. In addition, wheel flange pressures on the guiding truck do not develop to any appreciable extent as they are compensated mutually when curves are negotiated. It is obvious from the construction that the total wheelbase can be increased as desired. As constructed it is 17 ft. 7 in., whereas the wheelbase for the usual type of four-wheel truck seldom exceeds 9 ft. This type of truck is somewhat heavier than the usual four-wheel design, but the total weight when equipped is no greater as the increased weight of the truck is compensated for somewhat, since on account of the higher ratio of transmission between the motor and the driving wheels a considerable reduction in weight of motors is obtained.



End View of Trucks Showing Spring Supporting Arrangement for Car Body

Transmission of torque from motors to drivers is accomplished by means of a double gear inclosed in an oil and dust-proof cast-steel casing which bears on the driving axles. The casing is provided with a radial arm connected with one end to the adjusting or guiding truck by means of a ball-and-socket joint. All of the parts subject to wear, such as ball bearings, gears and articulated joints are so cased in as to be absolutely dust-proof. These are lubricated continually by special devices which insure minimum wear of these driving parts. The gear ratio between motor and driving wheel is 9 to 1, which is about twice as great as with the ordinary axle-hung arrangement of motors. All of the supports for the driving axles as well as for the gear wheels and carrying rollers of the guiding trucks are provided with roller bearings of ample size.

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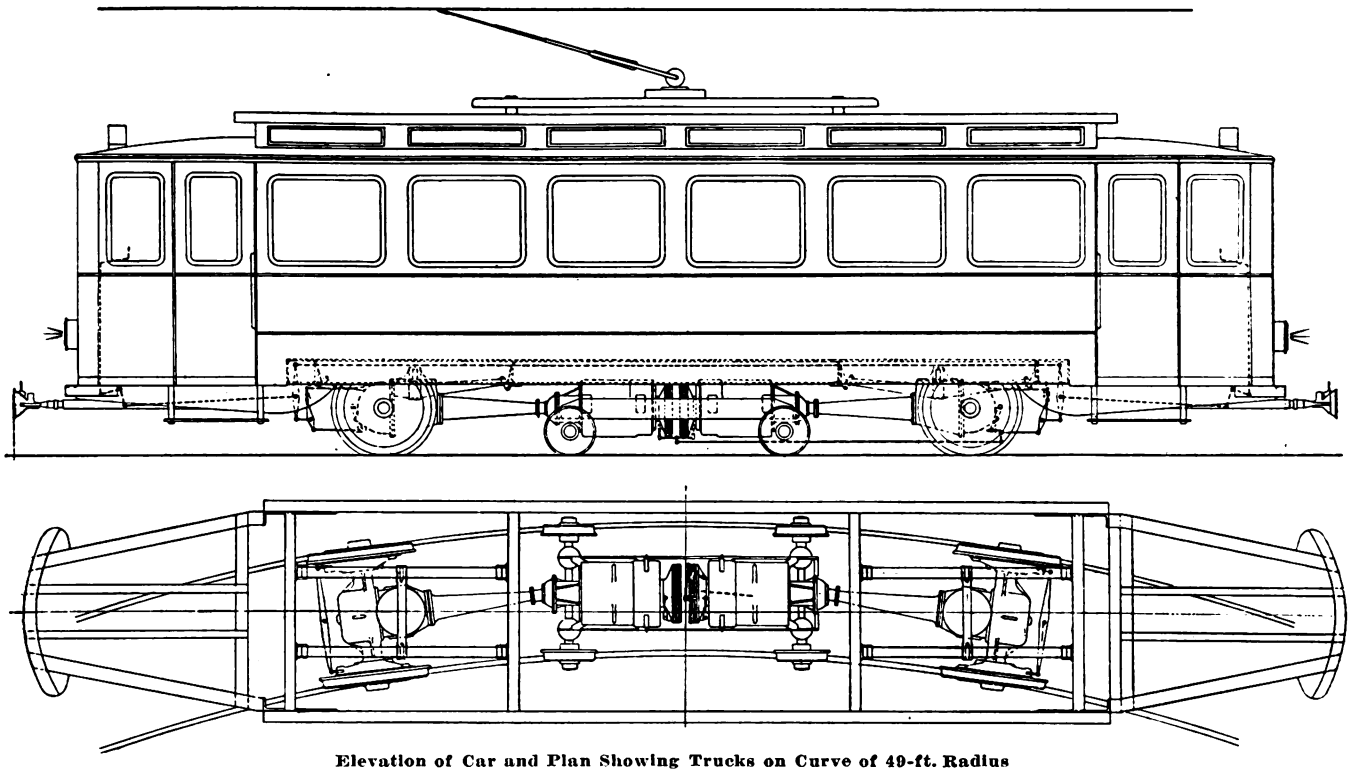
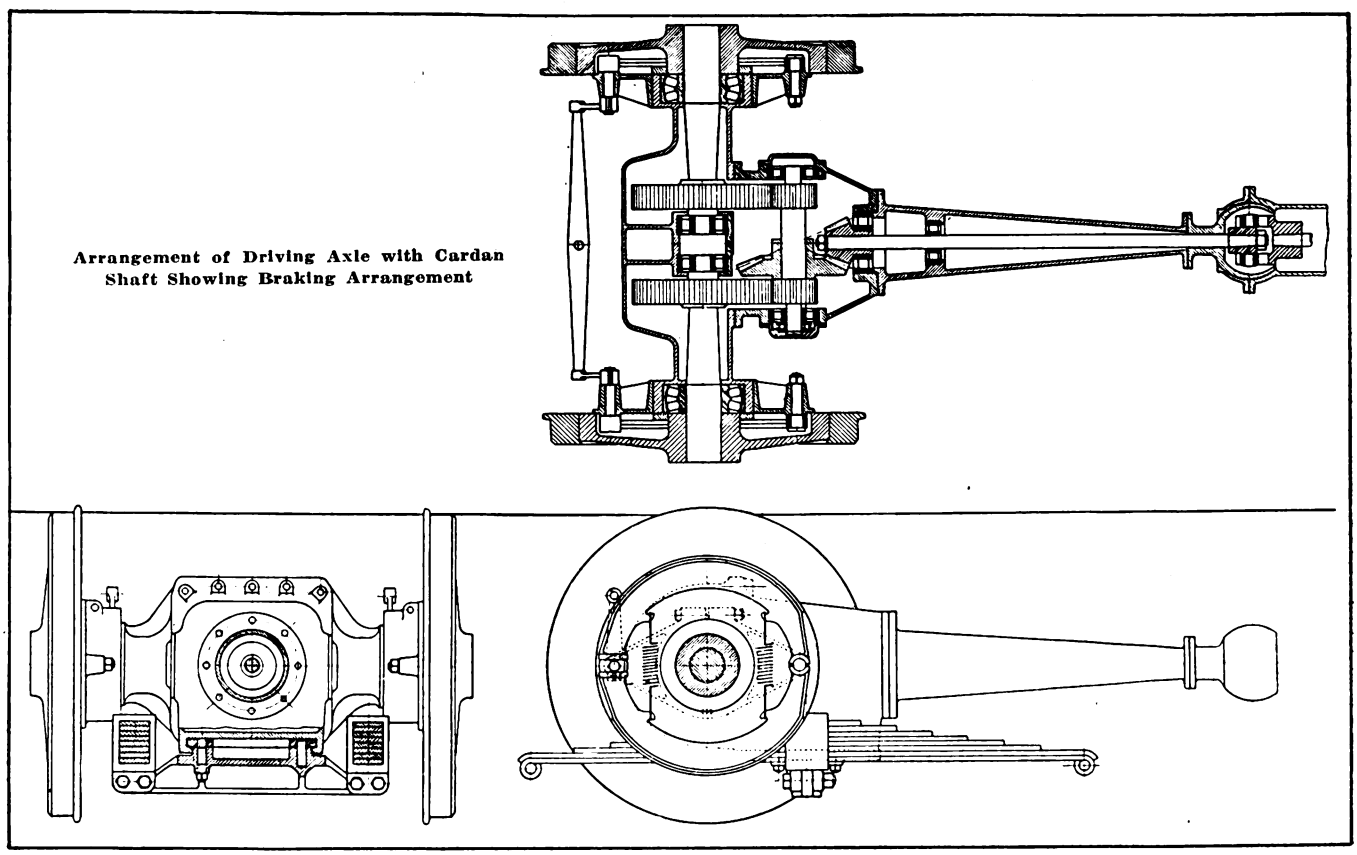


Elevation of Car and Plan Showing Trucks on Curve of 49-ft. Radius

An interesting detail of this new truck is the construction by means of which each driving wheel of the corresponding axle is allowed to displace itself with regard to the opposite wheel. This displacement, however, is limited to a certain angle in the sense of rotation. The idea of this construction is to do away with shrill noises which result when rounding curves and to prevent development of grooves on the wearing surfaces of the rails. Obviously this result would be attained best by the adoption of a differential gear. The intricate arrangement of this gear and its disadvantages which involves full independence of the two wheels in rotation and the resulting adhesive capacity are reasons for the adoption of a resilient displacement gear. With this device the driving axle is cut in halves, each fitted with a resilient spur gear, which in turn is driven by bevel gearing on a jackshaft supported by the radial arm. The resiliency that results is such that

Arrangement of Driving Axle with Cardan Shaft Showing Braking Arrangement



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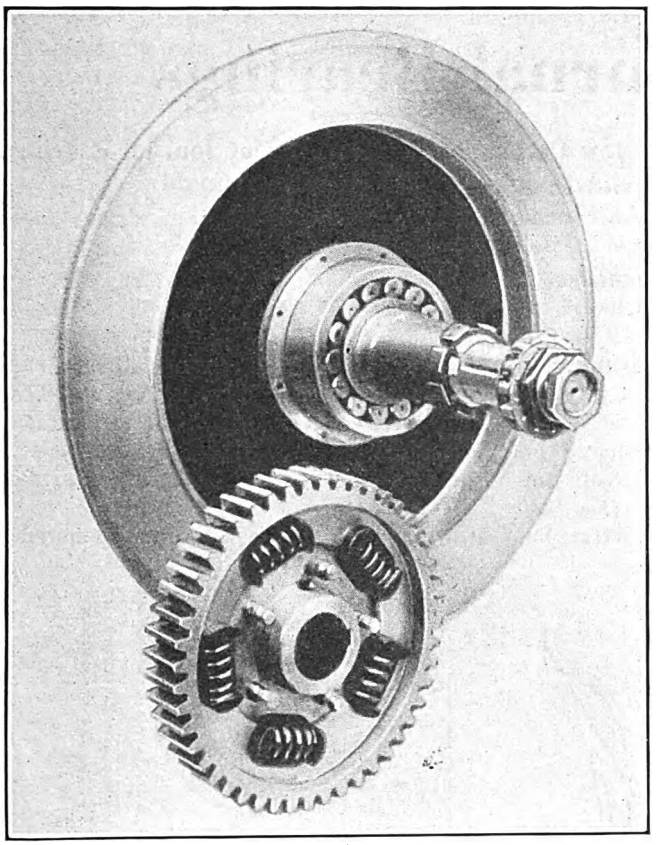


Driving Wheels Are Provided with Roller Bearings and the Drive to the Spur Gear Is Through Coil Springs

short sections of curves can be negotiated without forcing the wheels to skid on the rails.

The truck is braked at six points interconnected by an absolutely equalized brake rigging. Four out of these six points are inside the driving wheels and two on the ends of the motor shaft. Distribution of brake pressure among these six points is balanced so that no braking forces are transmitted by the gearing; that is, the inertia of the rotating parts is absorbed by the motor brakes alone.

The design of the brake equipment conforms somewhat to automotive practice. By means of a lever and key, the two brake blocks which pivot on the axle are pressed against the inner surface of the wheel. Thus gentle, uniform, but very effective braking results. Brake blocks have ample dimensions and are covered with "Chekko" linings. This material has given particular satisfaction and is subject to much less wear than cast iron, in addition to producing a higher braking effect. These linings can be replaced easily. By unscrewing a setscrew, displacing a bow and removing the release springs the brake blocks readily can be taken out and replaced. All of the essential braking details except the rigging are protected from dirt. Distribution of brake pressure upon the six points and protection against dust and dirt by tight casings result in a minimum wear of the linings.

The car body rests on two large pivot centers which are submerged in an oil bath and are also well closed in a dustproof casing. The top portion forms a cross-carrier, the ends of which are rigidly connected to long resilient laminated springs, which in their turn are connected to the body by means of eight pairs of pendulum links. The idea of these suspension links is to compensate for the slight reduction of wheelbase when curves are negotiated. They also act as a resilient means for transmitting jerks and kicks imparted to the body lengthwise by the trucks. This feature is of pronounced advantage in providing uniform and easy starting.

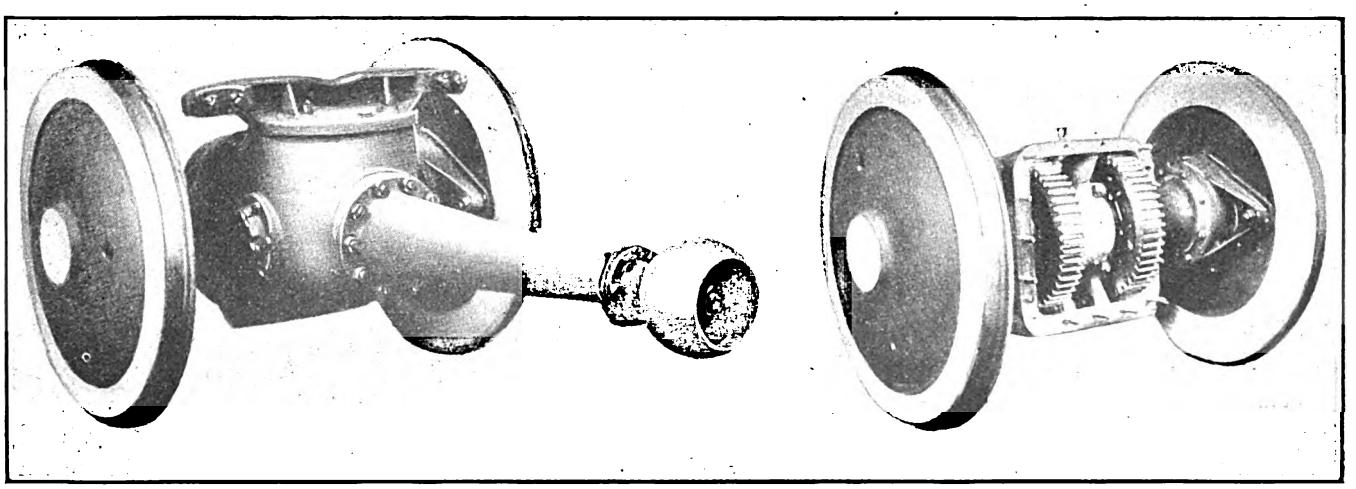
The axles are provided with solid roller bearings arranged inside the driving wheels. These are cased in effectively.

Ductile Welds Developed

TWO methods for producing ductile welds have been developed by research scientists of the General Electric Company. In both processes, air is excluded from the metal by means of a bath of hydrogen or other gas. The formation of oxides and nitrides in the weld metal is thus prevented, and the fused metal is as strong and ductile as the original metal.

One method developed by Dr. Langmuir in Schenectady is to pass a stream of hydrogen between two electrodes. The heat of the arc breaks up the hydrogen molecules into atoms. These combine again a short distance in front of the arc into molecules of the gas, and in so doing liberate an enormous amount of heat, so that much higher temperatures can be obtained with this than with the usual welding methods.

The second process developed by Mr. Alexander makes use of the chemical and physical properties of hydrogen and other gases in their molecular state. This process aims primarily at the prevention of the formation of the nitrides and oxides in the arc-deposited metal.



The Gearing at the Axle Is Provided with an Oil-Tight and Dustproof Steel Casing

The Driving Axle Is in Two Parts, Each Fitted with a Resilient Spur Gear

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Causes of Hot Journal Bearings*

An Investigation Was Made in Germany to Determine How Periods between Oilings of Journal Bearings Could Be Lengthened—How Deformation and Displacement of Bearings Could Be Prevented and What Were Some Causes for Hot Bearings

By Erich Schulze
Chief Consultant German State Railways, Berlin, Germany

WITH the beginning of general standardization of German freight cars early in 1909, attention was centered upon the car journal bearings because the two-part bearing then generally used gave most unsatisfactory performance. A section of this old journal bearing is shown in Fig. 1. The bearing had top and bottom lubrication, most of the lubricant coming from above, while the lower pad acted chiefly as an emergency lubricator. Theoretically this bearing was well designed. Its only, but grave, fault was that frequent jolts, particularly in yard service, loosened and soon broke the lower part of the journal bearing. In 1909 the German railroads had to replace some 200,000

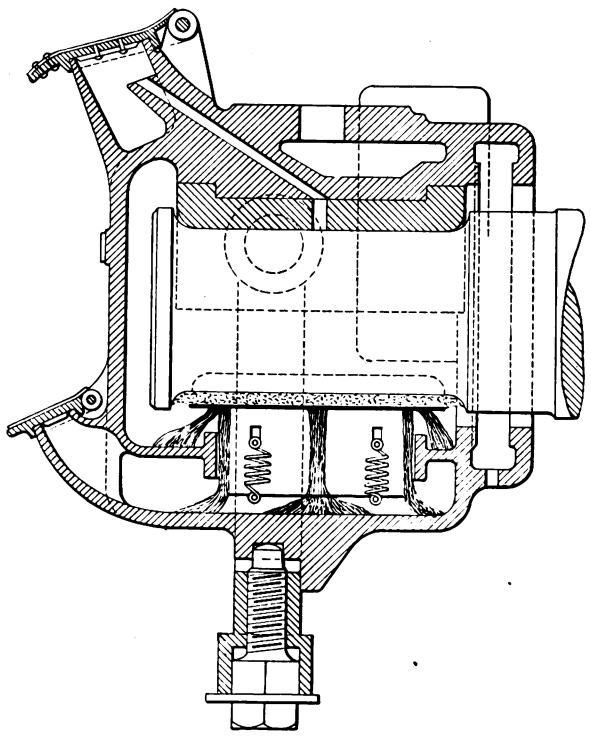

Fig. 1—Old-Type Journal Bearing Construction Used on German Freight Cars

of these lower parts. Much oil was lost, dust and sand entered, and the train crews were kept busy tightening the bolts, which usually turned very hard.

Passenger coaches then used a bearing shown in Fig. 2, which was copied from American practice. It gave excellent service, was made of one piece, and was readily replaceable. This journal bearing can no longer be kept on German roads, due to the present method of yard shifting. The bearing surrounds only about one-third of the upper part of the axle, so that every time the car wheels are blocked suddenly considerable shock is exerted upon the bearing. A further disadvantage of this type is that the cover of the journal box is not entirely tight against rain and snow. This construction, therefore, requires continuous attendance, which it may receive on passenger cars, but which is entirely out of the question for freight cars in German service.

After long study, a new journal bearing construc-

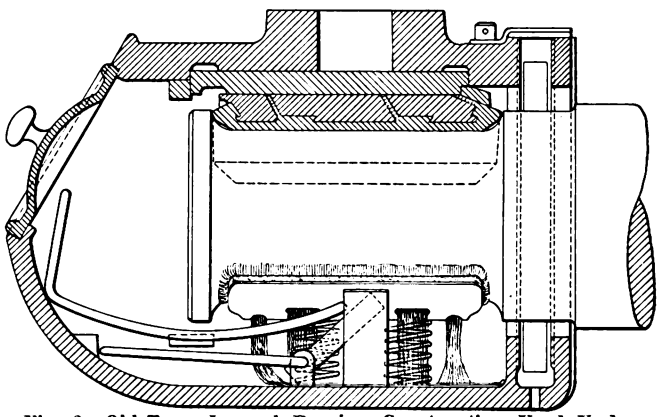

Fig. 2—Old-Type Journal Bearing Construction Used Under German Passenger Cars

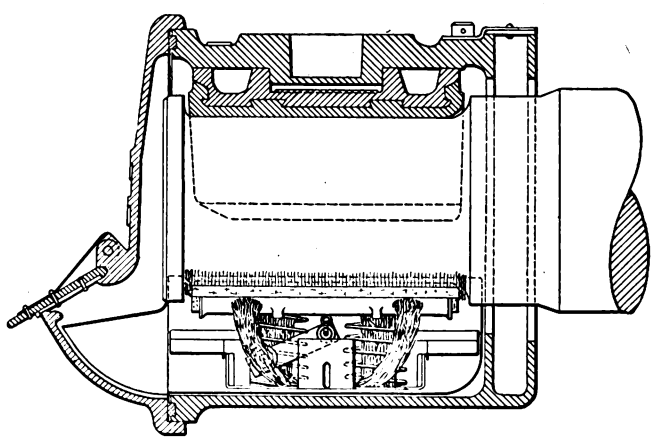

Fig. 3—New-Type Journal Bearing Construction Used Under Freight Cars

tion has been adopted. This is shown in Fig. 3 and is now in very wide use, there being approximately 25,000 freight cars on German roads with this journal bearing construction. In spite of great opposition, the journal bearing was made out of cast-steel rather than cast-iron. During the years 1914 and 1916, it developed that under certain circumstances the internal parts of this bearing could be twisted around, so that in many cases the bearing was fond underneath. This was no doubt partly due to the yard service becoming more and more severe. These observations have led to a redesign of the bearing, with its edges reinforced, and the bearing lengthened at both ends, so that it now reaches well beyond the horizontal center line of

*Abstracted from an article in *Verkehrstechnik*, June 25, 1926.

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the axle. During the copper and tin scarcity of 1916, the bearings had to be made temporarily of iron. This new bearing, called C2, was a considerable improvement over any previous bearing, and it proved to be quite unaffected by even the heaviest jolts. The journal box and bearing consists of but few parts, and all of these parts are interchangeable. Contrary to the original construction, shown in Fig. 1, a lining is provided, which can be replaced readily when its bearing metal is worn out. The former disadvantage of this type of bearing, that when made solid it does not permit ready inspection, did not hold, because it was such a great

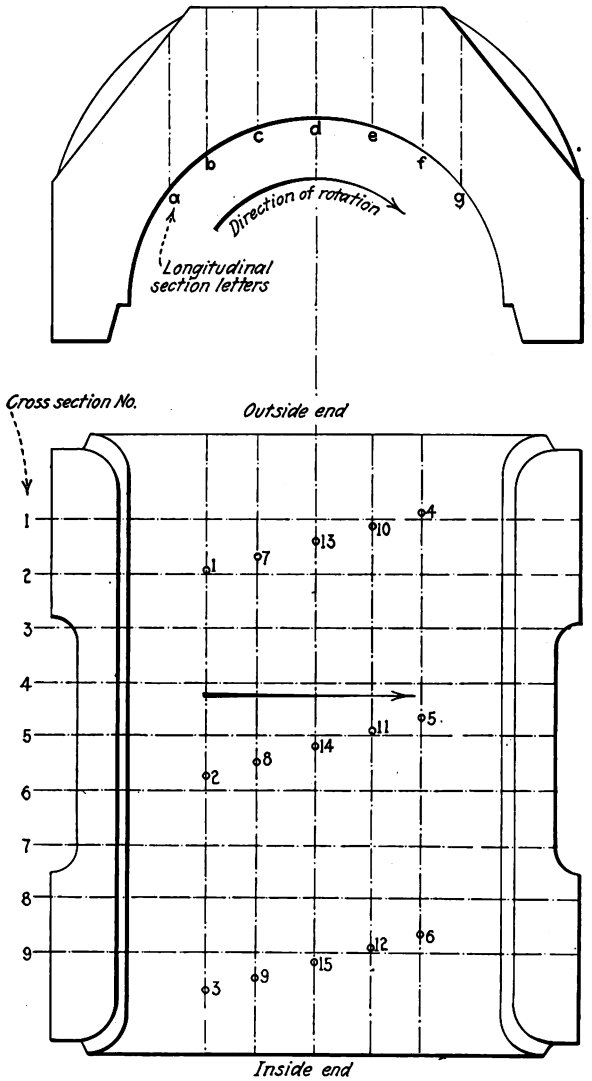

Fig. 4—Construction of Bearing Used for Test Purposes

improvement over the old bearing that such inspection was not necessary, or at least it was necessary only after long periods. Practical experience showed that hot-boxes occurred very rarely.

With increased weight of equipment faults began to develop even with this bearing, particularly on the heavy 20-ton cars. As already mentioned, iron bearings had to be introduced during the war, and these caused considerable trouble. When the bearing metal melted out, the axle ran on the iron and caused rapid wear of the journal. In some cases the damage was so severe that the end of the axle broke off. These troubles led to extensive research in order to determine what the weak points of this bearing were, and how they could be best overcome. In particular, the following points were investigated:

1. Possibility of introducing a lubricating system which would give three-year service with one lubrication of the journal.
2. Methods necessary to avoid deformation and displacement of the bearing.
3. Improvements desirable for all details of the bearing.

It was found that a mechanical lubrication method has so far not given fully satisfactory service. Experience with lubrication from the bottom only does not seem to lead to the desired goal. It may be that top and bottom lubrication will have to be taken up

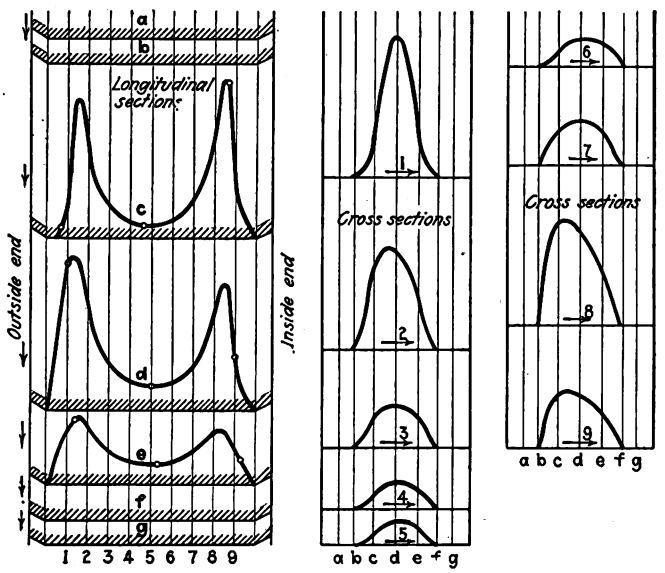

Fig. 5—Graphical Representation of Test Results for Bearing Shown in Fig. 4

again, and it is not improbable that in the near future a new, totally different, bearing may have to be devised.

An oiltight construction of the journal box has been sought by many investigators since 1919, and no fully satisfactory method has as yet been found. It is desirable that under no conditions shall even the slightest amount of oil be permitted to leak out of the bearing. It is probable that a material will have to be found which can give emergency lubrication for the journal where the bearing is neglected to such an extent that it becomes dry.

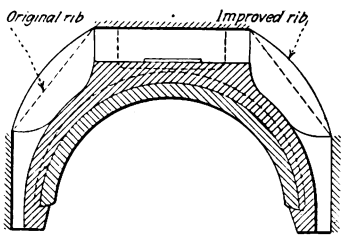

Fig. 6—Improved Bearing With Rib Reinforcements

Very extensive investigations have been made, recently in the railroad shops in Göttingen, to determine the exact nature and cause of hot-boxes. A special test arrangement was set up, and a bearing lining of alloy such as is being used now by the railroads was provided with fifteen small holes, distributed on its bearing surface as shown in Fig. 4, and each of those little holes was connected by a small copper tube to a pressure indicator. The bearing under test was lubricated from underneath, just as in actual service, and a

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mechanical oil conveyor supplied 186 gm. of oil per minute. For comparison with this bearing, a standard pad-lubricated bearing, consuming 0.25 gm. per minute, was tested. Some of the results found were rather surprising. For example, the maximum pressure of the bearing is not in its middle, but is at its two ends, and the maximum pressure was also found to be displaced 5 deg., depending on the direction of rotation.

Fig 5 shows graphically the data obtained. During these tests, the bearing was loaded with 7,000 kg. (15,400 lb.), and the wheel was rotated at a speed corresponding to 45 km. per hour (28 m.p.h.). The pressure resulting was 40 kg. per square centimeter (700 lb. per square inch) assuming the width of the surface as 9 cm. (3.546 in.). The shape of the oil pressure curve is due to the fact that the bearing apparently rests on the axle only at its two ends, while its middle is bent out. The results also indicate that the bearing is wrong theoretically. The location of the maximum

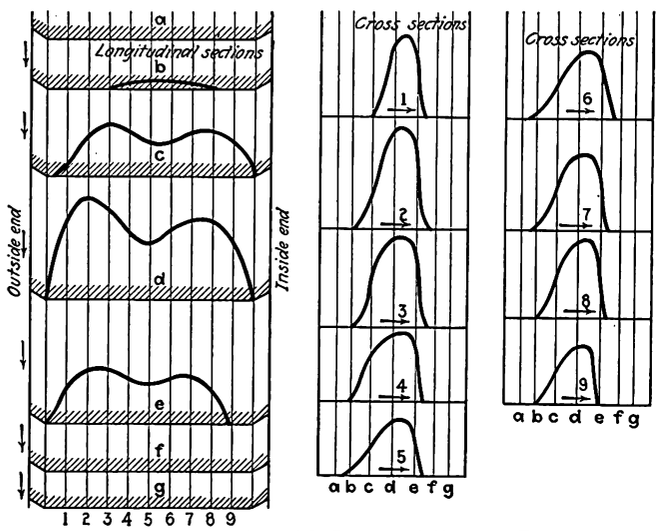


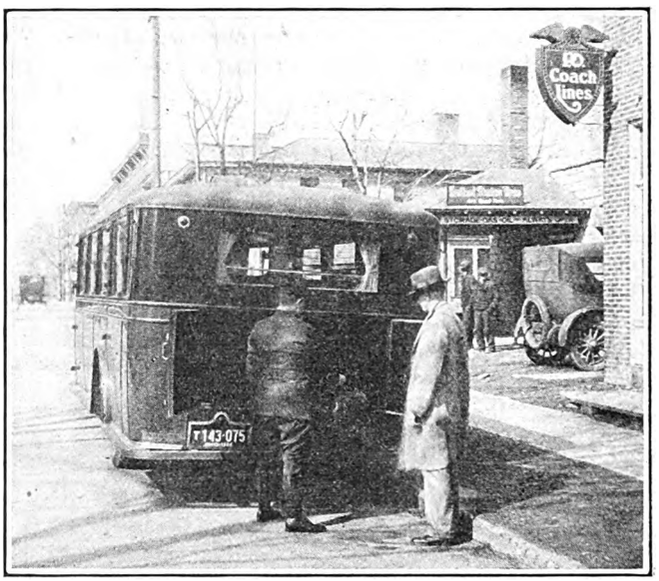
Fig. 7—Test Results with Improved Type of Bearing

pressure explains why the bearings run hot frequently, as the heating always begins at the two ends.

The construction of the present bearing will not permit changes necessary to improve the bearing surface. Other ways, therefore, will have to be followed. The strength of the alloy decreases with the temperature and this may result in serious damage. Deformation of the bearing occurs also in its cold condition. For this reason weak parts were improved by providing heavier ribs, as shown in Fig. 6.

All these conditions seem to indicate that a new bearing metal should be found which will give a certain amount of lubrication even when red hot. This resulted in trial of a cast-steel bearing with inner alloy shell. Tests with this new construction were made in a way similar to the previous tests and results are shown in Fig. 7. The results are not yet ideal, but the flat character of the curves show a considerable improvement.

Artificially introduced hot-boxes gave the following results: With a load of 7 tons on the wheel, the bearing became red hot 45 minutes after its lubrication was stopped. In this red-hot condition the bearing ran satisfactorily for three-quarters of an hour longer, after which time the axle became cherry red. From this moment on no further change took place, because apparently the heat generated was equalized by the radiated heat. After the test the bearing metal was found to be worn off 2 mm. (0.08 in.).



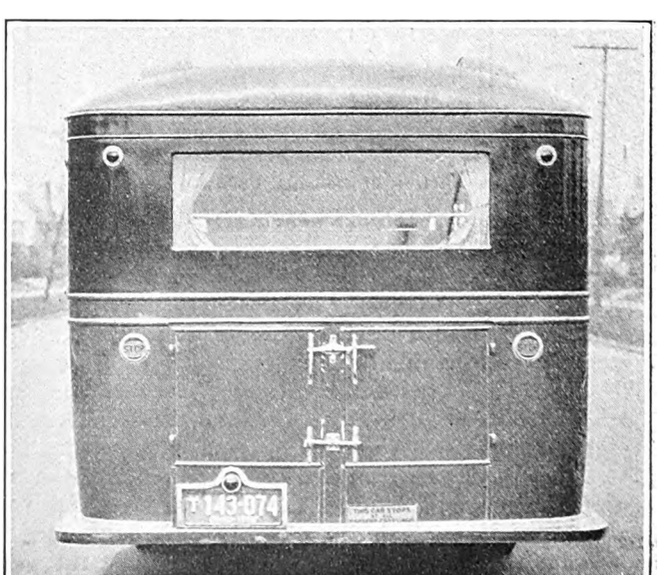
New Baggage Carrier Opened to Allow the Placing of Hand Luggage in the Compartment, Under the Rear Seat

Improved Baggage Carriers on New P.-O. Coaches

BUILT-IN baggage carriers are a new feature on the Pennsylvania-Ohio coaches recently purchased. Previously a carrier known as the "bustle type" was hung on the rear end. In these latest de luxe coaches the space under the rear seat has been made available through doors in the rear end.

An accompanying view shows an operator in the act of storing a customer's bag in this compartment. Another view shows the doors closed, ready to go. One of the views is taken in front of a typical suburban coach station, showing the illuminated sign, built in the form of a shield, typical of all P-O rail and coach operations.

Particular attention has been given in the design to provide an attractive rear end. A recessed aluminum frame is provided for the tail light, and state license plate and rear end stop lights have flush aluminum fittings.



Doors in New Style Baggage Car Closed, and Ready to Move. Note the Recessed Aluminum Frame for the Tail Light and State License Plate

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The Readers' Forum

Operation of the Straight Air-Brake

LOS ANGELES, CAL., June 23, 1926.

To the Editor:

Nowadays there are really only two different general methods taught motormen in manipulating brake valves: (1) the once to service position with three subsequent releases; and (2) the split application and release method.

In the first method, the motorman is required to get sufficient air to make a stop the first time the handle is placed in service position. A second movement to service position is discouraged. This is very good in theory, but in practice there are numerous disadvantages, so many, in fact, that only one street railway on the Pacific Coast teaches it. Advantages of this system are that the air is applied the hardest when speed is at maximum. A stop is made in the shortest possible distance, with, it is claimed, a corresponding reduction in brakeshoe wear. The disadvantages are that it is too hard on standing passengers, particularly when the car is equipped with large service port brake valves; and is dangerous on slippery rails. The motormen soon get into a rut. It requires more skill than the average motorman possesses and causes too many flat wheels, because many motormen form the habit of admitting too much air so as to avoid a second movement to service position.

About the only way this system can be operated without discomfort to passengers is to make a mild application and drag up to the stop. This, of course, is impractical in most cities, where the schedules require a motorman to use from 30 to 45 lb. of air to make a stop from speed. There are too many variations of equipment, rail conditions and gradient to tie a motorman down to any absolute method. If this is done the accident and flat wheel record is sure to suffer.

In the second system, the motorman is instructed to move the brake valve handle to service twice from lap, splitting the application, so to speak. This avoids causing the brakeshoes to come up against the wheels with a nasty snap, which is objectionable to standing passengers. Using this system, about 25 or 30 lb. of air can be admitted the first time and then 10 or 15 lb. in the next movement. It is extremely important, however, to impress on motormen that the second movement to service should be made within about five seconds of the first one. If this is not done motormen soon form a habit of letting in a little air at a time, with the result that there is a high cylinder pressure when brakeshoes are taking hold the hardest, and this results in sliding wheels.

The simplest way to teach this system is to instruct the motorman to apply sufficient air to make a stop before the front end of the car has passed the prospective stop, and make graduations near the end of the stop. The first graduation must be made before the sliding point has been reached. Too many motormen believe that graduated releases will start the wheels after they are once locked. This is wrong. An almost complete release is necessary, depending on the condition of the rail. The graduated releases in the second system are the same as for the first system, with the exception that no fixed number is recommended.

Advantages of this second method are that it is easier on standing passengers; does not kill momentum so quickly that an early release is necessary; safer on slipping rails; easier to spot car; easier to teach to new motormen. It is not an absolute system, therefore it meets the thousand and one variations of speed, equipment, grade and brake equipment. It is widely used by street railways in the United States. It has been used in Seattle, Tacoma, Oakland, San Francisco and Los Angeles with good success. The Los Angeles Railway believes in it implicitly, and its smoothness of operation is hard to beat. This railway has in effect a rigid follow-up system for new men, and any improper operation of brake valve is checked. "As the twig is bent, the tree will incline"; it never fails.

Disadvantages of this method are that it will cause as many, if not more, flat wheels than the first system, unless motormen are taught to apply air the hardest when speed is near its maximum. Some motormen will make second movement to service after speed has been greatly reduced, which will lock a pair of wheels. There is a tendency in some motormen to fan the handle. These three disadvantages can be easily overcome by proper instruction and a follow-up system.

There are many variations in brake valves and equipment. Electric railways teaching motormen the first system will find it works the best with old-type brake valves and outside-hung brake rigging. The old-type Christensen, Westinghouse and National brake valves work the best. The fast schedules of today, however, have developed brake valves such as National P.V., Westinghouse S.M.E. and M.-18a and General Electric that will admit about 30 lb. of air a second in service position. These are generally used with inside hung brake rigging, which makes a pretty severe brake. This system is at its worst with that equipment.

The following few points should never be overlooked in teaching new motormen: Proper braking is 50 per cent good judgment and the rest proper instruction. When applying air, always be governed by the speed condition of the rail and comfort of passengers; use as little air as possible. Apply air hardest when speed is at maximum. The holding power of brakeshoes is greater at low speed than high. Coast up to all stops as much as possible. Never fan the brake handle. Don't imagine you can operate the brake valve exactly the same for every stop. Never use sand for service stops in street railway service. Running on lap with power on is a sign of ignorance. Don't forget the wheels; if they are flat it is a sign of some one's inefficiency, usually the motorman's. An application is from the time the brake is first applied until the first release. There are few excuses for second applications. The only time they should be used is when approaching dangerous places.

GEORGE W. BOOTH,
Motormen Los Angeles Railway; formerly Motorman the Connecticut Company and Interurban Motorman, Portland Electric Power Company.

To simplify the work of instructing new employees in the transportation service, R. B. Hill, superintendent of operation Los Angeles Railway, has prepared a book of information to students. This begins with a statement on courtesy and continues with information about equipment, uniforms, safety and accidents.

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Maintenance Notes

Flexible Track With Steel Ties

BY NELSON R. LOVE
Chief Engineer Denver Tramway Corporation, Denver, Col.

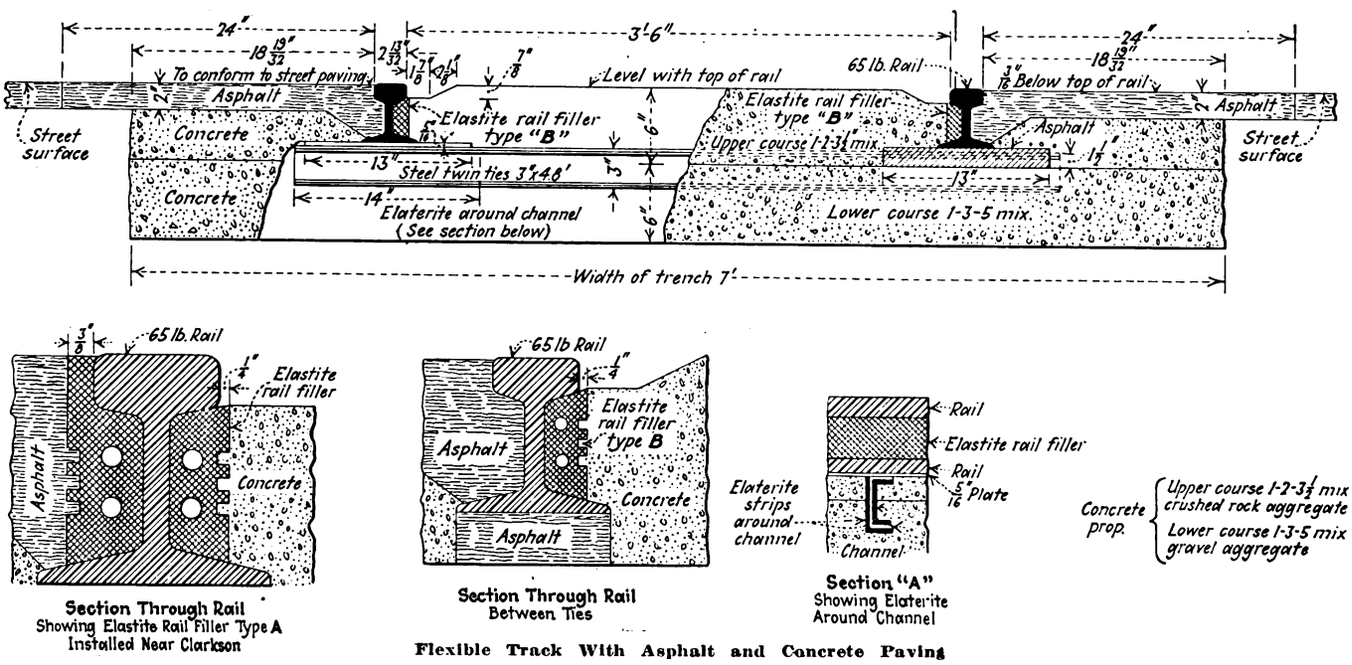
IN A paper presented before the annual meeting of the Midwest Electric Railway Association, Denver, Col., June 8, 9 and 10, 1926, a special cushion track construction was described. This design, which is illustrated herewith, uses concrete and asphalt together with the steel ties exclusively. It will be seen that the steel ties function only in a horizontal direction in order to maintain gage and proper tilting of the rail. Vertical loads are sustained entirely by the ordinary paving asphalt, which is tamped solidly underneath the rail and ties by means of electric tampers. This track was installed on Colfax Avenue, Denver, a year ago and has proved an ideal type of flexible track.

In the illustration showing a section through the track it will be seen that the concrete paving does not come in contact with the rails at any point, although concrete is used to pave between the rails. A special type B elastite rail filler is placed between the rail and the asphalt paving. Asphalt paving is used outside the rail and this is laid directly against the rail.

One of the lower sections in the accompanying illustration shows a type A elastite rail filler installed between the rail and the asphalt. A stretch of track has been tried with this construction and further experiments in regard to this flexible construction will soon be tried.

Canting of the rail to a slope of one to twenty-five is a feature of this construction, the steel ties being bent so as to provide for this. Inspection of the track after a year's service shows that the rail has worn very smoothly and there is no sign of corrugation. The cost of this type of construction is approximately the same as for the standard type of track previously used, which employs wood ties on a 9-in. concrete ballast and paving. The surface appearance of this special track is more pleasing, primarily because the rails themselves constitute the only joint in the paving. The asphalt is continuous from the track to the curb and the concrete is continuous inside the track.

No expansion joints were placed in the concrete, which runs in a continuous stretch of approximately 1,200 ft. Inspection shows only a few hair cracks.



Flexible Track With Asphalt and Concrete Paving

Metal Used Almost Exclusively for Car Sheathing

IN MAKING extensive renovations on a number of cars in the Holyoke Street Railway shops recently it was decided to use all metal sheathing in renewing the sides of the cars. The pieces are welded together, making a continuous strip of sixteen-gage metal sheathing. It was found to be simpler to adopt this practice even on the older wooden type cars, since the fitting and welding of the metal may be accomplished with considerably less effort than it required for constructing a wood sheathing.

On the dashers of the cars three metal strips are used, since the front and rear-end collisions which are such frequent occurrences may at times only result in one section of the dash being damaged. With the sectional metal strips it is possible to replace one or two sections without renewing the entire dasher.

Metal battens are used instead of wood, for it has been the experience of the company that trucks and other vehicles scraping the sides of the street cars will invariably tear off a wooden batten. The metal battens seem to fare considerably better under similar treatment than those of the wooden type.

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Dick Prescott's Promotion Is Discussed

And Trouble Brews

ON THE same evening that Dick Prescott spent at home contemplating the opportunities before him in his new position of assistant to Tom Mullaney, superintendent of equipment, his promotion was the subject of a discussion far less pleasant in character.

At one of the battered green-topped tables in a backroom rendezvous for the idlers of the neighborhood, not far from the Consolidated Railway & Light Company's shop, Pete Welcher, shop inspector, swapped grievances with three of his cronies. "Slowfoot" Lewis, "Lefty" Kooms and "Shorty" Green knew well the import of Inspector Pete's announcement that Dick Prescott had been made Mullaney's assistant. It was obvious that the new appointment was a setback for the inspector's personal ambition, and at the same time promised seriously to disturb the arrangement whereby Pete traded a willingness to overlook obvious defections from maintenance rules for active support by a small clique among the men.

Under the stimulus of his sympathetic audience, Pete dropped his customary caution and gave way freely to his bitterness.

"This new manager downtown sure must have Mullaney buffaloed all right," he told them in a confidential tone by way of indicating the reason for his own failure to win the promotion. "Think of making a guy like this bird Prescott assistant superintendent!"

"What does he know about a railroad anyhow?" questioned Slowfoot, who knew more about the tricks for avoiding an honest day's work than any man in the shop, and who never lost an apportunity of cultivating inspector Pete's favor.

"Nothin'!" declared that offended individual with a sneer.

"What do they want to go messin' things all up for?" piped "Lefty" Kooms. "We was all goin' along all right and nobody had to work too damn hard at that. Who started all this fuss anyhow?"

"Well, I got a notion this guy Prescott's been nosin' around ever since he's been here, and has spilled a lot of stuff in the office. It's up to us boys to show him up quick or this shop won't be no place to work at all."

"What's his game, do you suppose?" asked "Shorty" Green, also catering to the wisdom of Pete:

"Oh, he's got a lot of schemes to make every guy in the shop think they're salesmen, or some such bunk. You can bet your bottom dollar if somebody don't stop him, some of you guys will find things awful unhealthy 'fore he's done."

"They ought to 'a made you assistant superintendent," ventured "Slowfoot," quick to grasp the opportunity to get in a good word for Pete. "This would be a real joint to work in then."

"Keep your trap shut and use your head," snapped Pete by way of covering up his pleasure at thus having his own case stated so frankly.

"What are we goin' to do?" again questioned "Shorty" Green.

"You guys keep your eyes and ears open, and we'll soon put the skids under him. All we got to do is get him out on a good trouble job some one of these days and he'll fall down so hard we won't need to worry about him much."

In the past few weeks, Dick Prescott had sensed something of an undertone in the shop that was not in accord with the new spirit of the management. On the whole, most of the men and foremen began to feel the satisfaction which comes from membership in a hard fighting team. The old shop began to take on a new importance in winning back public favor for the railway. Each man's job was becoming more a part in the game and less of a mere task for a day's wage. But little did Dick suspect how soon he was to learn that in any such group of men there are always a few who are more interested in dodging work than in getting satisfaction from a job well done; that there are some always jealous of progress in others, and quick to put obstacles in the way of accomplishment.

A Letter to Dick Prescott

EDITOR'S NOTE—Many unusual letters come to the desk of an editor. Some carry blame, some praise and some a challenge. Ordinarily an editor pays no attention to an anonymous communication. He may or may not read through such a message, but that is usually the end of it. This is an exception to the rule. Dick Prescott is a fictitious person. So there seemed to be justification for publishing the anonymous letter signed "An Ardent Admirer," not because "An Ardent Admirer" sounded sweet, but because we were the provocateur in creating the fictitious Dick and because the letter tickeled our risibilities, as it probably will yours. The ethics of journalism require that the editor keep confidential the names of his correspondents where they so request it. Our correspondent apparently did not know this. With this assurance from us we hope that "An Ardent Admirer" will disclose his identity so we may be permitted personally to congratulate him. We certainly pardon "An Ardent Admirer" for addressing us as Dear Dick. We admonish him, however, to come out into the open if he expects again to make the editorial grade.

July 25, 1926.

Dear Dick:

Please pardon my familiarity in addressing you by your first name but I am inspired so to do through the pleasure given me by your promotion as noted in the ELECTRIC RAILWAY JOURNAL for July 17. I tender you my congratulations and would ask you to congratulate for me your little playmate, Tom Mullaney, who was given a promotion at the same time.

"Merit tells" and "You can't keep a good man down" and all that rot, you know.

However, this letter is meant to be optimistic, cheerful and constructive, so I'll lay off of any of the chronic pessimisms and blind adherence to obsolete methods so dear to the heart of the electric railway employee. We are living in a modern age, and all around us are evidences of changing methods and a realization that the seller must give the buyer what the latter wants, especially when he is ready and willing to pay for it. The fact that your superior officer, Mr. Milburn, your playmate Tom, and you seem to be imbued with a progressive spirit leads me to believe that you three have acquired or will acquire that realization and thereby become a Faith, Hope and Charity combination alone by yourselves.

But don't be downhearted—some of the rest of us are with you in spirit but we don't dare say so out loud.

The fact that you "visualize the opportunities that lay ahead because of the very difficulties in the present railway situation" and "street cars can be made more attractive through improvement in design and better maintenance" is very comforting, and "everything's going to be all right" if you are not about ten years too late. Of course you can't be blamed if your predecessors and their colleagues, while riding in automobiles equipped with comfortable seats, were so dumb as to figure that slat or cane seats in a rattling trolley car were good enough for everybody else. Neither can you be blamed for their attitude that people must ride in trolley cars because the railway owners had been good boys and faithful to their trust in pioneering the transportation facilities (whether *now* good, bad or indifferent)—such cry-baby attitude being directly responsible for driving away business. It is not your fault that the railway operators who are using buses look upon them with the same admiring complacency that guests at a lawn party would at the advent of a skunk. This is not said in derogation of a skunk because that animal really has some good qualities—on the surface at least. I admire your "new ambition and enthusiasm."

AN ARDENT ADMIRER.

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Stringing Trolley Wire by Improved Methods in Cleveland

BY JAMES SCOTT
Superintendent of Overhead Lines, Cleveland Railway, Cleveland, Ohio

RAPID removal and restringing of trolley wire has been made possible through the use of a new trolley wire stringing truck which has just been placed in service by the Cleveland Railway, Cleveland, Ohio. The use of this truck permits many radical changes in wire-stringing methods. The super-structure and equipment for the reel truck were built by the mechanical department of the Cleveland Railway. They are mounted on a 45-hp. White chassis. This truck is provided with two carriages for holding trolley wire reels. These are mounted by means of a specially designed shaft which will fit practically any make of reel. Drums of pressed paper are mounted on each end of this shaft, and a brake band lined with standard automobile brake lining is fitted around these drums. Two rods joined to a common crossbar are attached to the brake bands.

In the accompanying illustration showing the reel truck, the braking arrangement can be seen at the bottom of the reel. With this braking apparatus an equal pressure is applied to both sides of the reel shaft by simply screwing down upon a wing nut that is placed in the center of the crossbar. Thus any tension desired for the trolley wire may be secured readily. When starting to string wire this nut may be set and the reel will not require any further attention. The equipment of both reels is the same and these are designed so as to allow handles to fit the reel shaft, the handles being used to rotate the drums for reeling in of worn trolley wire.

Inside on the top of the truck a chain fall and runways are installed that permit the loading and unloading of reels by one man. An opening in the body framework above the driver's cab allows the trolley wire to be reeled in. This opening is equipped with a roller.

At the present time four laborers are used in the operation of reeling in old trolley wire, but further improvements are planned which will make the operation entirely mechanical and so eliminate the laborers. The platform running the length of the truck folds up when the truck is not in actual use. The picture of the truck reproduced herewith was taken before the wheel guards were installed on it.

With this equipment old trolley wire can be taken down and new wire installed at the same time without any interruption of traffic. This double operation requires two tower trucks and the reel truck. The first tower truck removes the trolley wire from the span and it is then led through the opening above the cab and wound up on the reel. Before stringing, the desired tension on the reel of new wire is set, and the new wire is led over the top of the rear tower truck and tied in upon the span wires.

By Use of the New Reel Truck Together With two Tower Trucks, Trolley Wire Can Be Taken Down and New Wire Installed at the Same Time without Interrupting Traffic

While in the tracks in the operation of stringing, the trucks are spaced about 70 ft. apart to allow the men to tie the wire in. When a street car approaches they pull to one side and close up. The car then coasts by. The trucks can then turn back into the track and proceed. A third tower truck comes along behind the others and attaches the ears and aligns the wire. By this method a mile of trolley wire may be strung, taken down, and practically all insulated for service in 2¼ hours.

The tension obtained by means of the reel-braking apparatus is such that it is necessary only to pull the trolley about every 1,500 ft. Due to the fine performance of both reel brake and truck there is practically no vibration at all in the line.

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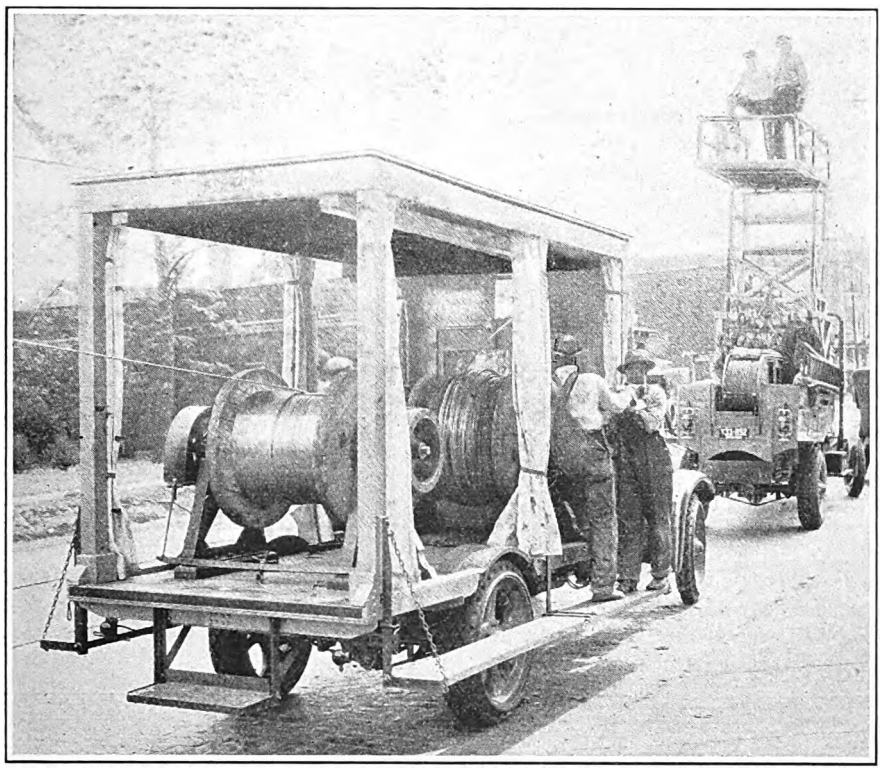


New Trolley Wire Stringing Truck Just Placed in Service by the Cleveland Railway

By use of this equipment, in an emergency two tracks may be strung at the same time if desired. The truck is also equipped with ladders, located alongside the driver's cab. These lead to the truck roof, which is designed to permit linemen to work from it. This method of wire stringing has resulted in great economy and a large saving in labor. One foreman can control all the trucks used and it is not necessary to disturb overhead equipment.

Shop Made Anti-Climber Bumper

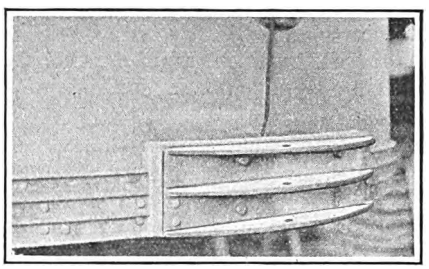
A COMBINATION draw pocket and anti-climber bumper has been developed and made by the West Penn Railways. The view shown is one of these units just installed on a Wheeling Traction car that is being overhauled in the Wheeling shop.

Constructed from a section of standard 9-in. channel, the piece is first bent to conform to the car end. Then the corners of the flange are burned off by the acetylene torch and forged to shape. The center section is cut from a steel plate of the same thickness as the channel flanges and curved to fit the inner flat face. This center section is then electric welded in place, making a three leg anti-climber.

On top of each angle flange an additional crescent-shaped piece of steel plate is cut and welded to form the continuous face shown, thus increasing the depth of the channel flanges in the center of the bumper.

This extra flange depth serves two purposes: First, it provides a more certain lock to prevent telescoping in case of a severe end on collision and, second, it allows the drilling of an adequate draw pin hole and the use of a draw bar in case of pull-ins.

The entire device is mounted on an oak plank and bolted firmly to the steel floor and platform members, so that stresses due to collision are transferred to the steel work forming the floor members. As noted in the view this bumper is inserted in a standard anti-chamber, the center of which was first cut out.



Combination Anti-Climber Bumper and Draw Pocket Installed at Center of Standard Anti-Climber

One Man Handles Heavy Casting with Hand Truck

FOR transporting heavy parts about the shops, the Department of Street Railways, Detroit, Mich., makes use of standard platforms under which Cowan trucks are placed

Hand Trucks with Separate Platforms Are Used for Moving Heavy Parts About the Shops of the Department of Street Railways, Detroit, Mich.

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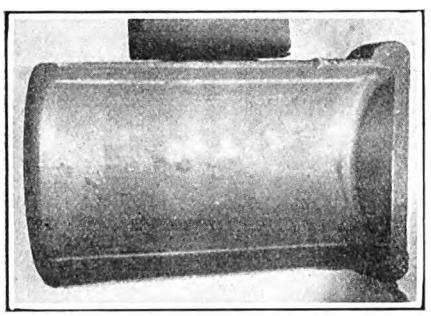
to move these about the shop. These platforms have a top of planking 10 in. above the floor and strap iron supports at either side so as to provide a light construction. One man can run a hand truck underneath such a platform and, by ratcheting the handle, raise the platform free from the floor, so that it rests only on the truck and so can be moved about readily.

Journal Bearing Designed to Take Axle Thrust

END thrust is taken on the axle bearings instead of on thrust collars in cars of the Wheeling Traction Company, Wheeling, W. Va. This design originated on the West Penn Railways, the parent company.

The bearing is cast with an end and has a bearing on nearly half of the axle as shown in the accompanying view. The bearing itself is locked in place by its projecting above the journal housing. When new bearings are placed in cars the end thrust bearing is also replaced. This is much simpler than to place a new axle collar on the axle inside the truck frame. Furthermore, the thrust surface is always lubricated in this arrangement.

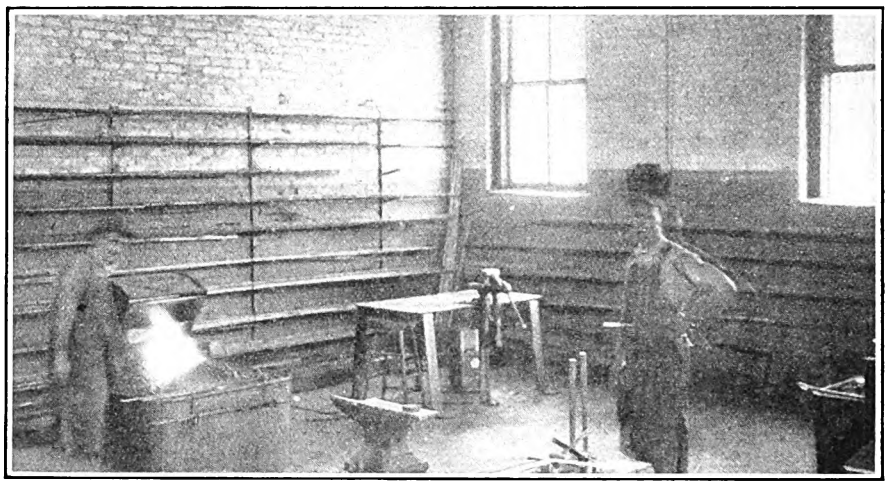


Bronze Journal Bearing Used in Wheeling
This bearing is cast with an end surface on which the axle thrust is taken instead of on thrust collars. When new a bronze-to-steel bearing is used, but when this surface becomes worn so that too much play exists a babbitt surface is applied.

When the thrust surface becomes worn the end is given a babbitt surface at the same time as the bearing is rebabbitted. When new, no babbitt is used on the thrust surface. A special babbitting form is used that allows the thrust surface to be cast coincident with the curved surface.

Blacksmith's Shop Kept Clean

ONE of the cleanest parts of the Chattanooga shop of the Tennessee Electric Power Company is the blacksmith shop. No cinders are allowed to accumulate around the forge and only the day's scale can be seen around the anvil. Stock is seen against the rear walls. There is a place for all tools and at night they are put away so that the floor of the shop can be swept clean easily.



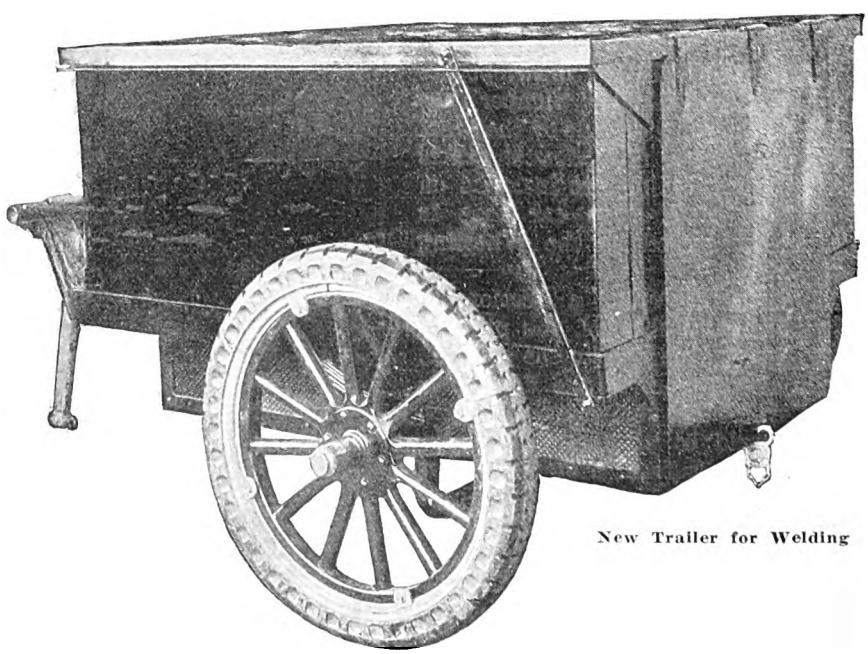
One of the Cleanest Blacksmith's Shops Can Be Seen on the Chattanooga Railway Division of the Tennessee Electric Power Company

New Equipment Available

Cushion Tired Trailer for Welding Equipment

FOR transporting resistance type track welding equipment on city streets, the Eectric Railway Improvement Company, Cleveland, Ohio, has recently developed a bonding and track-welding equipment mounted on a cushion-tired trailer. This is strong but light and has a sturdy metal frame. Two generous tool boxes are provided for carrying equipment, and space for placing the welding rheostat is also arranged. One cover is equipped with a folding rear panel which covers both the rheostat space and the tool boxes. A single lock at the rear protects the trailer from entry by unauthorized persons.

By raising the cover the welding rheostat can be operated in the usual manner. Ample ventilation is provided for the removal of heat. This equipment has been given type No. SRT-2. It weighs approximately 500 lb. complete, and particular care has been given to balancing the weight so that it can be handled by one man.



New Trailer for Welding

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Association News & Discussions

Publicity and Equipment Problems Discussed at La Crosse

At a Meeting of the Electric Railway Section of Wisconsin Utilities Association Specific Subjects Valuable to the Operator Were Considered

LA CROSSE, WIS., was the scene of the annual convention of the Electric Railway Section of the Wisconsin Utilities Association, held on Aug. 12-13 under the leadership of Chairman Nels C. Rasmussen of the Wisconsin Valley Electric Company, Wausau. Specific subjects that have a direct bearing on departmental work received major consideration. C. R. Phenicie delivered an excellent paper, abstracted elsewhere, on opportunities of a transportation man for establishing good public relations. In his paper, and particularly in the discussion by B. W. Arnold, a note of caution was sounded against being too obvious in attempts to please the public. Care should be used to avoid having the public feel like animals in the Zoo where they must know they are being "worked on." Mr. Phenicie further said that public relations might be defined as human nature diplomacy applied to human nature.

H. M. Pauley, local manager Wisconsin Gas & Electric Company, Kenosha, said that improvements should often be made without undue publicity, allowing the public to realize the good work of the company through observing the facts, rather than observing the publicity of those facts.

C. M. Larson, chief engineer Wisconsin Railroad Commission, offered his opinion that many utilities have failed to convince the public that they are straight shooters and it is necessary for them to establish this condition before they can expect the best results from the public.

J. P. Pulliam, vice-president and general manager Mississippi Valley Public Service Company, spoke of the value of having the employees know the business of the company and be familiar enough with the policies so that they may tell the company's story among their friends and to the public that come in contact with these employees. Mr. Pulliam believes that the city railway business is improving but has serious doubts as to many interurban roads in Wisconsin.

NOISE MEASURED GRAPHICALLY

Perhaps, the paper of greatest interest, because of its distinctly new material, was that of Kent Wooldridge who is now with the Chicago Rapid Transit Company of Chicago. Mr. Wooldridge, electric railway fellow of the Wisconsin Utilities Association at the University of Wisconsin, spent the year developing an apparatus that would measure and analyze the noise made in street car operation. In his report he outlined briefly the principles used and gave enough of the results obtained on several properties in the state to indicate there were great possibilities in the use of this type of test equipment. The principle of the apparatus was an inversion of the usual radio receiving set. The sounds were picked up by the use of a loud speaker, which acted as a transmitter and produced a varying electric current, which caused a movement of the needle of a microammeter in unison with the sounds. Use of this equipment has indicated possibilities of segregating the different types of noises. While this first year has been devoted largely to the development of the equipment, it is to be hoped that the apparatus will be perfected and that considerable data will be obtained for different types of car and track construction.

Mr. Wooldridge gave it as his opinion, based on the studies he made this year that on straight track 30 per cent of the noise originates from the roadbed; 20 per cent from the wheels; 15 per cent from gears and pinions; 20 per cent from the truck brake rigging; 10 per cent from the car body; and 5 per cent from the trolley. A more complete description of this equipment and the early results obtained which are indicative of the possibilities of this kind of a study will appear in a subsequent issue of this paper.

Chairman Nels Rasmussen is an optimist. One could see this from his annual address. However, he believes that increased speed and better facilities are required to produce riders under modern conditions. The automobile has taught the public luxury of travel and the railways must offer comparable facilities. Mr. Rasmussen believes in the future of common carrier service operated under proper conditions.

B. W. Arnold, manager motor coach department, Chicago, North Shore & Milwaukee Railway Company, read a paper on accident prevention from an executive viewpoint, which is published elsewhere in this issue.

R. M. Howard, vice-president Mississippi Valley Service Company, Winona, Minn., for years has kept accident figures for the electric railways in Wisconsin. From the table of accidents reproduced herewith, automobile collisions have decreased from the high of 1923, while the increase in automobiles registered in the state in each year since, has been 69,500 per year. Mr. Howard saw in these figures an improvement in the accident situation and stated that the transportation companies have been successful in improving equipment and operating methods that would successfully meet the situation. A large share of these collisions occur on business streets served by car lines. Suitable parking restrictions would not only reduce accidents, but greatly relieve the congestion on the streets. Association members, he felt, should use their influence to improve their local situation and recommended that recent traffic surveys be used to indicate to merchants that the elimination of parking on business streets would not injure, but rather improve their business.

F. R. Coates, president American Electric Railway Association, prepared a paper but due to his inability to be present in person, it was read by Captain Leslie Vickers, economist of the association.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Sept. 17-18 — Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

November 16-19—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.

ACCIDENTS AND COLLISIONS IN THE STATE OF WISCONSIN

Year	Car-Miles Operated	Total Transportation Accidents	Automobile Collisions
1918	34,028,371	9,438	3,497
1919	30,870,393	9,636	3,997
1920	33,694,023	12,247	5,662
1921	32,831,916	11,257	5,522
1922	34,469,690	11,279	5,780
1923	35,011,123	13,818	7,422
1924	37,917,230	13,502	6,811
1925	37,651,771	13,958	6,775

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WISCONSIN AUTOMOBILE AND TRUCK LICENSES ISSUED DURING THE YEARS 1918–1925, INCLUSIVE, HAVE INCREASED RAPIDLY

Year	Registration	Increase
1918	196,844	.....
1919	236,881	40,137
1920	293,298	56,317
1921	341,741	48,443
1922	387,848	46,107
1923	457,271	69,423
1924	526,814	69,543
1925	596,386	69,572

Mr. Coates likened the electric railway industry to the farms of Wisconsin when Abraham Lincoln once advised the farmers to "plow deeper" for greater crops. Mr. Coates does not believe that the surface has been scratched as far as common carrier transportation is concerned. His paper is abstracted elsewhere.

Door control and the circulating load method of car operation were discussed by P. W. Gerhardt, assistant superintendent of transportation The Milwaukee Electric Railway & Light Company, and Oscar A. Broten, western manager National Pneumatic Company. These papers are abstracted elsewhere. Both are firm in their belief that this method makes possible one man operation of relatively large cars in heavy service.

In discussion of these two papers, Henry Cordell, master mechanic Chicago, North Shore & Milwaukee Railroad, considered that the automatic door devices operated by a pneumatic engine are eminently successful. R. M. Howard believes that this plan of operation with one man, using the treadle device on the rear door, operates under crowded conditions and adheres to schedules better than two-man cars.

Use of the foot valve aroused considerable discussion, some claiming that good operators do not use it to any extent and others claiming that the safety devices would be impossible unless some provision were made so that a man could remove his hand from the controller handle on long runs.

Earl F. Harra, master mechanic Wisconsin Power & Light Company, Oshkosh, said that he makes a practice of blowing out all air pipes in the fall with high-pressure air. He washes the air engines at the same time and re-oils the moving parts with a high grade thin oil to avoid sticking in the winter. He claims that blowing out small particles of dust and scale each year prevents the freezing of air pipes due to condenser moisture in the compressed air.

Mr. Broten in discussion said that practically all of the trouble due to freezing could be eliminated by avoiding the use of pipe that was too small. If necessary to use small pipe, it should be run on the floor inside of the car.

C. M. Larson, chief engineer Wisconsin Railroad Commission, spoke for Commissioner Andrew R. McDonald. He said that the Wisconsin Railroad Commission was unanimously in favor of repealing the law requiring electric railways to flag railroad crossings, now requiring either a watchman or two men on each car. This law was originally passed in Wisconsin through the urgency of the Milwaukee city council and which was determined to defeat one-man operation in that city. As shown in Mr. Gerhardt's paper, these difficulties have been largely overcome and the commission is convinced that there is no more reason to flag electric cars over railroad crossings than buses.

At the present time, the commission has little jurisdiction over buses in the state. An applicant must file schedules and rates of fare but the commission has no jurisdiction over the application except to see that adequate insurance is carried. Mr. Larson believed that this law should be amended to allow the commission the right to determine the necessity for bus service applications before such operations be allowed to start. The commission would not only welcome increased jurisdiction but believes that this is necessary to assure adequate service to the public and for the protection of the company now providing service.

Mr. Larson pointed out the fact that the electric railway service offers an opportunity of providing personal contacts, that is not possible in any other form of utility. He likened this to the personal contact method of sales of other commodities versus the less efficient method of mail or telephone selling. To accomplish this, trainmen should be educated in the policies of the company, and their attitude toward the public should be developed so that they will be good salesmen, as well as good operators.

The table that Mr. Larson presented, which is reproduced herewith, indicates that in the face of decreasing passenger revenues during the past five years an increased number of seat-miles during rush hours has been given, the capital invested to provide the service has gone up 38 per cent, and due to more economical operations the return on the capital has increased 42 per cent since 1920.

H. G. Monger, The Milwaukee Electric Railway & Light Company, delivered a paper on the co-ordination of street railway and motor bus transportation.

TREND OF ELECTRIC RAILWAY OPERATIONS IN THE GREATER MILWAUKEE METROPOLITAN AREA, PER CENT OF 1920

	Revenue Passengers	Car-Miles Operated	Maximum Number Seats Operated in Rush Hours	Revenue per Car-Mile	Expenses per Car-Mile	Utility Capital Invested	Return on Capital Invested
1920	100	100	100	100	100	100	100
1921	92.7	93.5	98.4	102.7	100.4	105.6	112.6
1922	93.6	94.0	105.5	104.1	96.3	119.4	126.1
1923	98.0	96.6	124.7	106.6	97.3	125.8	129.6
1924	96.0	94.5	129.2	106.6	98.6	134.7	141.1
1925	95.4	96.0	143.4	103.4	96.3	138.2	142.8

Oliver Wynn, an east side high school student of Madison, Wisconsin, gave a talk on why he was interest in transportation from the standpoint of choosing this as a vocation.

Clyde Hedges, Mississippi Valley Public Service Company was unanimously elected chairman of the electric railway section for the coming year. John Lucas, The Milwaukee Electric Railway & Light Company was elected vice-chairman.

Following the sentiment developed in recent years some thought was given to a change in the name of the section. A motion was made and passed that the question of changing the section name to Transportation Section be referred to the executive committee.

The entertainment provided in part by the local hosts, the Mississippi Valley Public Service Company, included pleasure and inspection trips in the surrounding territory of La Crosse and to the company's carshops. On Thursday evening, Aug. 12, an informal dinner followed by dancing was held at the Pioneer Club. On the afternoon of Aug. 13 three choices were available, golf at the La Crosse Country Club, an automobile trip to Coon Valley or a fishing trip to Galesville.

Safety Appliances on Electric Freight Cars

THOROUGH study concerning the safety appliances which should be installed on traction freight cars will be made by the Central Electric Railway Master Mechanics' Association. A circular recently sent out by the secretary relates an experience of the Indiana, Columbus & Eastern Traction Company. Ten box cars were built for this company at Chicago Heights, Ill., and shipped on their own wheels over the Big Four Railway. An Interstate Commerce Commission inspector found one of these cars in the Springfield yards of the Big Four Railway and discovered that it was not equipped according to the U. S. Safety Appliances Standard, being short several end grab handles, all four ladders and the running board. At first he refused to permit the Big Four to deliver the car to the traction company until these devices had been put on. F. J. Foote, superintendent of motive power and equipment of the I., C. & E., took up the subject personally with the inspector. He explained that the running board would be a menace to the men rather than a safety device on account of the danger of men on top of cars coming in contact with live trolley wire. Moreover, on traction lines trainmen have no occasion to be on the roof of box cars and are not required to do so, he said. From this it followed that there was no need for running boards or ladders. It was finally agreed to cancel the matter of running boards and ladders for the present and install a full set of grab handles.

After further consideration of this matter the I., C. & E. decided to equip all its cars as called for by the Safety Code with the exception of the running boards and ladders. As a result of this experience, Mr. Foote suggested that the subject be taken up for consideration at the September meeting of the Central Electric Railway Master Mechanics' Association.

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In the Words of Lincoln—Plow Deeper*

Some Important Problems of the Industry Are Better Service, Better Employee Understanding, Traffic Regulation and Tax Reduction

BY FRANK R. COATES
President American Electric Railway Association

DURING the last year I have had the great dual honor of serving as President of the American Electric Railway Association and the Central Electric Railway Association. In discharging the duties of these two offices, I have traveled somewhat extensively, and had an opportunity to observe first-hand many local transportation situations. This address which you have done the honor to request will probably be the last that I shall make prior to my final talk before the annual convention of the American Electric Railway Association in Cleveland, Ohio, on Oct. 4. Therefore I am going to try to summarize for you some of the outstanding conclusions that I have reached in my year of observation in the electric railway field.

More than 67 years ago, in an address to Wisconsin farmers Abraham Lincoln, then merely a country lawyer from down in Illinois, uttered some advice which I think might well be adopted today by local transportation men. "Plow Deeper," was the crux of Lincoln's remarks. The soil, he added, never has been pushed to half its capacity.

That statement, "The soil has never been pushed to half its capacity," seems to me to fit the local transportation situation today. While it is true that there are more forms of vehicles than ever before, it also is true that people are riding as they never have previously. Admittedly, despite the best efforts of rubber heel manufacturers, the people have practically forgotten how to walk. It is a commercial fact that because of this lack of walking, in great part, the shoe manufacturers of this country are producing only half the number of shoes of which they are capable. The situation has become so serious that shoe manufacturers have recently introduced a light summer shoe and are urging people to use different weight shoes in different seasons.

You need only to look around you to see that the riding habit is increasing. The number of automobile riders alone proves this. In fact, the figures of our own industry also prove it. In 1902, when there were practically no automobiles, the average number of street car rides annually taken by each individual in the United States was 61. In 1925, with approximately 20,000,000 automobiles, the average number of electric railway rides per inhabitant of the United States was 115.

People can be made to ride more just as Lincoln said land could be made to produce more, but only by "Deeper plowing." I am not so unmindful of the great differences in various local transportation problems to say that one scheme of intensified plowing for business is applicable to all of them. At the same time, I will say that most of the recognized principles of such plowing will fit anywhere. Let me suggest just four kinds of plowing which, if done assiduously, will, I am sure, bring better business crops to the great majority of local transportation companies in this country. They are these:

Plow deeper for better service;

Plow deeper for better employee understanding;

Plow deeper for traffic regulation;

Plow deeper for fair tax reduction.

I have placed service first in this plowing schedule because without good service, no local transportation company can or should survive. It is an old saying, but a very true one, that transportation companies must regard themselves merely as merchants dealing with rides and that they must make their goods attractive or they cannot sell them.

GOOD SERVICE INVOLVES ALL DEPARTMENTS

Good service covers a multitude of things. It extends all the way from the activities of the head of the local company to those of the most minor employees. It particularly touches the kind of equipment which a company furnishes. It involves clean cars, a comfortable ride, courteous service and a thousand and one other similar things. It is the one big thing that companies have to sell.

So much has been said in recent years at electric railway meetings about good service, that many companies have come to regard the term in an abstract manner. Speakers chant about good service and the pleasing financial results that it brings, but all too often the whole subject is handled in a very vague manner. Men go out of meetings saying good service is quite necessary, but wondering just what all the shouting is about.

I want to be a little bit more specific. I want to point to a company that is making good service pay. It is not the only company in the country or in Wisconsin that is bringing about this much desired result but it is one of the activities that is very pertinent to this meeting. It is pertinent because it refers to the company managed by Nels Rasmussen, who was chosen chairman of the meeting in which we are now participating. I take the story of the activities of his company not from him, but from a copy of the *Wausau Daily Record-Herald*, for Friday evening, July 30, which recently came into my hands. That paper said in part about the service of his company:

> Street car patrons of the city are elated these days over the riding comfort of several of the smaller city cars which have been remodeled on the interior. Four of the small cars, which have a capacity of 28 persons, have all leather upholstered seats with springs that add greatly to the riding comfort. The leather seats, together with the rubber flooring, give the car a cleaner and more sanitary appearance on the interior. The rubber flooring is ¼ in. thick and has good wearing properties. The new floor coverings are easier to keep clean than the lumber flooring that had begun to show wear.
>
> According to Nels Rasmussen, superintendent of railways for the Wisconsin Valley Electric Company, the cars were remodeled at a cost of $600 per car. He also stated that all the cars owned by the local traction company would be repainted on the interior and exterior within a few weeks. The remaining three small cars will be remodeled with leather seats and rubber flooring in the near future.
>
> The electric company operates eight large cars, with a capacity of fifty-two persons each, in addition to the seven cars of the smaller type. The railways superintendent announced that more transportation equipment will be added to the service next fall.
>
> Few persons in the city realize the number of street car patrons the local company serves daily. The number of fares for the city last year up to Jan. 1, 1926, totalled 2,629,000. The electric company enjoyed the greatest business last year since the inauguration of the surface lines and the number of fares for the first six months of the present year shows a substantial increase over the same period of last year, the railways superintendent declared today.

The success of the company to which I have just referred must be due in great part to improved service. And that improved service was supplied at no great cost, about $600 per car according to the newspaper statement.

This is the most eloquent answer to the numerous electric railway managers in many parts of the United States who say that they would give good service if they had the money. The cheapest things in the world to provide that will produce the largest returns are clean cars and courteous service. The difference between good and bad local transportation service often is, to the eyes of the customer, just the difference between dusty and wormy prunes in an open bin offered by a grouchy clerk, and clean sweet inviting fruit packed in a well labeled Del Monte can and sold by an obliging salesman.

SELLING PRUNES AND RIDES

If all of the hundreds of millions of words that have been printed regarding what good service is have not sufficiently educated the local transportation industry, it needs only to visit the stores of successful and unsuccessful local merchants in order to grasp the fundamentals. There is not one iota of difference between properly merchandising a prune and a ride. It is all a question of making the thing for sale attractive to a prospective customer.

It is especially gratifying to me to note that the plowing for employee understanding has been much deeper in transportation circles during recent years.

Progressive managements in all lines of business endeavor have come to realize that two of the first essentials to business success are honest endeavor on the part of the company, and a thorough understanding and sympathy with that endeavor on the part of employees.

Employees cannot be expected to delve deeply into company problems unless they are encouraged by the management.

There is no one thing that will carry a man farther in business today than the ability to get along with the public. Certainly the electric railway employee has a most unusual opportunity to show his capability along this line.

*Abstract of a paper before the Electric Railway Section, Wisconsin Utilities Association, La Crosse, Wis., Aug. 12-13, 1926.

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Perhaps there is no better illustration in the history of the world of a man making a success through understanding human nature than the life of this same Abraham Lincoln, who told the Wisconsin farmers to plow deeply. The basis of Lincoln's whole success in life was his understanding of the masses of the people. He understood them primarily because he was one of them, but also because he endeavored always to understand and sympathize with them. What a conductor or an executive he would have made!

Some Problems to Solve

The traffic congestion problem, caused chiefly in cities by parking, is one which is going to require deep plowing by local transportation men. They have side-stepped it for years in many communities, but the time is rapidly coming when they no longer can ignore its presence or try to get the matter handled by some other agencies than their own.

It is daily becoming more apparent that the local transportation managements must make a fair, upstanding open fight against traffic congestion in behalf of the majority of local travelers who are their patrons. Four out of five persons who use any kind of vehicle in city streets, ride street cars, and the progress of this 80 per cent is being seriously impeded by a very small minority. Incidentally, this is hurting the business of local transportation operators, and will continue to hurt them until adjustments are made which will accord fair treatment to street car riders.

The tax situation is one that has been grossly neglected by the industry generally, and here is need for more deep plowing. There has long existed a lack of agreement among electric railways as to what constitutes a fair tax, and as a result today this industry is taxed more unfairly perhaps than any other in the United States. In round numbers 10 cents out of every dollar of revenue goes for taxes.

The cure for this situation is intensive educational work by local transportation managements. It is not enough for them merely to say that taxes are too high or unfair and seek legislative relief. They must dig down deep into the facts and prove the unfairness. The story must be carried back to the individual who, in the end, is the controlling factor with state legislatures and the power that must eventually give the industry relief.

The gross-net tax seems to be a fair tax. If the industry can agree on this as a fair tax, then it is the duty of every electric railway man to get behind it and urge its general adoption by all legislatures.

I have touched only the high points of problems confronting the industry. There are many more which I have not touched. Just as Lincoln said of farming, "Every blade of grass is a study," so I say that every blade of grass in the transportation field—the rider, the employee, the cars, the taxes, the parking problem—are each a study. They offer an exceptional opportunity for the keen-minded, ambitious man who wants to overcome obstacles and make a monument of his work. They offer a discouraging prospect to the drone.

Opportunities for Good Public Relations*

Five Ways by Which a Transportation Company Can Improve Its Status in This Respect—Personal Contact with the Purchaser Is a Valuable Asset

By C. R. Phenecie
Vice-President Wisconsin Public Service Corporation, Green Bay, Wis.

PUBLIC utilities have extended and enlarged the scope of human powers and apparatus to a point where humanity, as viewed from the standpoint of hundreds of years ago, has become composed of supermen and women. I do not mean wholly improvement in material welfare, but also in the spiritual welfare as well, because we have a happier, fresher, fuller and more altruistic life today, if we as individuals take advantage of the opportunities which we have before us. The amazing growth of the public utility industry is proof that the public who use gas, electric and street railway service, recognizes its value. Do they also recognize its cost, its problems, its responsibilities continually to progress and develop and serve?

The great problem of public relations is the problem of this understanding. This involves continued telling and retelling the public in attractive and interesting ways and by the more convincing and forceful way of providing good service, the needs and conditions which are constantly before the public utility industry. A street railway or bus line, because it transports persons, has a privilege of inestimable value in this great problem of public relations, not enjoyed by any other public utility to the same extent. When viewed from the standpoint of the satisfaction of the customer, that method of selling which brings about a personal contact of the customer and the sales representative, stands out pre-eminent. Advertising, direct by mail solicitation or any other method of transacting business than that of personally conducting the transactions, may be successful but never to the same extent as the earnest, honest, straightforward, courteous, personal, face-to-face methods. This then, gentlemen, is the privilege of your business.

Thomas A. Edison once said that nobody was doing a really good job until everybody recognized it as a good job. This certainly is true of the public utility. To understand the public involves on our part a better understanding of how the public thinks and why it thinks as it does. We must understand the motives and desires and purposes of our people, and when we do we understand those things which sway peoples opinions. We have but partially solved the problem of public relations.

The problem still remains for each of us to work out how this much-sought-after good public relations can be obtained. In my judgment, the first and most necessary step to obtain good public relations, is good public service. Of course we all realize the practical limitations imposed by the earning capacity of a property or the riding potentialities of its people, and we cannot offer a service not justified by the conditions. Offering advanced and progressive service will tend to promote the business and will do more than anything else to keep before you a constant, encouraging, kindly attitude on the part of your customer. Clean equipment, courteous conduct and reasonable attention to the incidental things which the rider likes are also necessary. All of these things go to make up good service.

The second thing that I feel is necessary for good public relations, is public understanding. To obtain public understanding we have to tell our story to the public, and we have to tell it many times and in many different ways. If your business is a clean, legitimate business, then as a public utility operator without competition, you have no need of any secrets from your customers. Make this fact clear and be prepared to give any facts to your public that it may desire. Advertising, as you know, can be very ingenious and subtle, and in my humble opinion, such advertising is oftentimes tremendously more effective than the bald solicitation of business. Make up each year an advertising budget as a part of your regular legitimate operating expenses. You will find it a good investment.

The third step towards obtaining good public relations in a practical way, is I believe, to have every utility executive, and to encourage every employee, to take an active part in all community affairs, simply as good citizens. The company may support a reasonable amount of the expenses which might be incurred by employees or executives in this work.

The fourth point towards good public relations, is to be sure that your own organization, your own employees give out such utterances of loyalty and understanding of the company as will reflect to the company's credit. Gentlemen, nothing can do your company more harm in the public eye than to have your own employees go about the streets knocking your policies and misstating your problems. Therefore, you must sell your organization to its company and the personnel of your company if educated to your problems and equipped to talk them in a proper way, can be through these added points of contact with the public of tremendous value to you. A man on a car or in a bus can make or break you.

The fifth point that occurs to me as of vital importance for good relations, particularly to a transportation agency, is the handling of your claims. This is one of your great opportunities to bring about good public relations. One might think that the trying circumstances under which claims are often handled and the necessity for an unsympathetic reception of some recital, would make it far from pro-

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pitious for good public relations. On the contrary with proper and honest attention towards claims, the best of public relations may be obtained. When a claim is presented to you by letter or in person, try to get the other fellow's point of view first before you impress him with your point of view. Remember that 90 per cent of the people are essentially honest and if a claim is presented to you, no matter how little at fault you may be, at least understand the loss or damage or suffering that the claimant may have experienced, even if entirely through his own negligence. Some of the rules that I believe should be followed in handling claims in a practical way are these:

Never decline a claim as soon as it is made. Take it under advisement and inform the claimant that every fact and circumstance cited will be investigated. Listen courteously and patiently to every claim. Keep constantly before your claimant your continuous efforts for safety, make him understand that every man and woman in your employ hears in some way or other about safety constantly. In accidents involving collisions or injuries around cars or buses, make the claimant understand in a tactful way, that his claim is a direct thrust at the operator of that vehicle, and will mean a direct personal loss to that operator if justified. And last, settle all claims in a broad, sympathetic and kind way. If at all possible make your position clear and justify it always to your claimant. You will find that by taking this extra pains and trouble in settling your claims that you will sow your community with understanding people, and you will find your towns full of open minded and fair people who may be called to sit in judgment as jurors.

Circulating the Load Through the Rear Exit*

By P. W. Gerhardt
Assistant Superintendent of Transportation
The Milwaukee Electric Railway & Light Company

EFFORTS to extend one-man operation to larger units and to lines of heavier traffic met at first with considerable opposition on the part of the public. In general their arguments could be summed up as follows: One-man cars are not as safe as two-man cars; one-man cars are slower in operation and slow down traffic; one-man cars are more congested at the entrance and exit doors.

The first argument, that of safety, was met by the superior safety devices with which the one-man cars are now equipped.

The second and third objections could not be successfully met, however, as we had to admit that there was a small slowing down in schedule speed and there was undoubtedly congestion on the cars. For even though we might persuade our passengers to "move to the rear" there would yet be the problem of aisle friction or the annoyance of one stream of passengers moving toward the rear and another moving toward the front. Moreover, the short-ride passenger would not move away from the doors as he expected to get off within a few blocks and did not care to be caught in a jam. Then there was also the problem of "street friction," due to the would-be passengers massed about the exit and entrance doors. All of this combined to slow down passenger movement and consequently the schedule speed.

Then came the treadle door to solve our problem and make the one-man car really operative on any route. The one-man operator on a car performs the duties of both motorman and conductor, but not simultaneously. While the car is standing he acts as a conductor collecting fares, making change, issuing transfers and assisting passengers on and off the car. This done he ceases to be a conductor and takes up the duties of a motorman, starting, operating and stopping his car, ever with his attention focused on the track ahead to avoid accidents. Thus he is always busy and does not have the alternate periods of rest that a motorman or conductor on a two-man car has. It is essential, therefore, that everything possible be done to assist him in his work and keep him free from worry or annoyance.

With a car equipped with the modern safety devices, air operated front doors and automatic treadle door at the rear, we believe that we have gone a long way in assisting the operator to better perform his work and to insure safety of passengers.

On first though it might seem that the best results from the treadle door one-man car would be had by requiring all passengers to leave through the rear exit. In Milwaukee, however, we provide a front exit also and permit the passenger to choose which exit he shall use but we recommend the rear door. The front exit, being in view of the operator, is not treadle equipped. As all of our passenger stops are near-side we find that some passengers prefer to use the front exit except when the car is well loaded, in which case both exits are used. At transfer points there is, of course, an advantage to the transfer passengers in using the front exit and in general we believe that our patrons prefer to exercise a choice of exits rather than to be required to use one end or the other.

Some study has been made to determine the proportion of passengers who leave by either door, also of the time required per passenger, but as yet we have not sufficient data from which to draw final conclusions. We did, however, make a very exhaustive study of boarding passengers on our Walnut Street Line from which we found that of all stops made to pick up passengers the following was the distribution:

Number of Passengers	Per Cent of Stops
1	36
2	22
3	13
4	8
5	5
6	4
7	3
8	2
9	1
10 or more	1

From this it will be noted that more than 84 per cent of all stops were for groups of five or less. It is probably safe to assume that passengers will leave the car in about the same grouping in which they board.

The advantages of the treadle door and other improved operating methods in Milwaukee can best be shown by a brief review of the history of one-man operation there. On July 19, 1921, one-man cars were started on the 35th Street Line and on Aug. 1, 1921, on the 27th Street Line without very serious opposition. On Aug. 1, 1923, one-man operation was started on the Center Street Line, after considerable opposition had been voiced against it. These three lines provide cross-town service and do not enter the downtown business section. The cars used on these lines were equipped with the standard safety devices but did not have treadle doors, all passengers boarding and alighting at the front end.

One-man cars were ordered on the Clybourn Street Line Jan. 1, 1925, after considerable protest had been made at the public hearing held by the Wisconsin Railroad Commission. A large share of this protest came from patrons of the 27th, 35th, and Center Street lines who testified that one-man service on those lines was less satisfactory than the former two-man service. The Clybourn Street line runs through the down town business section and the commission in its order for one-man cars specified that they must be equipped with treadle doors which were new and untried devices at that time.

The next line on which the company sought to operate one-man cars was Walnut Street. This is a fairly heavy line running through the downtown business section and into a high-class residential section. The hearing of this proposal brought out some very bitter protests from the city officials as well as residents along the route. The commission considered the matter for several months, then ordered one-man operation to start March 1, 1926. A number of protest meetings were held and the common council ordered the city attorney to request a rehearing of the matter before the commission. The rehearing was granted and the action of the commission in granting the company permission to operate one-man cars on Walnut was severely criticised. Some of the objectors went so far as to threaten rioting if the company should attempt to operate one-man cars.

It was significant that the only witnesses whose testimony was favorable to the company were patrons of the Clybourn Street line. These testified that the service on their line was satisfactory. The commission then amended its order to grant a trial operation of one-man cars for six months, beginning May 23, 1926.

*Abstract of a paper before the Electric Railway Section, Wisconsin Utilities Association, La Crosse, Wis., Aug. 12-13, 1926.

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So successful has been this operation and so well do the people think of it that all opposition has been withdrawn. When the commission recently held a public hearing to consider a proposal to operate one-man cars on the Wells-Downer line, the heaviest line in the city, not a single person appeared in protest.

Our Walnut Street one-man line operates over the same tracks as the 12th Street—a two-man line—for 2½ miles and there is no difficulty in maintaining the same schedule speed. As a matter of fact there is a much closer adherence to schedule time under one-man operation than there was under two-man operation.

We firmly believe that through the circulating load we have so thoroughly sold the one-man car to our patrons that there will be no serious objection to further extension of their use.

Accident Prevention from the Executive's Viewpoint*

Humanitarian Attitude Is Needed to Obtain Highest Degree of Success—Investigation of Accidents to Determine Causes and Prevent Their Repetition Has Reduced Them Materially

BY B. W. ARNOLD
Assistant General Manager
Chicago, North Shore & Milwaukee Railroad

NO EXECUTIVE can question the fact that safe operation contributes as much to a good or bad showing on the balance sheet as could any branch of his business. The title of this paper is so broad, and gives such an unlimited amount of food for thought, that no executive can help but appreciate the necessity for its application to his own property.

I am not certain, however, that all men holding executive positions with smaller utilities in the State of Wisconsin, have as clear and definite a viewpoint as I do upon this subject. The larger utilities, which employ thousands of men, are able to make exhaustive studies of the real causes and costs of accidents and the necessity for safety. They can set up safety departments in their organizations that will be just as important as the transportation, accounting or traffic departments.

ACCIDENTS ARE EXPENSIVE

When the manager of some small utility reads accident figures and costs compiled by the larger companies, he is no doubt somewhat impressed, but nevertheless does not realize that the same figures, in ratio to size of property, apply to his own. I have had brought to my mind forcibly a great many times during the past twenty years, the real meaning of safety and the tremendous cost of failure to apply it.

All too often companies embark on safety campaigns which, like a display of fireworks are beautiful to look at, but all too soon fade away. Unless we are able to convince the public who are our patrons, that we are sincere in our endeavors for safety and accident prevention, and unless we continue these efforts 365 days in every year, the one day that we vacation may prove our undoing.

In a great many companies the formerly much talked of claim agent has combined his duties as claim agent with those of safety director and in his new line of work has been able to save much more money for his company and build for it better public relations than he ever did when his one thought was to secure the names of the injured, along with the proper witnesses, on the dotted line on the bottom of the release blank.

In the United States we have an organization unlike any other organization in the world. If managers of small properties would fully realize and appreciate the value of the National Safety Council (the membership fee in which is nominal) they would undoubtedly reap tremendous rewards. Just at present the National Safety Council is headed by a member of the North Shore family, Charles B. Scott, head of the bureau of safety, which serves in an advisory capacity over all the utilities known as the Insull properties. These utility companies are distributed over some twenty different states and give service of one kind or another to over two thousand communities. About fifty thousand employees are thus within the scope of the safety activities of this bureau. While I hesitate to bring to this meeting experiences of my own property I cannot refrain from giving you the results accomplished by this bureau and then allow you to decide in your own minds whether safety and accident prevention should have an active place in your organization.

During the first five months that the bureau of safety started the accident prevention work on the Chicago, North Shore & Milwaukee Railroad there were 82 accidents to the public. During the same period in the second year of accident prevention work there were 36 accidents to the public, or a reduction of 56 per cent. During the first five months there were 49 employee accidents. After a year of accident prevention work, for the corresponding period this figure was lowered to 36 employee accidents, or a reduction of 27 per cent. Accidents of all classes during these same periods were reduced from 190 to 99, or 48 per cent.

SAFETY WORK PAYS LARGE DIVIDENDS

Can there be any doubt that organized safety work will pay large dividends on any property? While electric railway people are mostly concerned about accidents to the public, emphasis must also be placed upon the responsibility of a company with respect to the safety of its employees. It has been proved conclusively that a company which realizes this responsibility and fulfills its entire obligation has a much better accident report and much better public relations than one which is concerned only in the prevention of public accidents because they seem to be more expensive.

Notwithstanding many companies have been engaged in active safety work in a more or less definite and systematic manner for eight or ten years, there are still many executives who look at the question as purely a financial one—and all too few look at it from the humanitarian viewpoint. The highest degree of success will be attained by those who are able to view both sides. The average trainman is a man of intelligence; otherwise he could not operate a train successfully under present-day difficulties. He should be treated as such and as far as possible taken into confidence of the company and made familiar with its many problems, financial and physical, as well as its policy with respect to the public.

All this is safety work. No one man can do effective safety work alone. The first necessity is to have the executive fully sold so that he in turn can secure the confidence and the sincere support of his superintendents, foremen and employees.

PREVENTION BETTER THAN CURE

Who can doubt the wonderful results accomplished in the short time that utility companies have been permitted to have representatives make safety talks in the public schools. Between 1905 and 1910 far-sighted executives began to realize that accidents were wasteful, that they interrupted production and destroyed confidence of the public. They began to study accidents asking, not "Whose fault was it?", but "How could it have been prevented?"

On the North Shore we have an accident investigation board which is required to investigate accidents in a great deal the same manner as in a court. Its members take testimony and make a report to the president, not on the proposition of who was at fault, but on how it could have been prevented and what safeguards are necessary to prevent a repetition.

To give a correct viewpoint of accident prevention to the executive we have only to show the economic aspect of the safety movement.

Ask any mother and father to put a dollars-and-cents value on their children. You couldn't buy them if you could offer billions. But human beings have an economic value—a worth to society as a whole which has been set by states at from $5,000 to $25,000. That is the compensatory value of a human life as reckoned by economists and lawmakers.

If we compute the average value of a human life from these figures we would find that $10,000 is generally reckoned to be compensation for death. At this figure, the 85,000 lives destroyed last year by accident in this country are worth $850,000,000. In the last five years there have been over 400,000 persons killed in accidents. At least 75 per cent of these accidents were avoidable. That is, with the exercise of a reasonable amount of caution on the part of the person killed or some other person or persons, the accident would not have happened.

We do not reckon the price of death

*Presented before the Electric Railway Section Wisconsin Utilities Association, La Crosse, Wis., Aug. 12-13, 1926.

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rightly in all cases. What of the boy and the girl who have their lives ahead? An avoidable accident suddenly scoops their heritage from them. It is generally accepted to be true—or is it?—that life is the most valuable possession we have. But that is an intrinsic value, like a family heirloom, of little value to others.

All of Us Pay for Accidents

But we all pay for accidents. The annual loss per person in the United States is estimated at $50. Every year we pay as much for accidents as the much-discussed French debt. Insurance rates depend on accident costs. Automobile drivers in New York City, for instance, pay an average liability insurance premium of $119, while drivers in Portland or Denver pay only $27. In Chicago the rate is $45, in Boston $56.

I believe to the railroad man the automobile has presented one of the most serious hazards. Have you ever read the sayings of Abe Martin? They are sparkling with wit and wisdom. The other day Abe, having in mind the dangers of our modern traffic, said, "It's getting to be so that the only safe way to cross the street is with a cow." The average automobile driver is very careful about taking any chances with "Bossy." "Many cows have been sacrificed to teach motorists to drive carefully when they meet up with her, but the sacrificial lesson has been taught." Now you hardly ever hear of a driver having a collision with our friend the cow.

A cow is less conspicuous, with her quiet manner and poise, than the nervous wig-wag shimmying and blinking of signal lights and noisy bells to warn a driver that a high-speed train is approaching. She is less colorful than the striped gate extending across the highway. She is less forbidding than a crossing watchman with a warning sign in his hands.

We wonder why this greater respect, upon the part of drivers, for the cow, when so many lives are being snuffed out each year because of disregard for the wig-wag, gate or watchman.

Grade crossing accidents will continue to occur, mark you, we say occur and not happen, until the drivers of automobiles learn to respect the warnings provided by railway companies to the same degree that they now respect the cow.

In conclusion may I say that out of gatherings of this kind with expressions from many, a great good can be accomplished. The executive whose viewpoint does not embrace safe operation of his property is destined to failure. My thought is first, to make safety popular; second, to investigate carefully, thoroughly and intelligently every accident and set up proper safeguards to prevent its repetition: third, to be sincere in the work for safety. Only in this way can conditions be improved.

Pneumatic Operation Facilitates Traffic Movement*

By Oscar A. Broten
Western Manager National Pneumatic Company, Chicago

CONTROLLING and expediting passenger traffic has been given very careful and continued study since the first days of transportation. This has a direct bearing upon the increase or decrease of net revenues; therefore it is absolutely necessary to treat this subject with utmost care. In the method of controlling the passenger movement in loading or unloading, method of fare collection, distribution of load, etc., it is the final result of maximum speed and safety for which we are all striving.

One-man operation is rapidly increasing in all parts of the country with various types of cars and with it comes the decided reduction in operating expense. Successful and satisfactory operation of cars in one-man service is dependent upon the installation of proper safety devices and proper passenger control. The one-man safety car, originating with the Birney type car, was indeed a Godsend to the industry as it started the trend of operation in the right direction. From an operating point of view the main objection was the congestion of loading and unloading passengers through one small front door. On several properties this was partially overcome by fitting the car with separate entrance and exit doors at the front platform; however this did not solve the problem of evenly distributing the passenger load or eliminating the cross friction in the aisle.

Later one or two properties started the circulating load method of service, with front entrance and rear exit of passengers, the rear door being actually opened and closed by the motorman from his position on the front platform. This, although a step in the right direction, did not meet the requirements of the industry, as with this method the rear door is in the open position much more than necessary thereby inviting the stranger or car ride cheat to enter through the open rear door instead of the front entrance door. Furthermore during winter months an excessive amount of cold aid is admitted into the car. The greatest objection however, is the possibility of accidents caused by the motorman closing the door on an outgoing passenger.

Treadle Door Overcomes Objection to One Man

The problem of overcoming these objections and difficulties was solved with the development and distribution of the automatic treadle exit door, which insures an entirely safe and fast car operation with the circulating load method of passenger for all types of cars in one-man service.

Although the treadle door has been before the industry only a short time approximately 2,500 devices are either in operation or on order at this date, which is proof that this device, together with the circulating load operation, has been accepted by the industry at large, and in all kinds of climatic conditions.

It is important at this point to mention that the folding step has decided advantages over a stationary step in that the folding step insures the best operating conditions with treadle door operation, and also eliminates foreign matter, such as snow, ice and dirt, on the step.

For the past 25 years then has been a continuous effort to improve the methods of handling passenger traffic and it is our belief that the automatic treadle exit door together with the circulating load service completes for the industry the cycle of safety improvements which started with the one-man safety car.

A brief explanation of the operation of the treadle door is in order.

After the brakes have been applied and the car stopped the motorman moves the handle of the rear door control valve to a "Released Position." This is impossible until the air brakes have been applied. The passenger steps on the treadle plate which is set flush in the floor directly in front of the door, the door opens automatically, the passenger or passengers step out and when entirely off the step the door closes automatically notifying the motorman through a door signal light. The motorman releases the brakes, which automatically returns the handle of the rear door control valve to a door-locked position. At each stop the same operation would be duplicated. The treadle door is arranged to operate in conjunction with the approved one-man safety car devices.

Treadle Door Applicable in Bus Service

The circulating load idea with rear exit treadle door has been adopted by several bus operators, particularly those controlled by street railway properties. This method of operation is equally as necessary for city bus service as in street car operation of the same type due to the fact that the general body construction of buses includes only one small door at the front through which the passengers must both enter and leave. In addition to this the aisle space on buses in general is considerably narrower than on street cars. Therefore aisle friction is proportionately increased and can be practically eliminated, through use of the circulating load system.

It has been found desirable to use this method of operation on both single and double deck buses operating in one-man service and in your further consideration of bus operation this question should be given careful attention.

Various manufacturers have developed new apparatus or made refinements in present design equipment to secure quicker acceleration, faster car speeds, better braking, etc., and therefore it is up to the operating companies to keep the cars moving on faster schedules by increasing the speed and efficiency of the passenger movement and the elimination of excessive car standing time.

*Abstract of a paper before the Electric Railway Section, Wisconsin Utilities Association, La Crosse, Wis., Aug. 12-13, 1926.

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Co-operation in Accident Prevention

Pacific Claim Agents Association Convention Considers Methods of Reducing the Number of Automobile Accidents

MEETING at the Clift Hotel, San Francisco, on July 22, 23 and 24, the Pacific Claim Agents Association listened to an interesting series of papers dealing with the subject of accident prevention.

Speaking on the subject of compulsory insurance for automobiles, Arthur L. Levinsky, claims attorney Stockton Electric Railway, said that at the present time in California there are some 1,494,891 licensed motor vehicles and an additional 54,202 which are exempt from payment of fees. Of the total of 1,549,093 motor vehicles somewhere between 15 and 25 per cent carry insurance. Assuming that the latter figure is a proper basis for computation there are approximately 386,523 insured and 1,159,590 uninsured. Opinion is divided, he said, as to whether or not the passage of a law making it compulsory to carry accident insurance would cause motorists to be more or less careless.

Organization of a commercial drivers' club as a method of enlisting the cooperation of motorists in accident prevention was explained by B. F. Boynton, claim agent Portland Electric Power Company. The club in Portland now has 600 members, and in the six months' period since its organization commercial drivers' accidents have been reduced 50 per cent, he said.

Thomas G. Aston, claim agent Spokane United Railways, spoke on how to enlist the aid of employees in claim department work. He said that the idea must be removed from their minds that the claim department man's sole duty is to criticize their mistakes. An attitude of general interest in them and in their work should be fostered, he said. The claim agent should know where every employee of the company lives. The Spokane United Railways has a large map with a pin located to show the home of every employee. When an accident occurs the map is consulted and any employee living in the vicinity is questioned.

When the railway company has a strong case it should not compromise with a claimant in the opinion of W. H. Moore, claim agent San Diego Electric Railway. In the case of claims the merits of which are debatable on the other hand litigations can sometimes be avoided by mutual concessions.

At the conclusion of the meeting officers were elected for the year 1926-1927, as follows:

A. L. Levinsky, Stockton Electric Railway, Stockton, Cal., president.

F. J. Furman, Butte Electric Railway, Butte, Mont., first vice-president.

A. W. Worthen, Tacoma Railway & Power Company, Tacoma, Wash., second vice-president.

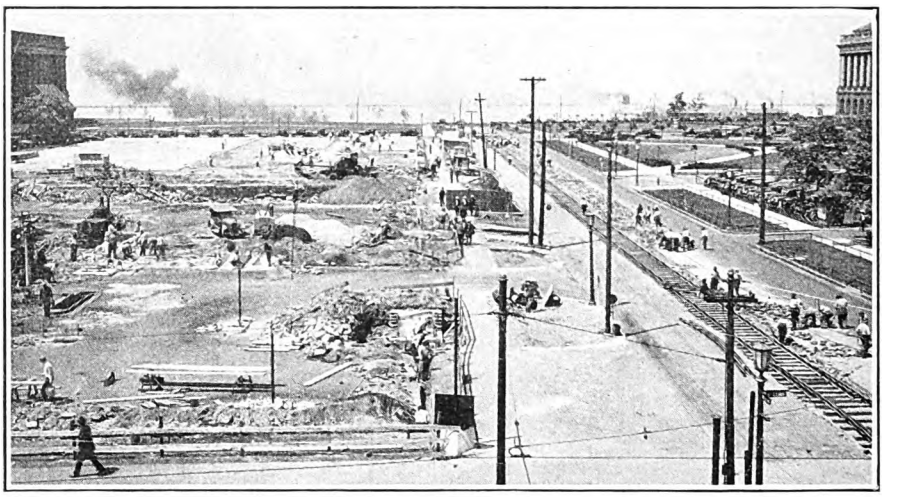
B. W. Fernald, Key System Transit Company, Oakland, Cal., third vice-president.

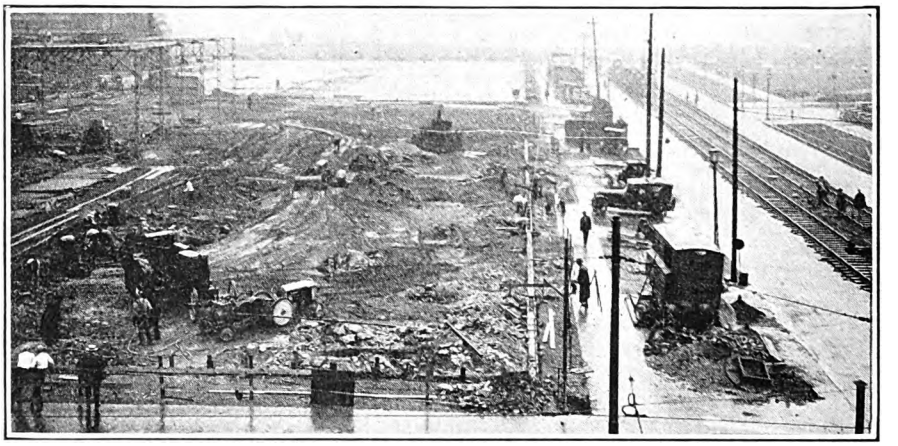
B. F. Boynton, Portland Electric Power Company, Portland, Ore., secretary-treasurer.

Executive Committee: J. H. Handlon, San Francisco, Cal., chairman; Thomas G. Aston, Spokane, Wash.; W. H. Moore, San Diego, Cal.; Charles A. Blackburn, Butte, Mont.; F. D. Oakley, Tacoma, Wash.; H. K. Relf, Portland, Ore.; A. M. Lee, Seattle, Wash.; C. M. Roberts, Los Angeles, Cal.; S. A. Bishop, Los Angeles, Cal.; C. R. Peck, Portland, Ore.; V. F. Bennett, San Diego, Cal.

Making Ready for Cleveland Exhibit of the A.E.R.A

The upper picture was taken Aug. 9; that below was taken Aug. 14.





CONVENTION time is not far away. It may seem so to many, but not to the Cleveland convention committee. The above views show that much more than a start has been made to house the greatest of railway conventions and exhibits—that of the American Electric Railway Association, to be held Oct. 4-8. The pictures were taken looking north from St. Clair Avenue near its intersection with East Third Street through what will be approximately the center of this exposition.

At the right of the picture are the temporary tracks installed to service the convention. They connect, on the north, with the Pennsylvania and New York Central lines, and, on the south (in the foreground), with the Cleveland Railway tracks on St. Clair Avenue. Other connections will be made for the car exhibit. At the extreme right may be seen a corner of the City Hall, which faces the Public Auditorium.

The street through the center of the pictures (East Third Street) will be closed to traffic during the week of the convention from St. Clair on the south to Lakeside on the north.

On the left half of the upper picture the ground is cleared for laying the concrete floor of the new exhibition hall. In the background may be seen a large area with the concrete floor completed, and in the right-hand corner of the new building is the portion of floor that was laid in the first four hours of Monday, Aug. 9.

In the middle of the picture are the remains of an old brick-and-wood stable which belonged to the city of Cleveland. The work was threatened with delay because of the slow progress of its dismantling. Saturday afternoon, Aug. 7, Charlie Clark soaked the interior with kerosene and burned out the woodwork; then threw a ⅞-in. steel cable around the base of the building and through a fall block connected it with a work train on the temporary track. In four hours the fire was out and the remains of the building are seen in the pit. Monday morning, trucks were busy throwing in the additional fill.

The lower picture shows the extent of progress made in five days. Grading has gone forward rapidly. The first track on East Third Street has been completed and the second one laid. The concrete floor is extended.

Other pictures will be published from week to week in order that the readers of this paper may check up the progress of the work and be assured that everything will be complete and in readiness for the convention.

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The News of the Industry

Commission Powerless

New York Body So Rules With Respect to Fares in Albany and Rensselaer —Future Course Not Stated

A decision of far reaching importance was rendered by the Public Service Commission of New York on Aug. 18. In the matter of the application of the United Traction Company, Albany, for an increase in its fares in the Capitol district from 7 to 10 cents, the commission reaffirmed its former decision that the Legislature has taken away its power to regulate fares as against local franchise fare restrictions in the cities of Troy and Rensselaer.

The company had sought to increase its fares on its entire system. The cities contended that the commission was without jurisdiction to hear the petition for increased fares on the ground that no power had been conferred on the commission to abrogate or nullify the fares and conditions fixed in the consents to the United Traction Company. The commission rendered a decision on June 23 and it was upon the petition for a rehearing that the decision just made was rendered. The determination reaffirmed on Aug. 18 held:

> That the Legislature has revoked the power to regulate rates fixed in franchise agreements by the repeal of the statute conferring it, and that the Public Service Commission has no jurisdiction now to exercise such delegated authority, and that therefore evidence should not be received in this proceeding as to valuation, operating expenses and revenues of the lines of the United Traction Company within the city of Troy and the city of Rensselaer affected by such franchise agreements, except insofar as such evidence may be necessary to permit an allocation of the revenues and expenses of the system to those lines unaffected by franchises and over which the commission has jurisdiction to fix rates, and that the commission as a fact finding body must regard such agreements as valid and subsisting until they have been annulled or limited by a court of competent jurisdiction.

This leaves the United Traction Company in the position of being able to petition for an increased fare on such of its lines as are located outside the cities of Troy and Rensselaer only. Whether or not the company will appeal to the courts from the decision of the commission could not be learned on Aug. 18.

New Grant at Louisville Advanced

It now appears likely that the Louisville Railway, Louisville, Ky., will secure its long-desired franchise modifications. On Aug. 10 the lower board of the City Council, by a unanimous vote, approved the ordinance recently placed before the City Council by the company, but with certain amendments. The chief of these was that on combination rides, on street cars and buses of the Kentucky Carriers, Inc., a subsidiary company, the maximum fare would be 10 cents, instead of 12½ cents. On street car rides the fare will be 7 cents straight, with 3 cents extra where a transfer is issued to a bus. On buses the fare will be 10 cents, whereas it is now 15 cents for single rides, or 12½ cents where tickets are bought. The bill will now go before the Board of Aldermen.

On Monday, Aug. 16, a conference was scheduled to consider amendments to the bill, to be participated in by the company, the railway committees of the upper and lower boards of the City Council, the Mayor, and City Attorney, as well as Board of Public Works. After agreements are reached at this meeting, the bill will go to the Aldermen, and if passed there, will be ready for the Mayor's signature, which is final.

Following the unanimous vote of the lower board of the Council it is indicated that there is not much resistance to the measure. Under the terms of the agreement the straight 7-cent fare would remain in effect for a period of two years, after which there would be a readjustment, instead of the present barometer arrangement under which the fare is arbitrarily put up or down every six months.

New Ordinance for Interurban Introduced at Cincinnati

An ordinance has been submitted to the transportation committee of the City Council at Cincinnati, Ohio, by the City Solicitor which grants the Cincinnati, Hamilton & Dayton Railway the right to continue the operation of electric cars from Dayton to Cincinnati and over the streets of Cincinnati for twenty-five years. The ordinance was made necessary because College Hill, through which the railway runs, was not a part of Cincinnati when the original franchise was awarded. The ordinance undoubtedly will be passed at the next meeting of Council.

Rapid Transit Issues in Los Angeles

Review of the Trials and Tribulations of the Local Railways in their Efforts to Give the City of Los Angeles a System It Should Have but Does Not Deserve

THE rapid transit problem in Los Angeles remains unsettled as to the ultimate plan the City Council will adopt. The Plaza Union Passenger Terminal controversy, bitterly contested by the railroads for years, has injected several new factors into the issue. The Plaza Terminal plan for a union station in the northern part of the city for all steam roads entering the city was investigated by the Interstate Commerce Commission, after a ten-year dispute between municipal bodies on the one side and the Southern Pacific, Union Pacific and Santa Fè Railroads on the other. In 1916 a so-called "grade separation and union passenger station" case came up before the State Railroad Commission and the commission ordered the railroads to submit plans for the construction of a passenger union station at the Plaza site.

The railroads secured a writ of review from the State Supreme Court, which on Dec. 19, 1922, annulled the commission's order, known as decision 8,901, on the ground that the court could "see no indispensable relation between the elimination of grade crossings and the establishment of union depot facilities," and that the California Railroad Commission had no jurisdiction to compel the construction of a union station by any railroads anywhere in California. That power has been transferred to the Interstate Commerce Commission by the transportation act of 1920. The Railroad Commission appealed to the United States Supreme Court, but again lost its case, for the decision of the California Supreme Court annulling the Railroad Commission's order was upheld on April 7, 1924.

The proceedings started in 1916 were reopened on Oct. 3, 1925, by the State Railroad Commission, on motion of the Central Development Association, and were set down for further hearing. These proceedings are now pending before the Railroad Commission. At the hearing held in Los Angeles during the last two weeks of April, 1926, lengthy and massive evidence was introduced by the city before the commission, while the railroads likewise presented many data and much evidence for their side of the question. The commission adjourned the hearing to review the evidence, fixing Aug. 2 as date of continuation.

When the city of Los Angeles placed its case before the Interstate Commerce Commission that body decided that "careful study of the Interstate Commerce Commission act convinces us that Congress has not conferred upon us the authority to require carriers to construct union passenger stations under conditions such as are here present."

No order, the carriers point out, was ever made by the Interstate Commerce Commission ordering a union passenger station in Los Angeles, as proponents of the issue claimed; or as the matter rests, there is no order outstanding of any commission requiring that a union

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station be built. The Los Angeles Chamber of Commerce and other prominent civic bodies and associations passed resolutions and filed them with the Railroad Commission, in opposition to the Plaza Terminal site. They urged acceptance of the railroads plan, for a separate system of station facilities, elevated lines and grade crossing separations. They contended that the Plaza Terminal plan would take years to complete, whereas the railroad plan could be completed in eighteen months. Also, it was shown that the union station was unnecessary, and that any plan which leaves the electric lines out of the reckoning would be an incomplete solution to the city traffic problems, and create intolerable congestion. It was further contended that the Plaza Terminal plan would eliminate only the steam track grade crossings, and leave the Pacific Electric city grade crossings open.

The railroad plan involves the construction of an extension of the Pacific Electric Railway's elevated line from its present Main Street station to the Los Angeles River and across the river, where it will again come to grade, also connecting with an elevated extension to its private right-of-way at Fourteenth Street for southbound suburban traffic. This plan would take 1,200 trains of the electric interurban line off the downtown streets of Los Angeles daily, eliminate 18,000 grade crossing movements daily and afford relief to 50,000 passengers daily who use the 1,200 interurban trains of the electric lines to certain suburban districts.

Opponents to the railroad plans, backed by a leading daily paper, endeavored to impress upon the people the horror of elevated lines. To this end it featured during the election campaign photos of wrecks on elevated systems in the East, likewise giving the impression that the proposed elevated extensions in Los Angeles were to enter the main business streets. The railroads endeavored to dispel this impression by public announcements and advertisements that the elevated extensions were to be projected outside of the business district and to be constructed on private right-of-way.

Issue Submitted to the Public

Despite the fact that the Board of Public Utilities approved of the railroad plan and asked the city to dismiss its case before the commission, the City Council remained neutral and passed a resolution to place the issue before the people to obtain a straw vote. The election was held on April 30 last. Proposition No. 8 on the ballot for a union station in Los Angeles, but not designating any location, received a majority of 42,779 votes. Proposition No. 9 for a union station at the Plaza, received a majority of 4,082 votes.

The election outcome is not final, binding neither the city nor the railroads as to the building or location of a union terminal. Prior to the election the railroads applied to the City Council for franchise to cross certain streets to construct 2.9 miles of elevated railroad, but not longitudinally over the streets of Los Angeles.

A new issue has developed by certain factions opposing the elevated issue and has come to the front to fight the Kelker rapid transit plan, which calls for elevated lines and was adopted by the City Council. It will be recalled that the transportation committee of the Council, appointed in June, 1925, after the new city charter became effective, began a study of the proposed Kelker report and plan to work out means by which it could be financed and carried out. This plan also called for an extensive subway system in the downtown business district.

Chance for Local Line Extensions Small

Several weeks ago the Los Angeles Board of Public Utilities and Transportation issued a statement to the effect that there was no hope of any further car line extensions by the Los Angeles Railway until definite action has been taken on a comprehensive rapid transit plan, as involved in the Kelker-DeLeuw report, inclusive of the possibility of the unification of the Los Angeles and the Pacific Electric Railway systems.

The statement further outlined that it is impossible for the Los Angeles Railway system to finance any large capital expenditure until some definite plans have been acted upon for rapid transit or for unification of the two local railway systems. There is now pending before the State Railroad Commission for decision the application of the Los Angeles Railway Corporation for the reorganization of the company as a necessary precedent to refinancing. The franchise condition is such that the railway intends to apply for a resettlement of the franchise as soon as the people have adopted a procedure ordinance. Neither the city of Los Angeles nor the State Railroad Commission has any authority to order a street railway to extend any of its lines, and the Los Angeles Railway is at present unable, at anything like favorable terms, to raise capital to carry out new construction, betterments or extensions. This statement was addressed to certain communities that are agitating railway extensions in the city.

Decision Expected Soon in Suit of Illinois Line

The decision of United States Judge Walter C. Lindley of Danville, Ill., in the injunction suit of the East St. Louis Railway, East St. Louis, Ill., against the Mayor and City Council of East St. Louis, who contemplate tearing up the railway tracks on Third Street between Broadway and Missouri Avenue, is expected shortly. A temporary restraining order was issued by the court on May 29, last, and the question is whether the injunction shall be made permanent.

The railway contends that the tracks in question are necessary for the efficient operation of the balance of the company system, and further that the Illinois Commerce Commission and not the City Council has final jurisdiction over the tracks. The commission declined to take action on behalf of the company.

The franchise on the stretch of tracks expired on May 31 and the majority of the Councilmen have refused to renew it.

Advance in Utica Fares Allowed

The New York State Railways was authorized by the Public Service Commission on Aug. 19 to put into effect on its Utica Lines, including the city of Utica and adjoining villages, a 7½-cent ticket fare and a 10-cent cash fare. The present fare rate is 7 cents. The order is effective on Aug. 22.

The company is authorized to sell ten tickets or tokens for 75 cents, each token or ticket good for one ride with all transfer privileges. Where tickets or tokens are not purchased, the fare is to be 10 cents.

Evidence submitted in behalf of the company's petition estimated that 80 per cent of the passengers on the Utica lines will purchase tickets, while 20 per cent, or occasional riders, will pay the 10-cent cash fare. The commission finds that the present 7-cent fare is not compensatory and does not yield the company a fair return upon the value of the property used in giving transportation service on the Utica lines.

The order of the commission providing for the 7½-cent ticket rate and the 10-cent cash fare was unanimous. There were two opinions, one by Commissioners Pooley, Van Voorhis and Lunn, and one by Chairman Prendergast and Commissioner Van Namee.

Improvement Program Going Ahead at Richmond

Officials of the Virginia Electric & Power Company, Richmond, Va., report that the company has completed upward of two-thirds of its $1,500,000 improvement program and are ready to rush it to completion after Sept. 1, provided the blanket franchise and bus legislation, which now are before the Richmond City Council, can be finished.

The company set aside $500,000 for the acquisition of the bus lines of the Richmond Rapid Transit Corporation and early extensions in this service and $1,000,000 for the co-ordinated bus and street railway improvements. The bus service was bought outright, $220,000 more has been spent on new electric cars, $72,000 for new buses and $60,000 on a new garage and terminals for buses. Meanwhile, the company has kept in advance of street construction in laying new tracks.

It is stated that, under the new transportation system, every resident of Richmond will be closer than 1,320 ft. to a street car or bus line.

In reply to a question as to how long after passage of the blanket franchise and bus ordinance the entire unified system would be in operation, officials of the company stated that all of the new bus lines would be ready within approximately 120 days, and that the last of the railway extensions would be complete and in operation within eighteen months. The first of the electric extensions should be in operation within three weeks after the passage of the ordinance, it was stated.

Two hundred and thirty-seven street cars and 62 buses are in operation. Fifteen new street cars recently were added to the system on one line alone, and fifteen new buses have been ordered.

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Three-Year Labor Agreement Reached in New Orleans

Union orders directing a strike of the trainmen of the New Orleans Public Service Company, New Orleans, La., effective Aug. 13 were revoked at a meeting of the union executive committee the night previous. The solution was found in a proposition whereby the union men could get their dismissal and suspension cases before members of the board of directors without having to subject the board to the necessity of sitting regularly to go through formal trials.

Here is the paragraph upon which agreement was reached:

> If any employee shall have grievances or claim unjust treatment, same shall be taken up directly by the employee involved, or through representatives or committees composed of and selected by the employees for that purpose, with the division superintendents. The right of appeal to and review by the general superintendent of the department in such case shall exist from any ruling of the division superintendent and in turn to the general manager. If the decision of the general manager is unsatisfactory to the party accused, he, or the association, shall have the right of appeal to the executive committee of the board of directors of the company and upon notice of appeal the said executive committee shall sit within ten days and determine the case upon written statements. The decision of the said executive committee shall be final and conclusive.

All provisions of the contract except the dismissal feature had been agreed upon previous to the call for a strike.

Among the provisions of that agreement are:

> That the contract shall be for three years.
>
> That during that period there shall be no strike for any cause whatsoever.
>
> That the wages of the carmen shall remain the same—that is, 45 cents an hour for the first six months; 47 cents for the next six months and then 51 cents.
>
> That all employees in the departments concerned must become members of the union.
>
> That the company shall not be required to discharge an employee should he be expelled from the union for any reason except for non-payment of dues.

After the new contract had been signed Rudolph Hecht, chairman of the board of directors, issued this statement:

> The directors of the New Orleans Public Service Inc. are pleased that a strike has been averted and that the differences between the company and the employees have been satisfactorily adjusted. The company has consistently taken the position that matters of discipline could not in the very nature of things be the subject of arbitration. However, to avoid any misapprehension on the part of the employees and to assure them that the company and its officers and directors have every intention of giving them a square deal, it has been provided that the ultimate decision in matters of discipline will rest with the executive committee of the board of directors. To Mayor O'Keefe and the other members of the Commission Council we extend our thanks for their splendid services in bringing about the settlement.

Not by any means was agreement among the men general that a strike was advisable. As a matter of fact before the settlement was reached, St. Clair Adams, acting for some of the union men who dissented from the strike order, took additional steps intended to make the strike ineffective. First a restraining order was secured from the court prohibiting the strike call, and then a supplementary order was secured prohibiting the officers of the union from spending any union funds and prohibiting the banks in general from paying out any of the funds of Division 194, until after a hearing on the injunction petition. This hearing was set for Aug. 16, but its need was removed by the terms of the settlement reached.

Scant Progress at Chicago

The task of solving Chicago's traction problem to the taste of the many parties involved loomed even larger last week as a result of the failure of city officials, traction executives, bankers and representatives of the Surface Lines security holders' protective committees to agree upon any definite plan.

Traction officials who appeared before the City Council committee on local transportation on Aug. 17 expressed many ideas on the subject, few of which were in actual agreement.

James M. Sheean, representing Henry M. Blair, president of the Chicago Surface Lines, as counsel, reiterated the traction chief's earlier statement that the Surface Lines will not be ready to negotiate with the city in working out the details of a new ordinance until legislation is obtained from the state removing the present 20-year franchise limitation. He said he did not think it wise for the city to negotiate a contract and then try to get the Legislature to "sign on the dotted line." In the last analysis, he added, the solution of the problem lies mainly in making traction securities attractive to investors.

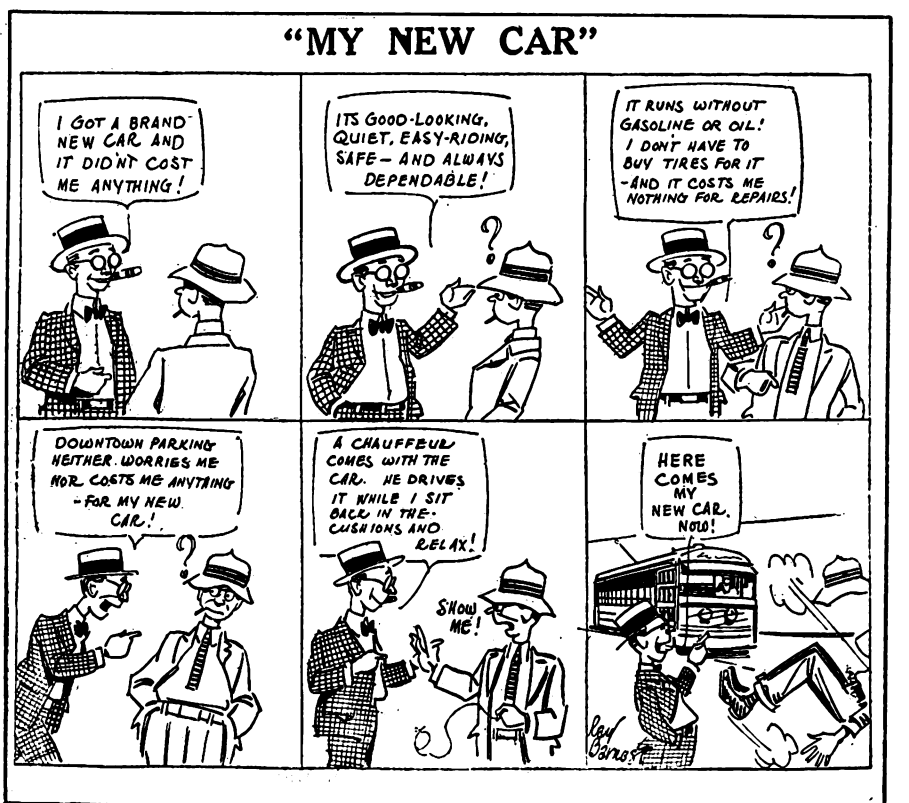
In rather marked contrast to Mr. Blair's reported opinions, however, were the remarks of Leonard A. Busby, president of the Chicago City Railway, and the only company man to sit in with the Aldermen at the first traction settlement conference to which all the traction heads had been invited early in July. Mr. Busby pointed out that enabling legislation and the details of an ordinance are so inseparably bound together that it is impossible to discuss one subject without discussing the other. He agreed to co-operate with the City Council in working out the terms of a new franchise at any time.

Save for Mr. Blair, all the other officials in attendance, including Samuel Insull, chairman of the Chicago Rapid Transit Company, likewise promised to join forces with the city in attacking the baffling traction problem. Mr. Insull was doubtful, however, about the wisdom of plunging the elevated lines into the present traction ordinance discussion when they do not need a franchise. He said that under the provisions of the tentative ordinance, the elevated lines would be unable to secure capital on which to function properly.

In replying to Mayor Dever's statement that the city could not build a subway until it knew who would operate it and on what terms, Mr. Insull said that the elevated lines would "enter into any kind of an agreement by which it could pay out on the rate of fare to be charged." He was willing to enter into any arrangement to operate jointly the subway and elevated properties. If the city could agree with the Surface Lines it would not be difficult to work out an agreement with the elevated.

Cartoonist Uses Grand Rapids Cars to Point Moral

One of the most recent instances of public response to the modernization movement in Grand Rapids, Mich., is furnished by the use of the new rolling stock of the Grand Rapids Railway as the subject of the accompanying sketch "My New Car," done for the *Grand Rapids Herald* by Ray Barnes.



Ray Barnes in the *Grand Rapids Herald*

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Survey of Transit at Cincinnati

The City Council of Cincinnati, Ohio, has awarded the Beeler Organization, New York, the contract to make a survey of all local transportation there and especially to report on the matter of the completion of the rapid transit project, upon which the proceeds of $6,000,000 of city bonds have already been expended with further expenditures required to complete. Upon the information which the present investigation divulges will hinge the issue of additional bonds, estimated at $6,000,000, by the rapid transit board. The problem is whether to abandon this plan, complete it along original lines or modify it, and if so, how. John A. Beeler, directing head of the Beeler Organization, started work at Cincinnati personally with his associates on Aug. 16.

Fast Service for Fairmont Interurban

The Monongahela West Penn Public Service Company, Fairmont, W. Va., is arranging to place in commission on its interurban line between Fairmont and Clarksburg a fast limited car, to be known as "The West Virginia," named for the State University. It will make the run between the two cities in one hour. In order that the limited may negotiate the 25 miles between Fairmont and Clarksburg, many of the usual stops will be eliminated. According to the present plan, the trains will make only four stops between the terminals of Clarksburg and Fairmont-Shinnston, Enterprise, Worthington and Monongah. In the establishment of the new service the company will not decrease the present service on the Clarksburg-Fairmont line. Trains at half hour intervals during the day and hourly intervals at night will continue to be operated. The new car is decorated in old gold and blue, the colors of the university after which it is named.

Speed Boats Suggested to Ease Traffic Jam

River transportation fed by cross-town buses is suggested as a method of transportation relief in New York during rush hours, in a report made by Major Philip Matthews, chief executive officer of the Transit Commission. The report is the result of a survey made by the commission during the recent Interborough subway strike.

Major Matthews suggests that high-powered boats be used to transport passengers up and down the North River with bus lines feeding the boats at such points as 125th, 96th, 42d and Rector Streets, with a possible stop at or near Fourteenth Street.

There is a possibility that if co-operation can be arranged with those who obtain bus franchises, similar service might be introduced on the East River, and fast boats operating as part of bus systems might be run between Manhattan and Brooklyn and Manhattan and Queens. Docking privileges would be obtained from the city if the plan was made effective. It is the suggestion that the extraordinary service be used only in rush hours and the boats be put to some other use at other times.

Wage Arbitration Case on Eastern Massachusetts Closed

The arbitration hearings on a new wage scale for the employees of Eastern Massachusetts Street Railway, Boston, Mass., are ended, and the closing argument has been held. The case is now before the special board of arbitration for its decision.

City Rejects Long Island Road's Offer

Chairman John H. Delaney of the Board of Transportation of New York City has informed the Long Island Railroad an offer it had made to cede its franchise for the Whitestone Landing branch was not acceptable. The company recently offered to surrender its right of way at a great saving both to the city and the railroad.

In his offer George Le Boutillier, vice-president of the railroad, said the company could not afford to eliminate the grade crossings as required under the law and that it was willing to abandon the line. He estimated the saving to the city would be $1,000,000 and to the company $2,000,000. The letter said the line would become obsolete when the city had completed its rapid transit program and suggested it might be made a part of the subway extension if ceded to the city.

Mr. Delaney says that the city's financial resources will be strained to the limit for the next eight years to provide funds for the financing of the $600,000,000 trunk subway program already laid out, and not one cent will be diverted for the extension of existing subways.

Cinderella Holds Up Traffic

The United Railways & Electric Company, Baltimore, turned to good account a little item that appeared in the Baltimore *American* recently.

"What's a traffic jam compared to a pair of light green satin slippers that just match one's latest frock? Bah! Don't mention 'em in the same breath!" said the newspaper story. "Which, there is little doubt, was the line or reasoning employed by a pretty Baltimore maiden yesterday afternoon in West Lexington Street. She left her roadster in the middle of the thoroughfare, tripped into a store and came forth with the slippers. There was a traffic jam three blocks long."

In reprinting the story the United also presents the following editor's note: "The 'amazing' thing about this tale is that she didn't repeat this performance at eight different stores and wind up by buying a new hairnet instead of slippers. The moral is, shop for your green satin slippers by street car."

Seattle Railway Leased by Theater

For one hour on Friday night, Sept. 10, every resident of Seattle, Wash., who so desires will be permitted to ride free on the municipal street cars to the downtown sections of the city. Under an agreement sanctioned by the City Council, D. W. Henderson, superintendent, has been authorized to lease the 197 cars between the hours of 6:30 to 7:30 p.m. that day to the Fifth Avenue Theatre Company, at a cost of $669.80.

The renting company will open its theatre on that night. It will also carry as its guests all inbound passengers on municipal street cars, and Mr. Henderson has declared that he will have rolling stock available to transport every person in the city from home to downtown that night during the one hour of free rides. Mr. Henderson explained to the Council that inbound traffic between 6:30 and 7:30 nightly was at its lowest ebb, that the leasing of the cars would cause no operating loss to the service, and that it would tend to encourage people to use the cars.

Hope for Agreement in Control of California Line

For the coming fruit shipping season, the Central California Traction Company, San Francisco, Cal., will be operated as an independent railroad, and the section between Sacramento and Stockton will be open freight soliciting territory as far as the Santa Fé, the Southern Pacific and the Western Pacific are concerned. This is the result of the third postponement of the date for filing exceptions to the examiner's report which has been granted by the Interstate Commerce Commission in order to give the three railroads concerned time to agree upon a plan whereby the traction company can be operated under joint management. The date now set is Dec. 1. Note of the opinion of R. R. Holster, Interstate Commerce Commission examiner, was made in the ELECTRIC RAILWAY JOURNAL of March 29. All three of the transcontinental railroads have offered to buy the traction line, but in each case the examiner has decided that such an arrangement would not be in the public interest.

One-Man Cars on 32-Mile Run

What is said to be the longest one-man car route in Ohio is being operated by the Stark Electric Railroad between Canton and Salem, a distance of about 32 miles.

To reduce the operating cost of the interurban line, the Stark Electric has placed eight new one-man cars in service over the route on a half-hour service.

To protect cars at three grade crossings, the company has employed its own watchmen. With two shifts at each crossing, the company employs six men to replace from 16 to 24 men.

On the old basis with two-man cars eight cars were in constant operation. This required 32 men for two shifts with additional men for the night runs.

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Draft of New Toledo Grant Being Completed

Aug. 23 is the date that has been fixed for the presentation to the City Council of Toledo, Ohio, of the new franchise ordinance for the Community Traction Company. If the ordinance is passed it will be placed before the voters in November. Into the ordinance will be inserted an amendment to the city charter which will permit a monopoly of local transportation by the railway. Voters will cast their ballots for both the amendment and the new ordinance on one ballot.

The draft of the new ordinance is now being completed. Naturally there are many rumors as to its terms. It is said that a maximum fare of 10 cents and a complete monopoly to the Community Traction Company will be provided. Under the new ordinance the Street Railway Board of Control will have practically complete control. A drastic forfeiture clause will be included in the new ordinance to protect car riders. This clause, it was announced, will force the operating company to maintain adequate service at a reasonable cost.

The board of control will be tested with power to raise or lower fares as it sees fit to encourage street car riding. The new ordinance practically breaks away from the old flexible fare rate which provided that fares increase as street car riding decreases.

The street railway commissioner will act as an executive officer of the board of control under a new ordinance.

The city will pay for paving and repaving of streets between the street car tracks but the forfeiture clause will include a provision requiring the company to maintain this pavement.

The new ordinance is being drafted along lines suggested in a transportation survey made by Prof. H. E. Riggs of Ann Arbor.

Terminal Electrification Discussed in Chicago

Electrification of Chicago's steam railroad terminals would be an immense civic improvement, but it cannot be accomplished until the railroads are convinced that a fair return is possible on the tremendous investment that would be necessary to carry out the work. This, in brief, was the conclusion reached by the subcommittee of the City Council at the end of its series of conferences with railroad executives, real estate operators and engineering experts on July 25.

Mayor Dever declared that the health of Chicago's citizens must be protected against smoke and dirt. He cited the example of New York, and also that of the Illinois Central Railroad, which recently electrified its suburban divisions out of Chicago, as proof that electrification is possible.

Joseph K. Brittain, president of the Chicago Real Estate Board, declared that speedier transportation is an immediate necessity. He said that he believed the benefit to community real-estate values would easily equal, if not exceed, the immense cost of electrification of lines serving it. This opinion was concurred in by F. L. Thompson, vice-president of the Illinois Central, who told the Aldermen that his company expected to make its suburban service pay for the first time by virtue of increased business attracted by recent electrification.

William R. Dawes, president of the Chicago Association of Commerce, was less encouraging. He declared that Chicago business men were not in favor of electrification, because they realized that the railroads must inevitably increase their freight rates in order to retrench themselves for the enormous outlay necessary. Charles Dillon, editor of the *Railway Review*, was of much the same opinion. He stated that many railroads entering Chicago were small and financially weak and that, for them, electrification was absolutely impossible.

The testimony of various officials of several of the larger railroads was substantially the same. They declared themselves to be in hearty sympathy with the aspirations of the committee, but feared that electrification would be gradual at best. They all agreed that the railroads could not consider the question seriously until it was demonstrated that they could secure a fair return on their investment.

News Notes

New Development in the Ironwood Street Car Controversy.—The Ironwood Commercial Association has endorsed the proposal that the city commission join with the Lake Superior District Power Company, Ashland, Wis., in submitting the matter of increased fares and paving relief to the Michigan Public Utilities Commission. This marks the latest developments in the Ironwood street railway abandonment controversy. Members of the association looked upon the proposed loss of railway service as a grave injury to the future growth and prosperity of Ironwood.

Paving Controversy Holds Up Abandonment.—Action by the City Council on the request of the Lincoln Traction Company, Lincoln, Neb., for permission to take up its South Fourteenth Street track as soon as bus service to the State Penitentiary can be established and routed largely by way of Thirteenth, has been halted by the insistence of property owners that the company make some contribution toward the paving of that part of South Fourteenth Street which is unpaved and where the tracks now rest. The company protests against paying for paving where it will have no tracks in the future, but the property owners insist they would not have signed for paving if they had known the company would, by withdrawing car service from the street, avoid any liability for paving costs and thrust the additional burden upon their shoulders. The Council is seeking a way to pave without increasing the proportion that it was intended originally the property owners were to pay.

Seattle's Transportation Problems Discussed. — Prominent business men and civic leaders of Seattle recently organized themselves into the Seattle Rapid Transit Club to conduct a campaign for better transportation. At their meeting one of the number expressed the opinion that Seattle's progress will be seriously retarded unless rapid transit is installed to afford traffic relief; that records of large Eastern cities having rapid transit show a steady and rapid growth; and that a project under which Seattle will be furnished with local transportation more commodious than is possible by surface car is the only permanent solution of Seattle's traffic problems.

Increase for Washington Trainmen. —Trainmen in both passenger and freight service of the Seattle & Rainier Valley Railway, Seattle, Wash., have been awarded an increase in wages of 2 cents an hour effective Aug. 1, by a board of arbitration. The increase will not apply to present line bus operators.

Street Railway Improvement for Wisconsin. — Improvement of the railway system operated by the Wisconsin Gas & Electric Company, Kenosha, Wis., to include the extension of one line, building of two single track lines and the double tracking of three lines with a view to increasing transportation facilities and relieving traffic congestion in the downtown district, was practically assured when the City Council indorsed extensions to the railway franchise bearing on these proposed improvements.

New Franchise for Ohio Line.—The Western Ohio Railroad, Lima, Ohio, has been granted a new franchise by the City Council of Sidney, Ohio. The present franchise expires on Nov. 1 and the new one will extend for a period of twenty years.

Will Use Buses on Part of Line.—The Rockford City Traction Company, Rockford, Ill., has been ordered to remove its tracks on South Main Street from West State to Morgan Streets, and to operate buses instead of cars. The order was made by the City Council at a stormy session attended by a large number of protesting South Rockford residents. An assessment of $25,000 has been ordered against the traction line to pay for the replacement of paving between the car tracks and an annual license fee of $50 has been fixed for each bus now operated or to be operated in the future by the company.

Railroad Reduces Fares in New York Suburbs.—Although the village trustees of Mamaroneck recently authorized the New York & Stamford Railroad, Port Chester, N. Y., to operate under an old fare schedule which places the fare from Mamaroneck to Larchmont at 14 cents, it is learned that the railroad plans to collect only a 10-cent fare during September. This action is construed by village residents to mean that the railways will compete, at least in fare, with any bus lines that start between the villages. Several propositions have been made to the officials of towns between Port Chester and Larchmont, but no company has yet received the support of all communities.

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Recent Bus Developments

Bus Rumors Revived in Westchester

Officials of the Third Avenue Railway, New York, are understood to have been in conference with bus owners at White Plains in an effort to establish the nucleus of a proposed county-wide bus system. The firm of Brennan Brothers and the Soundview Transportation Company, are said to have received offers for their lines.

S. W. Huff, president of the Third Avenue Company, which through a subsidiary, the Union Railroad, recently purchased the Westchester Street Railroad at auction, said at a conference with officials of White Plains that his company planned to run trolley cars until it was proved that buses would be better.

The Yonkers-Rye Beach bus system is operated through White Plains by the Third Avenue Company, which also has a bus route to Harrison from White Plains. Buses have replaced the trolleys in a section of East Chester. The trolley line abandoned was another subsidiary of the Third Avenue Company, the Westchester Electric Railway holding the only franchise for the operation of vehicular transportation between White Plains and Mamaroneck. The route from the city line to the center of the village of Mamaroneck has been suspended for several years, but the Third Avenue Company is attempting to install a bus service along the Sound shore. The company most favored is the County Transportation Company, a subsidiary of the New York, Westchester & Boston Railroad, which operates to Mamaroneck and is extending its line to Harrison.

In Yonkers the efforts of the city to sell at public auction franchises for the operation of fifteen bus routes is being opposed by the Third Avenue Company, which operates both trolleys and buses there.

In Larchmont the Village Board on Aug. 10 voted unanimously in favor of granting to the County Transportation Company, a franchise to operate a bus line within the village limits. It is the purpose of the company to establish a line of buses to connect Port Chester, Rye, Harrison, Mamaroneck and Larchmont. The company has received a permit to operate in Harrison, and it is understood that franchises will be granted in Port Chester and Rye.

Change of Plan Causes Delay for Nebraska Interurban

The State Railway Commission has declined to approve the application of the Omaha, Lincoln & Beatrice Railway to supplement interurban service by bus service between Lincoln and University Place, a suburb 5 miles distant, until such time as the Lincoln Traction Company has had an opportunity to examine the situation and enter a protest if it chooses to do so. The commission so ruled after the interurban had amended its original application, in response to letters and requests from business interests, so as to run the buses through the retail district, now served by the Lincoln Traction Company, the territory of which the interurban has hitherto carefully refrained from invading. The Councils of both Lincoln and University Place approved the supplemental service. The company's original plan was outlined in the ELECTRIC RAILWAY JOURNAL in the issue of July 14.

Construction of Bus Terminal Delayed

The project of the Pacific Northwest Traction Company, Seattle, Wash., which provides for construction of a $500,000 interurban and bus terminal, faces another thirty days delay, as the City Council has recently returned the entire matter to the committees on franchises and streets and sewers for further consideration. Property owners in the district have protested the construction.

Bus Service Expanded at Olean

Buses replaced trolley cars in the territory served by the line of the Olean, Bradford & Salamanca Railway Company, Olean, N. Y., between Olean and Salamanca, on Aug. 14, except for two runs daily. The change is in the nature of an experiment, which will be continued for an undetermined time. Should the change prove successful, the bus service will be made permanent. Buses have been used on the run between Olean and Bradford some time. The night bus leaving Salamanca for Little Valley at 9:30 has been discontinued. The last bus for Little Valley now leaves at 3:05. The revenue received did not warrant the 9:30 bus.

Bus Lines in Kansas City Rerouted

Temporary changes in the routings of the 39th Street crosstown and the Country Club express bus lines in Kansas City, Mo., have been granted by the city with the understanding that if the changes do not prove beneficial after a trial of ninety days, the lines are to be returned to their former routings.

The western terminus of the 39th Street line will be moved from 47th and Mill Creek Parkway to 48th Street and Belleview Avenue to the following route:

From 47th and Mill Creek Parkway, west in 47th Street to Roanoke Boulevard, thence south to 48th Street: West in 48th Street to Belleview Avenue; north in Belleview Avenue to 47th thence east to present terminus at 47th and Mill Creek.

This change extends the line to an apartment district not served before.

The change in the Country Club express route is not an extension. It will be between the intersection of Wornall road and Alameda road and the intersection of Alameda road and Wornall road by way of 47th Street. Thus the express line will be made more convenient to residents in the vicinity of Country Club Plaza.

Railways Plan Greater Use of Buses

Two interurban railways operating out of the city of Tulsa, Okla., plan greater use of buses in carrying passengers. The Union Transportation Company, which handles bus business of the Oklahoma Union Railway, Tulsa, Okla., has been authorized by the Corporation Commission to operate buses from Tulsa to Mounds via Sapulpa and Kiefer with the restriction that passengers are not to be carried by bus between Tulsa and Sapulpa. The company will continue to carry passengers over its interurban line from Tulsa to Sapulpa. The service from Sapulpa to Mounds, the southern terminus of its interurban line, and from there into Okmulgee and Henryetta will be handled entirely by buses. The railway line, however, will be maintained to handle freight service.

The Sand Springs Railway, Tulsa, Okla., operating an interurban line from Tulsa to Sand Springs, has notified city officials at Tulsa of its intention to apply to the State Corporation Commission for a permit to operate a bus line parallel to its interurban line. Officials of the company state that this does not mean that the interurban line will be abandoned, but that supplemental service will be given.

Wind-Kissed Cheeks of Apollos and Aphrodites of West

Alabaster Apollos who crave a golf course tan without the exercise are riding the bus tops in Kansas City these days. There is plenty of proof of this, according to officials of the Kansas City Railways, Kansas City, Mo., who announce that the receipts of the lines on which the double-deckers are run have greatly increased in the last two months. Likewise athletic Aphrodites who disdain the lemon and sunbonnet are getting their sunlight and wind that way. It makes one look and feel like the sipper in the soft drink ads. Palm Beach, ahoy!

The "toppers" are now in their heyday on the double-deck lines. Coatless, hatless, they gulp the sun swept winds as the city comes rolling up. The results are the same as might be secured at the seashore and they can be obtained going to and from work.

During the rush hours the buses, of course, are filled to capacity, but in the off periods riding on the double deckers is confined almost entirely to the upper deck.

With the arrival of hot weather the interiors of the single-deck buses were uncomfortable as the four ventilators, designed to carry the air in and out, were not of capacity sufficient to the needs. To remedy this condition cast-

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ings prepared in the company shops were fitted to the buses so as to allow the opening of the front windshield and permit the air to sweep through the buses. This proved so satisfactory that the patrons of the single-deck vehicles have ceased to envy their friends who use the lines on which the double-deckers are run.

Bus Franchise Report Not Ready for New York Board

Owing to the failure of the Board of Transportation of New York City to have the analysis on the bus franchise applications ready, no meeting of the Board of Estimate was held on Aug. 19. The date of the next meeting is contingent upon the receipt of the report by Mayor Walker. Four days after he receives it the meeting will be held, to allow members of the board now on vacations time to get to the meeting.

Bus Service for Scranton Discussed.—The Scranton Railway, Scranton, Pa., is asking the Public Service Commission for certificates of convenience to run bus lines on Green Ridge Street from Dunmore to Providence and also from Throop directly into the center of the city. A hearing at which the city was represented was held recently at Harrisburg.

Loss on Line Company Seeks to Abandon.—According to the petition of the Interstate Public Service Company, Indianapolis, Ind., to abandon its bus service between Franklin and Columbus, Ind., between Seymour, Ind., and the Indiana-Kentucky state line and its through service between Indianapolis and Louisville, the loss during the first six months of this year on the Indianapolis-Louisville service was $10,494. Receipts were only $4,350, compared with operating costs of $14,844. On the Indianapolis-Seymour bus line during the first ten days of July the company transported only 49 passengers with a total revenue of $43,05. Mention of the company's intention to abandon these lines was made in the ELECTRIC RAILWAY JOURNAL of Aug. 7.

Adequacy of Five-Cent Bus Fare Discussed.—From the point of view of Mayor C. M. Blanc of St. Petersburg, Fla., the fares on the newly established municipal buses should be fixed at 5 cents, at least during the summer, in order to induce the citizens to use them. Other officials point out, however, that tests elsewhere have established 10 cents as the minimum fare at which buses can be operated successfully under average conditions. It is hoped that the bus lines eventually will pay their own way, but at present any deficit in their maintenance will be met from the profits of the electric railways, which are said to be paying steadily.

Buses Will Supply Service.—The City Council of Canton, Ohio, has permitted the Northern Ohio Power & Light Company to abandon one of its city lines extending from Market Street over Sixth Street, Ninth Street and Maryland Avenue, a distance of nearly 2 miles. Bus service will be substituted. The line has been operated at a loss for a long time due to the closing down of industrial institutions.

Applies for Bus Line in Troy.—The Capitol District Transportation Company, Inc., a subsidiary of the United Traction Company, Albany, N. Y., filed a petition with the Public Service Commission for a certificate for the operation of a bus line from the Troy City line in Pawling Avenue, along Pawling Avenue to Congress to Fourth to Fulton to Third to Congress to Fourth Street, the city authorities having granted the company a consent for such operation.

Bus Service Extended in Illinois.—The Red Line Motor Bus Company has been granted permission by the Illinois Commerce Commission to extend its service from Greenville to Vandalia, Ill. This company originally started with a line between Collinsville and Troy, Ill. Later it extended to Greenville and when control passed to the East St. Louis & Suburban Railway, East St. Louis, Ill., the buses were run into St. Louis, Mo. The State Commission has authorized the Tri-City Service Company to extend its service from Vandalia to Effingham, Ill.

Tulsa Chamber Approves Anti-Jitney Ordinance.—The directors of the Tulsa Chamber of Commerce have expressed unqualified approval of Tulsa's present bus service system as operated by the Union Transportation Company and have condemned the old seven-passenger jitneys which were formerly operated on the streets of Tulsa by several different concerns. The resolution was occasioned by efforts of jitney owners to regain use of the streets of Tulsa through a suit in the district court. The city commissioners of Tulsa recently adopted a stringent ordinance regulating the capacity and equipment of city transport carriers and which was intended to keep jitneys off the streets.

California Company Changes Bus Route.—The Pacific Electric Railway, Los Angeles, Cal., has been authorized by the Railroad Commission to change its motor bus route between Pasadena and Shoeb. The rerouting was desired by the city of Pasadena to relieve traffic congestion on Colorado Street and Raymond Avenue, and to eliminate five safety stops in the cities of South Pasadena and Alhambra and avoid a highway not well paved.

Buses Start New Service in Minnesota.—Permission has been granted by the City Council of Superior, Minn., to the Superior-Duluth Coach Company, a subsidiary of the Duluth Street Railway, Duluth, Minn., to operate a city bus service on the streets of Superior. The company will begin service with four buses.

Co-operation Between Ohio Car and Bus Lines.—Through an agreement, effective Aug. 1, signed between the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio, and the Springfield, Urbana & Piqua Bus Company the buses of the latter company will use the traction stations as terminals in Springfield and Urbana. Schedules of the buses will be changed so that direct connection will be made with the traction company's cars and buses to Columbus and Dayton.

Buses Replace Street Cars in Belleville.—Buses replaced the local street cars of the East St. Louis & Suburban Railway, East St. Louis, Ill., in Belleville after months of discussion and negotiation with the city officials. These new bus lines cover approximately 60 per cent more territory than the street car lines, and the change has greatly improved the local transportation facilities, putting the city of Belleville on a par with any other of similar size in the United States. In July, 1924, the Oakland street car line was abandoned and a bus run in its place. The route covered by the bus was approximately 50 per cent greater than that covered by the street car. The success of the Oakland bus line led the company to ask the city officials for permission to replace the other street car lines with buses.

More Bus Lines for Cleveland.—Two new bus lines in Cleveland, Ohio, one on Eddy Road from Euclid Avenue to Lake Shore Boulevard, and the other on Bartlett Avenue from East 131st Street, to Gay Avenue, and thence to East 129th Street to Corlett Avenue probably will be placed in operation by the Cleveland Railway within the next few weeks.

Express Bus Service in Ohio.—The Northern Ohio Traction & Light Company, Akron, Ohio, established express bus service at a 10-cent fare on the through city streets of Akron on Aug. 4. Service is being well patronized. Buses from the Six-Wheel Company, Philadelphia, are being used. The single-deck bodies were built by Kuhlman, Cleveland. The double-deck bodies were built by Hoover Company, York, Pa.

Buses Operate in Westfield. — Bus service was started in Westfield on Aug. 1 by the Springfield Street Railway, Springfield, Mass. The trolley service has been abandoned, with the exception of the line running from Springfield to Westfield and the short line in Westfield proper. The fare has not been changed under the new régime.

Buses to Replace Logan Street Railway.—Replacement of the railway system in Logan, Utah, with a fleet of buses is asked by the Utah-Idaho Central Railroad, Ogden, Utah, in a petition submitted to the Public Utilities Commission. The petition states that the street car line has lost money for several years and that with bus service the company will be able to cover a wider area in the city and give better service than does present electrically operated railway. The company proposes to charge a 7-cent fare on the buses, offering three fares for 20 cents and twenty school tickets for $1. While no mention is made in the petition regarding the disposition of the railroad trackage, it is understood that it will be removed.

Buses Begin New Service in Pennsylvania.—The Northern Cambria Street Railway, Patton, Pa., has abandoned traffic over its railway lines, and substituted service with three buses. The buses will operate from Barnesboro to Spangler, Bakerton and Carrolltown with probable extensions of the lines to nearby towns. The last trolley was run over the 8-mile route on July 31.

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Financial and Corporate

New Company to Take Cuban Railways

A new company called the Havana Electric Railway is to be incorporated under the laws of Maine, preliminary to carrying into effect the program of the Havana Electric Railway, Light & Power Company to segregate its railways from its light and power properties. This new Havana Electric Railway will acquire all of the railways now owned by the Havana Electric Railway, Light & Power Company and by the Camaguey Electric Company and by the Santiago Electric Light & Traction Company.

The Havana Electric & Utilities Company, which is controlled by the Electric Bond & Share Company, will have a substantial interest in the common stock of the new company and will be represented on its board of directors.

Frank Steinhart, who for about twenty years has successfully operated the properties of the Havana Electric Railway, Light & Power Company, will become president of the new company. Mr. Steinhart says that the segregation of the railways from the light and power properties would benefit both divisions. In none of the twenty years of operation, he said, had the railway business of Havana failed to show a substantial profit and an appreciable part of the improvements to the light and power plants had been financed out of the surplus profits resulting from railway operations. Bearing in mind the future development and expected growth of the railway and power properties, he had reached the conclusion that their financial requirements could better be met if the two divisions were organized as separate units.

Provision will be made for the release of property under and satisfaction of some of the underlying mortgages. The securities of the new company, consisting of $5,500,000 of 5½ per cent gold debentures bearing subscription warrants for common stock, and $5,000,000 of 6 per cent cumulative preferred stock carrying a bonus of common stock, have been purchased by Speyer & Company and J. & W. Seligman & Company, and will shortly be offered for public subscription.

Lines of the system in 1925 carried approximately 136,000,000 passengers. Gross revenues for 1925 were more than $6,960,000 and net earnings, after operating expenses, maintenance and taxes, were more than $1,880,000.

In accordance with the new plan Speyer & Company in conjunction with J. & W. Seligman & Company, Hemphill, Noyes & Company, and Otis & Company, offered for sale on Aug. 16 $5,500,000 Havana Electric Railway twenty-five year 5½ per cent gold debentures (each debenture accompanied by a twenty-five year warrant entitling the holder to subscribe to 23 shares of common stock at $45 a share). The offering price was 92, at which price the debentures yield more than 6½ per cent. This issue was followed by formal offering later in the week by the same group of $5,000,000 Havana Electric Railway 6 per cent cumulative preferred stock. This stock was offered by the bankers at $100 a share with a bonus of six-tenths of a share of common stock.

$5,000,000 More P.R.T. Stock for Sale to Riders

The City Council has been requested by the Philadelphia Rapid Transit Company, Philadelphia, Pa., to assent to the issuance of $5,000,000 of 7 per cent preferred stock, $50 par, retirable upon any dividend date at $55 a share and accumulated dividends.

This stock will be sold direct to car riders, in accordance with Mitten Management policy of having P. R. T. customers—the riding public—share in the ownership of the company which supplies them service. To this end P.R.T. common stockholders have been requested to waive their rights of subscription.

About $1,550,000 of this new preferred stock will go toward the retirement of underlying securities, including P.R.T. bonds and car trust certificates and similar securities of P.R.T. underlying companies.

About $1,700,000 will be used for normal capital expenditures for track improvements and extensions; improvements and additions to carhouses, substations, transmission and distribution system, etc.

About $1,750,000 is required for additional buses to add to the extensive system which P.R.T. has given to Philadelphia in the past two years, with necessary service equipment and garaging.

P.R.T., in the spring of 1925, started its car-rider ownership policy with the sale of $3,000,000 of its 7 per cent preferred stock. This first issue was sold on the cars in small lots and by such easy payments that the car rider of the most modest means had opportunity to invest in the securities of the company.

In the spring of 1926 authorization was secured from City Council for the issuance of $15,000,000 additional; $5,000,000 of this issue was held pending approval by the Public Service Commission of the purchase by P.R.T. of the Yellow Cab Company and the other $10,000,000 was sold to the car riders under terms similar to those under which the $3,000,000 had been sold a year earlier. This $10,000,000 issue was over-subscribed by the car riders in ten days.

The increase of $5,000,000 now requested, together with the $5,000,000 covering the Yellow Cab purchase, will be put on sale, when properly approved, in the fall of 1926.

Four Massachusetts Roads Make Legal List

The Public Utilities Department of Massachusetts has certified to the Bank Commissioners that four electric railways holding Massachusetts charters have earned and properly paid, without impairment of assets or capital stock an amount in dividend equal to 5 per cent on all outstanding stock, for a period of at least five successive years. Because of this certification their securities are legal investment for the savings banks, under Massachusetts law. The companies so certified are the Boston Elevated Railway, the Boston & Revere Electric Street Railway, the Holyoke Street Railway and the Union Street Railway, New Bedford. They are the only railways in Massachusetts that have met these dividend requirements this year.

Some serial bonds of the Eastern Massachusetts Street Railway come within the same classification, of legal savings bank investment, under special legislation and an agreement with the road's board of trustees.

Merger Hearing Set for Aug. 24

The New York Transit Commission announced on Aug. 18 that it would hold a hearing Aug. 24, on the application of the Fifth Avenue Coach Company for permission to acquire all the common stock of the New York Railways. A total of 900,200 shares, all the common stock of the company, is involved.

That such an application would be made was announced last May when it became known an agreement had been reached for a merger of the companies. The coach company has submitted bus bids and the New York Omnibus Corporation, which represents both interests, has a bid waiting consideration.

The proposal of the New York City Omnibus Corporation was to operate buses north and south in Manhattan for a 10-cent fare, with cross-town lines operating at a 5-cent fare. It was planned originally if the franchises were granted to eliminate 25 miles of surface car lines, supplanting the cars with buses.

Reorganization of Dayton-Springfield Arranged

Plans have been completed for the reorganization of the Dayton Springfield & Xenia Southern Railway, Dayton, Ohio. The property of the company operating under this name was sold on July 22 at Xenia to C. J. Ferneding, president, for $130,000.

Since then the Public Utilities Commission of Ohio has authorized the Dayton-Xenia Railway, the successor company, to issue 3,500 shares of no par value common stock, $250,000 of 5 per cent preferred stock and $250,000 of 6 per cent first mortgage gold bonds. The new securities take the place of $394,000 bonds, $298,000 of preferred stock and $200,000 of common stock of the old company.

The Dayton, Springfield & Xenia Southern Railway was incorporated under the laws of Ohio as a successor

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to the Dayton-Xenia Traction Company, the property of which was sold under foreclosure in June, 1909. This last-named company was a consolidation of the Dayton & Xenia Traction Company, Dayton, Spring Valley & Wilmington Transit Company and the Rapid Transit Company of Xenia. The road extends from Dayton to Xenia 20.65 miles. Power is purchased from the Dayton Power & Light Company. The last report available in the financial manuals, namely, that for the year ended Dec. 31, 1924, showed gross earnings of $243,803 with a net income of $22,595 and a surplus of $1,063 after the payment of fixed charges.

Part of Nebraska Road Being Dismantled

Acting under permission from the Nebraska State Railway Commission the Omaha & Lincoln Railway & Light Company, is taking up its tracks between Papillion and Ralston. This interurban was intended to connect the cities of Lincoln and Omaha. It was started in 1911, but never got beyond Papillion. Ralston is a manufacturing suburb of Omaha, and is still served by the company, but with only two cars a day. Bus service was tried between Ralston and Omaha by the interests that run the railway, and proved a success. It is now being extended to Papillion. The company sells a considerable amount of current, but the road between Papillion and Ralston has never been profitable.

Washington-Virginia Railway May Be Sold to Local People

The Washington-Virginia, once one of the famous electric railways of the country, operating 60 miles of track connecting Washington, Alexandria and Mount Vernon, and Washington, Arlington and Fairfax faces abandonment. The company recently announced that the earnings were insufficient and that there were many difficulties surrounding the situation. Therefore the various bondholders' protective committees decided to shut down unless the local communities served were sufficiently concerned in maintaining the service to raise the necessary new capital. Interested bodies in Alexandria and neighboring communities are trying to find ways and means of purchasing all or part of this company's property at a fraction of its original cost.

The Washington-Virginia's difficulties are due principally to the fact that the Virginia Public Service Commission granted certificates to independent bus operators despite the willingness of the company to furnish this service, to the unregulated interstate bus competition, to difficulty in obtaining fare adjustment on account of being subject to the Interstate Commerce Commission, Virginia and District of Columbia Commissions, and finally to expensive maintenance in the District, where the underground electric system is in use.

As noted in the ELECTRIC RAILWAY JOURNAL for Aug. 7, the company has given the local communities a reasonable time to devise some plan by which the operation can be continued before it proceeds to scrap the system.

$118,199 Increase in West Penn Net Income

A comparative statement of the consolidated income account of the West Penn Railways, Pittsburgh, Pa., excluding inter-company items, for the years ended Dec. 31, 1925 and 1924 follows:

STATEMENT OF WEST PENN RAILWAYS EARNINGS

	Year Ended Dec. 31, 1925	Year Ended Dec. 31, 1924
Gross earnings, from all sources	$20,206,221	$20,073,164
Operating expenses, including maintenance, taxes and rentals	11,169,278	11,634,521
	$9,036,942	$8,438,643
Deductions:		
Interest and amortization	3,375,715	3,243,852
Preferred dividends of subsidiary	909,195	740,100
Income applicable to minority interest	587,889	505,182
Total deductions	$4,872,800	$4,489,135
Net income before renewals, replacements and depletion	4,164,141	3,949,508
Reserved for renewals, replacements and depletion	1,665,778	1,569,343
Net income	$2,498,363	$2,380,164
Dividends on preferred stock	$209,981	$383,579

The company explains that it has continued its policy of raising the standard and safety of the service. The year's operations were conducted in a most satisfactory manner and without serious accident or injury to passengers.

Through freight service over lines of Pittsburgh Railways and West Penn Railways, between the city of Pittsburgh and Coke Region points, started in August, 1924, has been substantially developed and the income arising therefrom very greatly increased during the year.

Sunday passes were adopted for use on long interurban lines with encouraging results and this means of stimulating holiday travel has been placed on a permanent basis and will be extended to other parts of the system. Weekly passes have also been put into effect with very satisfactory results.

The general tendency of the public to relieve street railways from the obligation to renew paving required by old and obsolete franchises has resulted in the company's obtaining new franchises without such obligations in several of the boroughs and towns through which it operates.

Further revisions in the company's rates of fare have been accomplished during the year and economies in transportation expense through the operation of one-man cars and other improvements have resulted in lessening the cost of operation. To relieve traffic congestion in some of the larger cities, loop operation has been adopted and construction of additional passenger and freight terminals with loop facilities in others are now in contemplation.

Chester Dale, New York City, was elected a member of the board of directors to fill the vacancy caused by the resignation of William B. Schiller.

Mitten Bank Opened in Philadelphia

Mitten Men and Management Bank & Trust Company, which took over the bankrupt Producers and Consumers Bank, Philadelphia, Pa., opened for business on July 1 in the building occupied by the defunct company, 927 Chestnut Street. The new bank starts with $1,000,000 of capital, surplus and undivided profits. A branch bank operated by the P.R.T. Securities Corporation, at 235 South Broad Street, the company announces, will accept deposits for the new bank.

Thomas E. Mitten, chairman of the P.R.T. board of directors, is active head of the bank. His son, Dr. A. A. Mitten, also a member of the P.R.T. board, is vice-president. Half of the bank stock is owned by transit employees, who have representatives on the board. This is in accordance with the Mitten plan for the further democratization of the ownership of industry.

As announced when the Mitten offer was under consideration by the court, depositors and stockholders of the bankrupt institution will be credited with the profits of the new bank until their losses are made up, a procedure which has caused much favorable comment.

CONSOLIDATED INCOME ACCOUNT OF WEST PENN RAILWAYS AND SUBSIDIARIES FOR YEAR ENDED DEC. 31, 1925

Gross operating earnings			$18,670,411
Operating expenses and maintenance (including $1,665,778 reserved for renewals, replacements and depletion)		$11,810,529	
Taxes (including Federal)		1,016,751	12,827,280
			$5,843,131
Miscellaneous income			1,535,809
			$7,378,940
Interest on funded debt	$3,335,418		
Interest on floating debt	125,641		
Amortization of discount	222,216		
	$3,683,276		
Less proportion charged to improvement accounts	307,561	$3,375,715	
Rentals		7,776	
Dividend accrued on preferred stock of West Penn Power Company in possession of public		909,195	
Income applicable to common stock of West Penn Power Company owned by The West Penn Company		587,889	4,880,576
Net income			$2,498,363

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Reasons for Short Albany Abandonments Reviewed

Approval was sought by the United Traction Company, Albany, N. Y., on July 14 from the Public Service Commission of three petitions seeking abandonment of portions of its route in the cities of Albany and Rensselaer.

The Albany petition sets forth the desire of the company to abandon that portion of its road upon South Ferry Street. This is a single track about 1,484 ft. in length that serves no useful purpose, there being no present operation of cars by the traction company.

Two of the petitions filed relate to proposed abandonments in the city of Rensselaer, one of which covers the portion of the route of the company located on Broadway and Aiken Avenue in that city. This is the section of street railroad trackage over which business are now being operated by Capital District Transportation Company, Inc., and the petition states that it has been agreed between the authorities of Rensselaer and the company that the tracks may be removed in view of the substitution of the motor bus line for the trolley service.

The other Rensselaer petition asks for approval of a declaration adopted by the directors of the United Traction Company for the abandonment of the so-called Third Street line in Rensselaer. This line consists of a double-track road on Broadway and Partition Street and a single track on Third Street. The municipal authorities have determined to pave Partition Street and a portion of Third Street at a cost to the company of approximately $40,000. This line for a long time has been operated at a loss, and there is no reasonable prospect that in the future sufficient revenue can be obtained to pay its proportion of expenses of operation, taxes and interest. The company has offered to serve this territory by buses at a rate of fare the same as may from time to time be charged by the United Traction Company on its trolley lines in Rensselaer and Albany, with interchangeable transfers, but an application by the Capital District Transportation Company, Inc., to the Common Council of the city of Rensselaer for consent to operate such motor bus line was refused.

Dates for hearings upon these applications will be announced by the commission later.

Balance in Honolulu $18,445

Operations in 1925 by the Honolulu Rapid Transit Company, Honolulu, Hawaii, were not so satisfactory as had been expected under the increased fare, but considering the large increase in the number of automobiles registered during the year a loss of passengers was to be expected. This statement was made by the manager in the annual report for the year ended Dec. 31, 1925. The balance of net revenue in 1925 carried to surplus was $18,445, against $21,550 in 1924.

Total revenue from all sources for the year was $1,074,483, compared with $1,014,349 for the year 1924. Total operating expenses were reduced from $713,930 to $708,717 in 1925. In addition $26,284 was charged to operating expenses for replacements during 1925, compared with $25,433 for replacements during 1924. Total transportation revenue for the year was $1,062,788, which included $1,040,452 for passenger revenue and $21,082 for bus revenue. In 1924 the total transportation revenue of $1,005,193 included a passenger revenue of $990,443 and $11,845 bus revenue. The total number of passengers carried exclusive of transfer passengers was 17,607,737 in 1925, against 19,839,528 in 1924.

REVENUE AND EXPENSE ACCOUNTS OF THE HONOLULU RAPID TRANSIT COMPANY, LTD.

	1925	1924
Total revenue from transportation	$1,062,788	$1,005,193
Total revenue from other railway operations	$11,695	$9,155
Gross revenue from operations	$1,074,483	$1,014,348
Total operating expenses	$708,716	$713,930
	$365,766	$300,418
Replacements chargeable to operating expenses	26,283	25,432
	$339,483	$274,986
Taxes	$94,847	$128,577
Profit and loss	826	3,261
Depreciation	45,155	45,089
	$140,829	$176,928
Net revenue from operations	$198,653	$98,057
Deductions—		
Interest	$5,208	$1,506
Dividends	175,000	75,000
	$180,208	$76,506
Balance 1925 to surplus	$18,445	$21,550

Abandonment at Chippewa Falls Approved

The Wisconsin Railroad Commission has approved the application of the Northern States Power Company to abandon railway service in Chippewa Falls as well as the interurban electric line running between Eau Claire and Chippewa Falls. The commission found that the line had suffered an operating loss for the past five years due to the use of the private auto and buses, which parallel the route of the electric line. With the passing of the interurban line service between these cities will be provided by buses. A checkup on the electric interurban line made last October showed that the number of through passengers carried between the two cities averaged 1½ per trip.

Insull Properties Merge in New Hampshire.—The Public Service Company of New Hampshire was incorporated at Concord on Aug. 16 to take over electric utilities in New Hampshire controlled by the Insull interests of Chicago. The companies involved are the Manchester Traction, Light & Power Company, the Keene Gas & Electric Company, the Laconia Gas & Electric Company and the Souhegan Valley Electric Company. Walter S. Weyman, Augusta, Me., is president. The company will issue 400,000 shares of preferred and 200,000 of common stock of no par value.

Another Washington Merger Bill Promised.—Preparations were made on Aug. 12 by officials of the Public Utilities Commission for drafting a bill for introduction at the next session of Congress to compel a merger of the Capital Traction Company and the Washington Railway & Electric Companies. Actual framing of the measure will be done by Major W. E. R. Covell, assistant district engineer commissioner, assigned to public utilities. The bill will be modeled after a measure introduced in Congress several years ago providing for a voluntary consolidation of the traction companies. It is said, however, that the bill will penalize the companies if they fail to merge.

Chicago Firm Purchases Painesville Line.—Announcement is made of the purchase of the Cleveland, Painesville & Easton Railroad, Willoughby, Ohio, by the Hyman-Michaels Company, Chicago. The property, which consists of about 70 miles of right-of-way, will be dismantled at once, and all equipment will be put on the market.

Earnings Off in Indianapolis in June.—The June statement of the Indianapolis Street Railway, Indianapolis, Ind., shows that the total gross earnings for the month were $451,179, compared with $435,355 for June of a year ago. Bus receipts for June this year were $17,454, compared with $1,575 for the similar month a year ago. The operating expenses for June this year, however, were $352,854, compared with $322,326 for June a year ago. Net earnings from operation less taxes were $70,273 for June this year, compared with $91,826 a year ago.

Minnesota Road Does Well.—The Minneapolis, Northfield & Southern line, Minneapolis, Minn., handling passenger trains by gas-electric engines and freight by steam, reports a gain in business in the year closed. Net operating profit was $144,598. After paying preferred stock dividends the company earned at the rate of $47.77 a share on common. This was put back into the road.

Would Abandon Part of Troy Line.—The United Traction Company, Albany, N. Y., applied to the Public Service Commission on Aug. 11, for approval of a declaration of abandonment of part of its line in Troy. The company says the municipal authorities of Troy have determined to pave certain of the streets and an agreement has been reached whereby the trolley service is to be succeeded by a bus service.

Offer Made to Underlying Holders.—The Pittsburgh Railways, Pittsburgh, Pa., notified holders of first mortgage 5 per cent bonds of the Brownsville Avenue Street Railway, due Aug. 1, 1926, outstanding to the amount of $300,000, that in pursuance of the policy followed with reference to other matured bonds, it was prepared to continue interest payments on this issue pending completion of the financial reorganization plan, providing for a general refunding and unifying mortgage under which bonds would be exchanged at rates to be determined. Bondholders desiring to accept this arrangement were requested to forward bonds to Pittsburgh Trust Company.

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Personal Items

C. H. Jones in New Chicago Post

Charles H. Jones, for the past nine years electrical engineer of the Chicago Rapid Transit Company and the Chicago, North Shore & Milwaukee Railroad, has assumed his new duties as general manager of the Chicago, South Shore & South Bend Railroad, another of the high-speed electrically operated railroads under the management of Samuel Insull and associates.

Mr. Jones' promotion, announced in the ELECTRIC RAILWAY JOURNAL of Aug. 7, comes as a reward for long and faithful service, during which he has won wide recognition in the electrical field. He began work with the Chicago Rapid Transit, Chicago, Ill., immediately after his graduation in 1909 and remained continually in this service until his recent promotion.

Charles H. Jones

Working his way up through the various stages of promotion from battery man on the Metropolitan Division, Mr. Jones was made electrical engineer of the Rapid Transit Lines and the North Shore Line in 1917. His first notable achievement was rebuilding the power distribution system of the Rapid Transit Lines shortly after their consolidation in 1912. This proved his capacity to handle big jobs, and he has been handling them ever since.

Mr. Jones also was in charge of all electrical work on the new Skokie Valley Route of the North Shore Line, which included the installation of catenary overhead along the entire route and part of the Shore Line Route, and the construction of five automatic substations of the latest type. Under his leadership the enormous power load required for handling the multitudes on the great Eucharistic Congress pilgrimage to Mundelein on June 24 was maintained throughout the performance of this miracle of mass transportation.

The present high standard of service being given on the South Shore Line is in great part due to the personal activities of Mr. Jones since the railroad was taken over by the Insull interests. Under his direction the power system was changed from alternating to direct current, the catenary was rebuilt over a large portion of the line and eight new substations were installed.

Mr. Jones was graduated from Armour Institute of Technology in 1909 with the degree of electrical engineer. He was born in Chicago.

Despite his many duties, he finds time to take an active part in the affairs of national electrical organizations. He is chairman of the power distribution committee of the American Electric Railway Association, in which capacity he has served for the past three years. As chairman he will make the annual report of the committee at the 1926 national convention to be held in Cleveland in October.

D. L. Smith Electrical Engineer of Chicago "L"

Dwight L. Smith, assistant electrical engineer of the Chicago Rapid Transit, Chicago, Ill., for the past seven years, has been appointed electrical engineer in charge of the electrical department, following the recently-announced promotion of Charles H. Jones to general manager of the Chicago, South Shore & South Bend Railroad.

The promotion of Mr. Smith to this position of great responsibility at the age of 36 years is a notable record of advancement in the electrical industry. Despite his comparative youth, however, Mr. Smith has had extensive experience in his chosen field. He was born in Freeport, Ill., in 1890, and received the degree of electrical engineer at the University of Illinois. He entered the Rapid Transit Line organization in 1910 as third-rail helper on the Metropolitan Division. He advanced rapidly, and in 1913 was made power supervisor of the entire elevated railway system.

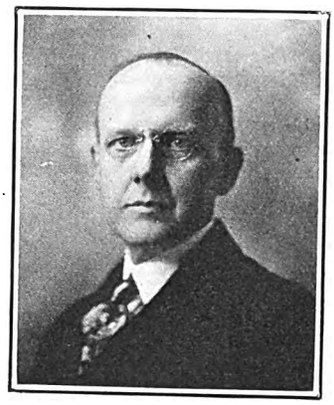
Mr. Smith was serving in this capacity when in 1916 he was called to the Texas border with the National Guard, in which he served as a Second Lieutenant. In October, 1917, he went overseas with the American Expeditionary Forces as Captain of Field Artillery. He returned to civilian life in April, 1919, with the rank of major. He was promoted to assistant electrical engineer during the same year, and served in that capacity until his recent advancement.

C. F. Gustason, acting power supervisor of the Chicago Rapid Transit, Chicago, Ill., for the past two years, has been appointed chief power supervisor. His advancement to this post follows ten years of service in the main office of the electrical department. Mr. Gustason is a graduate of Crane Tech. He entered the Rapid Transit organization in 1909 as battery man on the Metropolitan Division.

Railway Man an Elmira Bank Director

Frederic H. Hill, vice-president and general manager of the Elmira Water, Light & Railroad, Elmira, N. Y., has been elected a member of the board of directors of the Chemung Canal Trust Company, Elmira. During his residence of more than ten years in Elmira he has been prominent in civic activities and in several of the town's leading industries.

Mr. Hill has been vice-president of the Elmira Water Light & Railroad Company since 1918. He joined the company in 1913 as chief engineer, and a few months later was made general manager. A steady increase in the company's business has been noticed under his managership, and additions have been made to the property. A new gas plant has been built during his administration and service extended into surrounding towns and villages. He is also director of several other public utilities companies.



Frederic H. Hill

At the time of his appointment to the Elmira company Mr. Hill was the operating engineer of the United Gas & Electric Corporation. Before that he was connected with the Mellen banking interests on interurban electric railway work, and later with the Pennsylvania Railroad on construction and maintenance of way.

Mr. Hill was born in Bridgeville, Pa., in 1879. He was graduated from Washington and Jefferson College at Washington, Pa., and later received an engineering degree from the University of Pittsburgh.

In the ELECTRIC RAILWAY JOURNAL of July 7, 1923, there is an account of a celebration held by the employees of the Elmira Water, Light & Railroad Company showing their appreciation of his ten years of managership.

Henry V. Faber has been appointed assistant treasurer of the Jacksonville Traction Company, Jacksonville, Fla. The railway is under the management of Stone & Webster, Inc., of Boston, Mass., with which organization Mr. Faber was connected during the war on the Hog Island work. Later he became

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traveling auditor for the Boston office. Mr. Faber went to Jacksonville from the Boston office of the Haverhill Gas Light Company, where he worked on the standardization of forms and later in the treasury department.

Eldon A. Imhoff, office engineer of the Chicago Rapid Transit Company, Chicago, Ill., for the past five years, succeeds D. L. Smith as assistant electrical engineer. His promotion comes after efficient service with the company since January, 1919. Mr. Imhoff is a graduate of the University of Iowa, where he received the degree of Bachelor of Engineering in 1917. As noted elsewhere in this issue Mr. Smith has been named electrical engineer of the company.

Robert M. Davis, statistical editor of the *Electrical World* since 1919, has been made statistical adviser and consultant for all the McGraw-Hill papers. His wide experience in making statistical studies and his extensive knowledge of engineering qualify him well for this work. For several years before joining the staff of the *Electrical World*, Mr. Davis was engaged in engineering and statistical work in connection with water-power development for the United States Geological Survey. He is a graduate of the College of Civil Engineering of Cornell University, class of 1907.

Obituary

J. H. Chase

John H. Chase, district manager for the Iowa Southern Utilities Company at Burlington, Ia., died very suddenly on Aug. 14. He had been at his office the day previous.

Mr. Chase was a native of Marysville, Ohio. He was 50 years old, and had been connected with the Iowa Southern Utilities Company since 1914. He was first located at Centerville, Ia., and was later transferred to Creston. When the utility corporation took over the Walsh interests at Burlington two years ago, he was sent there as general manager. Under his direction the properties began to grow rapidly. He instituted the first bus service in the city.

Mr. Chase was a public spirited citizen. He was active in the Community Chest organization, and a director of the Greater Burlington Association and the Burlington Rotary Club, besides being affiliated with the Burlington Drama league.

Julius Thielson, formerly superintendent of the Providence & Danielson Street Railway, and retained as head of that division when the road was taken over by the Rhode Island Company, now the United Electric Railways, died in Portland, Ore., recently. He had been engaged there for the past six years in the manufacture of wood pulp for paper. Mr. Thielson, who helped lay the tracks for several transcontinental railways, went to Providence in 1900 with D. F. Sherman, who built the Providence and Danielson line. On the completion of the road Mr. Thielson was appointed superintendent.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

More Facts for Exhibitors at Cleveland

Instructions are going out from association headquarters about the shipping of material intended for use at the exhibit in connection with the meeting of the American Electric Railway Association at Cleveland, Ohio, starting on Oct. 4. Conditions are different this year from those in the past at Atlantic City. It is impossible of course to reproduce here all that the association has to say about this subject through Fred Dell, director of exhibits, but the facts are all contained in a special circular, a copy of which should be retained by the shipping department of each exhibitor and another copy by the exhibitor for his file.

The shipping instructions for freight and for express vary, but the differences are emphasized in the circular. All exhibitors should ship early, but this admonition is directed especially to those who send stuff by freight. All such shipments must be sent freight prepaid. A similar prepayment order applies to the express shipments. Norris Brothers, 2138-44 Davenport Avenue, Cleveland, are the official draymen.

To ignore the details set forth in the circular or not to follow them to the letter is to court disaster. There is no dearth of these circulars about shipping and Mr. Dell will supply as many as are needed within reason. Not only is it essential to ship material promptly, but it is highly necessary that particular attention be paid to the installation dates set forth in the circular. All exhibitors should bear in mind that likelihood that any lateness on their part in installing their own exhibit may discommode others who have been prompt in arranging their space.

Progress all along the line is reported in connection with the proposed exhibit. The sub-committee on decorations of the exhibit committee met in Cleveland, on Aug. 13, at which time bids were received from several prominent decorators. The committee is now studying the various proposals submitted and is preparing to let contracts in the near future.

General Motors Earnings Take Sharp Upward Rise

Recent feverish speculation on the Stock Exchange in issues of the General Motors Corporation, due to a statement attributed to a partner of J. P. Morgan & Company, that the stock was sure to rise in value, makes doubly interesting the balance sheet and statement for the half year ended June 30, 1926, issued on Aug. 9 by Alfred P. Sloan, Jr., president of General Motors.

Earnings for the six months considerably exceeded those of any previous half year in the company's history, and, moreover, earnings for the second quarter exceeded those of any previous quarter of any year. The total for the six months was $93,285,674, as opposed to $50,363,099 for the corresponding period of 1925. The first half of 1926 showed an earning of $17.33 per share of common stock, an increase of $8.31 over 1925. This pronounced gain in profits was due to marked increase in volume of business, as the profit per car has been tending downward.

G.E. Employees Offer Many Suggestions

Awards totalling $22,602 were paid to 2,172 employees of the General Electric Company during the first six months of the current year for suggestions which ranged from safety devices for the protection of workers to improved methods of manufacturing.

In all, 7,080 suggestions were made, an increase of approximately 1,500 over the first six months of last year, showing a gradual increase in the interest of employees in the company's suggestion system. For the first half of 1925, awards were made totalling $17,510 to 1,693 employees.

The awards, which ranged up to $500, were paid at the option of the recipient either in cash or G-E Employees Securities Corporation bonds, which yield 8 per cent as long as the original holder remains in the employ of the company.

Electricity Supplants Ice in Railroad Refrigeration

The Chicago, North Shore & Milwaukee is the latest railroad to turn to electricity as a means of solving its refrigeration problems. Five electric refrigerator cars, manufactured by the Phoenix Ice Machine Company, Cleveland, Ohio, have been purchased, and will soon begin to carry perishable produce from Chicago and Milwaukee provision houses to smaller towns along the line.

The successful application of electric refrigeration on the interurban lines of the Northern Ohio Traction Company was described in the ELECTRIC RAILWAY JOURNAL of Feb. 7, 1925. In that instance, conditions were such that the electric refrigerator car was able to perform in 24 hours a service similar to that performed by an ice refrigerator car in four days.

For the Chicago, North Shore & Milwaukee, the value of electric refrigeration lies not so much in the saving of time as in the way in which it meets several difficulties peculiar to the railroad. For example, one of the serious objections to ice refrigerator cars was the dripping from the ice bunkers, since the tracks of the company are elevated in the city of Chicago. More-

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over, since the railroad is electrified, the cost of necessary power is considerably less than that of ice. Also, the electric refrigerator car operates automatically, and requires no special organization to care for it. Thus, its overhead expense is nominal.

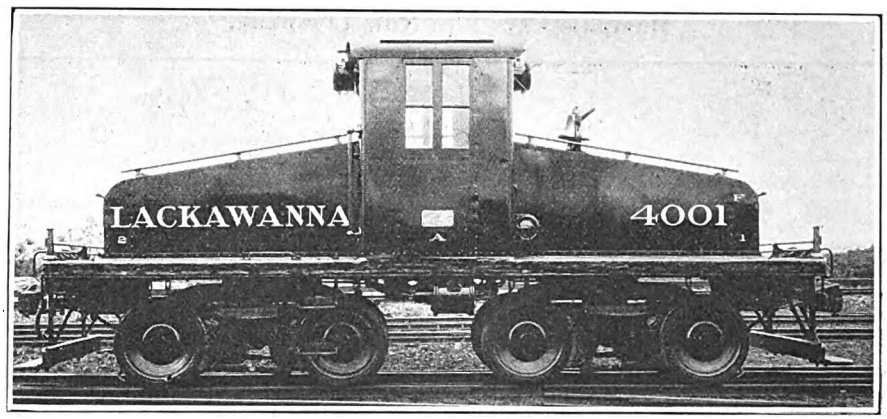
Frameless Truck Electric Switching Locomotive

A switching locomotive, known as the frameless truck type, which embodies several unique features of design, has recently been supplied to the Delaware, Lackawanna & Western Railroad for use at the company's Wall-about terminal, Brooklyn, by the General Electric Company.

The most important feature of this design is the truck, which is a departure from the usual construction of swivel truck locomotives. In place of the customary two axle bearings of the motor and the two truck journal bearings, the motor itself is modified in its external construction and provided with a single substantial bearing in place of the usual auxiliary bearings. The gears occupy their usual location, but no external journals are used. On this account the locomotive has the appearance of what is commonly called the inside-hung bearing type of truck design.

Each motor frame is cast with two pairs of lugs directly over the axle bearing to receive the ends of the equalizers. A substantial pin passes through the end of an equalizer and the lugs are so spaced as to serve as guides for the equalizers.

Two equalizers forged from steel bars perform the usual functions of truck equalizers in supporting the transom and, in addition, tie the trucks together and hold the parts in alignment.



A Departure from the Usual Truck Design Has Been Made for This Locomotive

The steel bolster is cast with the truck portion of the center plate with recesses and lugs for the motor noses and safety lugs and with slotted extensions for the brake hangers and levers. The transom, supporting the weight of the superstructure, the brake rigging and about half the weight of each motor, is in turn carried on coil springs which rest in spring hangers suspended from the equalizers. Vertical slots in the transom at opposite sides of the center plate serve as guides for the two equalizers.

The electrical equipment consists of four GE-207, 110-hp. motors, similar in all respects to the usual railway type motor except in the external form of the frame. Type M control is used, including the master controller and the necessary auxiliary contactors and rheostats. Compressed air is furnished by a 600-volt motor-driven air compressor having a rated piston displacement of 50 cu.ft. of air per minute.

The specifications of the new type locomotive follow:

Over-all length	29 ft. 2 in.
Over-all width	9 ft. 0⅞ in.
Height over cab	11 ft. 9⅝ in.
Height over trolley locked down	16 ft. 8¼ in.
Maximum height, trolley up	25 ft. 6 in.
Total wheelbase	18 ft. 8 in.
Rigid wheelbase	6 ft. 2 in.
Diameter of driving wheels	36 in.
Minimum radius of track curvature	45 ft.
Total weight, all on drivers	100,000 lb.
Weight per driving axle	25,000 lb.
Operating voltage	600 volt, d.c.
Motors	Four GE-207-G.

Portable Generator Receives Approval of Underwriters

The medium pressure portable acetylene generator manufactured by the Bastian-Blessing Company, Chicago, Ill., is the first machine of this type to be approved by the Underwriters, according to recent statements made by officials of the company. This approval was not given until the generator had passed through several stringest tests.

Its stability was demonstrated by the fact that it failed to tip over when its side was raised 21 in. or when its front was raised 66 in. Its safety was proved by two other tests. In the first of these the generator was set to producing gas at 10-lb. pressure and then thrown on its side, while in the second test the carbide feed was locked and the machine again thrown on its side. In both cases, when the generator was righted, it had suffered no damage and operated perfectly.

Large Equipment Order Placed at Seattle

The City Council of Seattle has authorized the Board of Public Works to enter into a contract with the St. Louis Car Company for 80 new street cars at a cost of $1,400,000. This is an expenditure of $120,000 more than now is available for this purpose. This action by the Council reverses its former mandate to the board that the fund of $500,000 for a street car bridge across the West Waterway on West Spokane Street should not be touched to buy new equipment. The Council states that the estimate upon which the former allocation was made provided for paving the street car bridge, which is now considered unnecessary.

ELECTRIC RAILWAY MATERIAL PRICES—Aug. 17, 1926

Metals—New York

Copper, electrolytic, cents per lb.	14.525
Lead, cents per lb.	8.90
Nickel, cents per lb.	35.00
Zinc, cents per lb.	7.75
Tin, Straits, cents per lb.	64.75
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	55.00
General service	30.50

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$5.00
Somerset mine run, Boston	1.95
Pittsburgh mine run, Pittsburgh	2.00
Franklin, Ill., screenings, Chicago	1.825
Central, Ill., screenings, Chicago	1.50
Kansas screenings, Kansas City	2.50

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.30
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.20
Steel bars, cents per lb.	2.05
Ties, white oak, Chicago, 6 in.x8 in.x8 ft.	$1.45

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (28 gage), cents per lb.	3.10
Sheet iron, galvanized (28 gage), cents per lb.	4.25
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	3.10

Waste—New York

Waste, wool, cents per lb.	12–18
Waste, cotton (100 lb. bale), cents per lb.:	
White	13–17.50
Colored	10–14

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	12.80
White lead in oil (100 lb. keg), cents per lb.	15.25
Turpentine (bbl. lots), per gal.	$0.9925
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	5.25–5.50

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire, cents per lb.	16.25
Rubber-covered wire, No. 14, per 1,000 ft.	$6.25
Weatherproof wire base, cents per lb.	18.00

Paving Materials

Paving stone, granite, 5 in. New York—Grade 1, per thousand	$147
Wood block paving 3½, 16 lb. treatment, N. Y., per sq.yd.	$2.70
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3x8½x4 N.Y., per 1,000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	1.85
Cement, Chicago consumers' net prices, without bags	2.10
Gravel, ¾-in., cu.yd., f.o.b. N. Y.	1.75
Sand, cu.yd., f.o.b. N. Y.	1.00

Old Metals—New York and Chicago

Heavy copper, cents per lb.	12.00
Light copper, cents per lb.	10.125
Heavy brass, cents per lb.	7.50
Zinc, old scrap, cents per lb.	4.375
Lead, cents per lb. (heavy)	7.75
Steel car axles, Chicago, net ton	$17.75
Cast iron car wheels, Chicago, gross ton	16.25
Rails (short), Chicago, gross ton	17.75
Rails (relaying), Chicago, gross ton	26.00
Machine turnings, Chicago, gross ton	7.50

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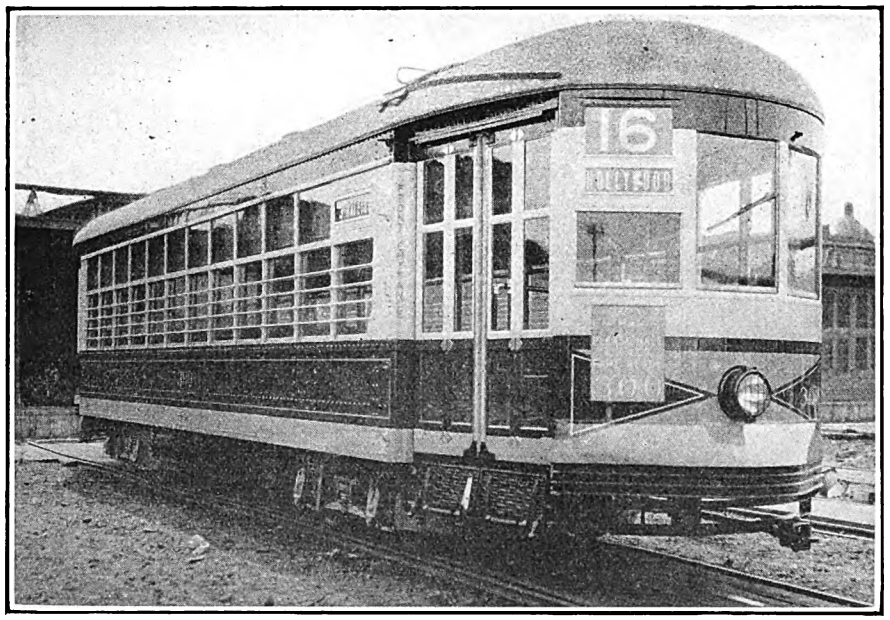
Memphis Cars Are Now Completed



New Memphis Cars Present Excellent Appearance

Delivery has just been made of 32 single-end, one-man street cars ordered from the St. Louis Car Company in February by the Memphis Street Railway of Memphis, Tenn. The cars are of steel construction and weigh but 35,090 lb. They are destined for use in city service. Following are principal specifications on the new equipment:

Seating capacity	56
Weight:	
Car body	16,000 lb.
Trucks	10,520 lb.
Equipment	8,570 lb.
Total	35,090 lb.
Bolster centers, length	22 ft. 0 in.
Length over all	46 ft. 2 in.
Truck wheelbase	4 ft. 10 in.
Width over all	8 ft. 4⅞ in.
Height, rail to trolley base	11 ft. 0½ in.
Body	Steel
Interior trim	Mahogany
Headlining	Agasote
Roof	Arch
Air brakes	General Electric
Bumpers	Hedley anti-climber
Car signal system	Faraday
Car trimmings	Polished bronze
Control	K-35 single-end
Curtain fixtures	Curtain Supply Company
Curtain material	Pantasote
Destination signs	Hunter
Door operating mechanism	National Pneumatic
Fare boxes	Johnson, air operated
Fenders	Memphis standard
Gears and pinions	General Electric
Hand brakes	St. Louis Car Co.
Heater equipment	Consolidated Car Heating Co.
Headlights	Golden Glow
Motors	Four General Electric 35 hp., outside hung
Paint	St. Louis Car Co. system
Registers	International, electrically operated
Safety Devices	Safety Car Devices Co.
Sanders	Keystone air operated traps
Sash fixtures	Rex brass sash
Seats	Hale-Kilburn de luxe non-reversible
Seating material	Plush
Step treads	Irving Iron Works "Safkar"
Trucks	Brill
Ventilators	Nichols-Lintern
Wheels	Chilled iron, 26-in.

Rolling Stock

Steubenville, East Liverpool & Beaver Valley Traction Company, Steubenville, Ohio, has ordered eight new interurban cars, costing approximately $131,000, for trunk line service between Steubenville and Beaver. These cars, which are manufactured by the G. C. Kuhlman Car Company, Cleveland, Ohio, are more than 48 ft. in length and unusually low, measuring only 10 ft. 8 in. from wheel tread to roof.

New York, Westchester & Boston Railway, New York, N. Y., has ordered 20 steel vestibuled, Brinkerhoff cars from the Pressed Steel Car Company. Each seats 80 passengers. Deliveries will commence in September. Some of the principal specifications are as follows:

Number of cars ordered	20
Approximate weight:	
Car body	64,800 lb.
Trucks	32,883 lb.
Equipment	29,837 lb.
Total	126,900 lb.
Bolster centers, length	47 ft. 7½ in.
Truck wheelbase	8 ft.
Width over all	10 ft. 4 in.
Height, rail to pantograph	14 ft. 7 in.
Body	All steel
Interior trim	Agasote and steel
Headlining	Agasote
Insulation	Three-ply Salamander and Tucork
Floor	Red Flexolith
Air Brakes	Westinghouse
Armature bearings	Sleeve
Axles	5½ x 10-in. Standard Steel Works
Car trimmings	Statuary bronze
Center and side bearings	Pressed Steel and Perry
Compressors	Westinghouse XD-EG-2
Conduits and junction boxes	Westinghouse
Control	Westinghouse AB.
Couplers	Pitt
Curtain fixtures	Curtain Supply Co.
Diaphragm	Curtain Supply Co.
Curtain material	Pantasote
Destination signs	Stencilled steel
Door operating mechanism	National Pneumatic
Draft Gear	Waugh
Finish	Devoe & Reynolds enamel
Gears and pinions	Nutall BP flexible
Hand brakes	Blackhall
Heater equipment	Gold
Headlights	14 in. Golden Glow
Journal bearings	5½ x 10 in. sleeve
Journal boxes	Symington
Motors	Two Westinghouse 409-B2, inside hung
Pantagraph	Nuttall 131-A
Sash fixtures	O. M. Edwards
Seats	Hale & Kilburn 392
Seating material	Pantasote No. 85
Slack adjuster	Westinghouse type "L"
Springs	Railway Steel Spring
Step treads	Kass safety
Trucks	Pressed Steel Car Co.—built up
Ventilators	Ten Utility
Wheels	36-in. rolled steel, 42-in. bolted steel

Track and Line

Cincinnati Street Railway Company, Cincinnati, Ohio, is expending approximately $35,000 in relaying 3,000 ft. of single track on McMicken Avenue. The new rails are of the 7-in. types, laid on steel ties imbedded in concrete.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has started work on track improvement program on its Twenty-seventh Street line between Hopkins Street and Atkinson Avenue, where a new double track will replace the present single track line at an estimated cost of $85,000.

Montreal Tramways, Montreal, Que., has started preliminary work on constructing its new line to the top of Mount Royal. Engineering difficulties are consoliderable, as the line will reach an elevation of 690 ft., passing over an elevated viaduct at one point, and in another place going through a tunnel about 300 ft. in length. The line will cost approximately $600,000 and will be ready for operation next spring.

Hydro-Electric Railways, Windsor, Ont., has given out contracts for excavation work in preparation for laying 8,400 ft. of new track on Ouellette and Wyandotte Streets, Windsor.

Trade Notes

Reo Motor Car Company, Lansing, Mich., states that more Reo Model W buses were shipped in July than in any other month in the history of the company. The statement was also made that more buses were shipped during the fiscal year, which ended July 31, than in the previous year and that the company entered the month of August with a large volume of unfilled orders.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued a folder, No. 4710, describing standard gasoline-electric equipment for rail cars. The information about this equipment is classified under four heads: Generating equipment, motors, car data, and performance.

Eisemann Magneto Corporation, New York, N. Y., announces the occupation of its new direct factory branch building at 6511 Lincoln Avenue, Detroit, Mich. Ground was broken for the erection of the structure in April, and building operations were completed July 15.

New Advertising Literature

United States Graphite Company, Saginaw, Mich., has issued a pamphlet describing in detail its line of motor and generator brushes. General suggestions for eliminating brush troubles are also included.

Crouse-Hinds Company, Syracuse, N. Y., has issued a folder describing various types of "Arktite" plugs and receptacles, interlocking switches and plugs and safety hand lamps.

Ohio Brass Company, Mansfield, Ohio, has issued a leaflet which lists several new features responsible for the longer service of the O-B Feist trolley wheel.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

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Cleveland Program Presages Meetings of Value

EVERY railway man, no matter what his position in the industry, will find interest in the program for the Cleveland Convention of the American Electric Railway Association, published elsewhere in this issue. "Unified Transportation Service in the Public Interest," the general topic for the opening session, may well be said to characterize the entire program. It is indicative of the growing conviction that success in transportation is dependent on an honest endeavor to serve the public with the best facilities and methods that can be obtained.

It will be noted throughout the program that the movement begun last year to subordinate committee reports so as to give more time for discussion of vital topics has been extended. The reports are now being distributed to the members. They should be studied with care so that each individual interested in a particular topic will be prepared to discuss it intelligently rather than to listen to a detailed reading of the report on the convention floor. The change has already done much to increase interest in the meetings, and as it is used more its value will become even greater.

The General Manager Threw the Switch

IT WAS a small single-track interurban property on which the general manager was in the position of a man trying to plug, with his fingers, a hundred holes in a leaking bucket. He needed money for improvements. He had severe bus and automobile competition. His track was none too good. His public was on the whole disinterested in his troubles.

But he had implicit faith in the railway. By his very enthusiasm he had raised the money for a down payment on spick and span new cars. He was determined to make his service superior to any other form of transportation in his territory. He was trying to build into his service the "pep," "snap" and "enthusiasm" that the public wanted. Since he realized that in improved service alone lay his salvation, he was intent on speeding up his cars, keeping them on time and building enthusiasm in his men.

On a particular day he was riding one of his new cars—and he rode them frequently at all hours of the day and night. The car was comfortably loaded with passengers as it approached a turnout to make a "meet." Bill, the one-man operator, slowed down preparatory to throwing the switch. He was apparently in a hurry, for the schedule was "tight." But before he could bring his car to a complete stop the general manager arose from his seat and hopped off the front end. That manager ran ahead and threw the switch before the car reached it. "Let's go, Bill," he sang out as he swung aboard again. The car picked up speed rapidly and was soon under way to the delight of its passengers.

The incident may seem insignificant and the general manager's action unbecoming his position of responsibility. But after all the force of example is greater than any precept. Enthusiasm is communicable. In the common task of serving the passengers on that car the manager joined Bill in practicing what he preached.

Exhibit Your New Car at Cleveland

FACILITIES for the exhibit of electric railway cars during the annual convention in Cleveland are better this year than they have ever been at any former convention. Twenty-five hundred lineal feet of track space with convenient connection to steam railroads and to the surface rails of the Cleveland Railway are being provided. The exhibit committee has made a special effort to encourage and foster a showing of the progress made during the past year in improving the vehicle in which electric railway rides are sold.

This is in line with the car improvement program that is rapidly gaining momentum in the industry. Reservations for space both by manufacturers and operating companies have been made to an extent which indicates that this will be one of the most impressive car exhibits held in many years. To the car builder it offers the opportunity of capitalizing on the progress made during the year. It is unquestionably good business for every builder to be represented adequately.

But there is also a good reason for operating companies to co-operate by sending cars to Cleveland. By thus helping to make the exhibit truly representative of the best that has been done during the year, there will be an opportunity for critical comparison of designs. Every operator will benefit through the stimulus thus given to progress. Now is the time for the industry to put its best foot forward. Send one of those new cars to Cleveland!

Merchants Have a Direct Interest in Traffic Congestion Relief

ONE phase of vehicular traffic congestion is the danger to big city stores in the fact that residents of outlying districts are doing more of their shopping locally. This situation is giving much concern to merchants in metropolitan centers, where advertising of stores in some of the outlying districts occasionally amounts to one-third as much as that done in the main shopping area. In some of the largest cities, downtown merchants are endeavoring to offset this competition by establishing branch stores in sub-centers. They have been forced to realize that growing vehicular traffic has not only diverted business to other locations, but has added much to the cost of the business which they still hold. One prominent merchant has been quoted

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as saying: "If merchants do not do something to relieve the present traffic situation, within fifteen years there will be no downtown shopping districts of any importance."

While merchants and bankers as well as property owners in downtown centers might well look with concern on the fast development of rival business in outlying districts, local transportation interests should also be looking ahead as to what this development means for them. Will it avoid the necessity of car rides to get people to their shopping districts? Will they walk to neighborhood stores of all kinds as they now do to local movie shows? Or, on the other hand, will the subcenter stores attract more short riders and thus prove a boon to the railway companies?

Store patronage will follow the line of least resistance. Traffic will follow that patronage. The result of decentralization, therefore, will be a shifting of the congestion problem to the various local centers to which business was transferred in the hope of finding relief. Moves of this kind probably will bring only temporary help. This prospect should bring together business interests and transportation executives in a common effort to plan a solution which will serve both to best advantage.

Public Recognition of the New Spirit of Salesmanship

ARTICLES like one on the Pittsburgh railway situation, published in the *National Municipal Review*, must eventually redound greatly to the credit of the industry. So far as electric railway men are concerned there is nothing new in the presentation, but it is ably done by the author, Charles K. Robinson, a member of the Pittsburgh Bar. He has taken old material and worked it over in an orderly and readable way that carries conviction. This in itself is art.

Mr. Robinson attributes the accomplishments at Pittsburgh to "a new spirit of management and salesmanship." Those seven words really tell the whole story. It just happens that Pittsburgh is the first of a proposed series, so that others in the railway industry who are making this phrase their watchword need not feel jealous at the selection of the Coffin winner of 1925 over them. They may be in line for treatment in the future and not know it.

The picture of the past painted by the author is not an ennobling one, but the past had to be gone over merely to point the way to the present and the future. The story of Pittsburgh is too well known to the industry to attempt to tell any part of what Mr. Robinson has said. Important as are his remarks, their significance to the industry lies in their presentation through the medium he chose rather than in their context. Particularly significant is the recognition on the part of the editor of the *Review* in his brief editorial comment to the effect that the nickel fare is little more than a memory and that to-day the important thing is adequate service at a reasonable rate. In this respect, to use his own words, the editor says that his series begins "with Pittsburgh, where better service plus a desire to please has done the trick."

It has "done the trick" there and it is doing it in many more cities. Moreover, this recognition is growing. The oftener the story is told the more frequently will citizens of other places be likely to grow introspective and to inquire to what exent they themselves may be responsible for any difference in standard between what they enjoy and what others enjoy. When they do that, they are on a fair way to the settlement of the problem. As the JOURNAL for Sept. 26, 1925, said: "It is the privilege of the people to demand better and better service, and for it theirs is the obligation to pay." That means an adequate but not an onerous fare under conditions of operation in which the mutual dependence of the railway and the community is recognized. That has been the basis of Pittsburgh's progress.

Universities Can Help Promote the Science of Transportation

ADEQUATE transportation is a vital factor in the prosperity of this country and requires the services of a large number of persons, yet comparatively little attention has been given in the past to determine the best methods of training men to engage in this industry. Fortunately, under the bequest of Lord Strathcona, a pioneer railroad builder in Canada, Yale University has been placed in a position to undertake study along this line. As a preliminary the university recently authorized what is probably the most comprehensive survey of all work of this kind being done by universities, transportation agencies and others in this country. This survey has just been finished by Messrs. Topping and Dempsey, holders of Strathcona Memorial Fellowships in Yale University, and contains, in addition to the survey, recommendations of what the universities can do in the way of courses of study and research in transportation.

Those in charge of the investigation are under no uncertainty as to the need of adequate preparation on the part of those who will be called upon to conduct the transportation enterprises of the future. They also believe that in this preparation the universities can assist, just as they are now doing in other professions, such as engineering, law and medicine, and that this service need not in any way conflict with such other training conducted directly by transportation and equipment companies. Indeed, the report gives as much, if not more, consideration to the courses and research conducted by these corporations than to those at present being given in the universities and in technical and vocational schools. Electric railway transportation is considered extensively in the report, and it is satisfactory to learn that at least some electric railway companies have fully realized the necessity for conducting courses for apprentices as a logical preliminary to securing competent men for responsible positions in the organization.

Obviously, research also is a field in which the universities can be of assistance to the transportation companies. There are many questions, the survey declares, to which unbiased study by a body of scientific research workers, especially with the co-operation of the carriers, can bring most satisfactory replies.

Considerable skepticism was met among railway men during the survey, as to the ability of the universities to help much in the way of training men for transportation positions. The business is one, they said, that can be learned only on the job. The universities cannot turn out transportation specialists. The necessary knowledge can be acquired only in practical work. All this may be very true. But the same statement can be made with equal force of young men preparing for other careers.

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Unquestionably, there are great opportunities in the field of local transportation where the universities can do valuable service. The transportation companies of the future will need all the assistance that they can get from men trained in economics, sociology and engineering. The Yale survey points the way in which scientific thought can help to make better transportation in the future. As courses are developed at the universities, they should receive the cordial support of electric railway companies.

For Those Who Swell and Those Who Grow

CRITICAL, indeed, of corporate statements intended for public consumption is Professor Ripley in an article "Stop, Look, Listen!" contributed by him to the *Atlantic Monthly* for September. Still the dissertation is shot through with strains of praise, and the utilities come in for much of this as well as some of the sarcasm. It is the Ripley of old that is functioning, the Ripley whose works on the railroads are classics, the Ripley who ponders well what he writes before he essays the task. But that is not the point. It is in the substance of his remarks rather than in the vehicle that the ELECTRIC RAILWAY JOURNAL is concerned.

It would be impossible even in a cursory way to consider here all he says. Much less would it be possible to pass upon the applicability of some of the remedies he suggests with respect to extension of the jurisdiction of the federal trade commission in the domain of the so-called industrials. He is on safe ground when he criticises the annual report that is ornamental rather than orderly. Of course, reports of the utilities are all on file with their state commissions in detail and in standard form, but that is no excuse for the inadequate annual statements rendered by many of these companies. As recently as the issue of May 8, ELECTRIC RAILWAY JOURNAL in a somewhat liberal characterization said that after all an annual report, just like a person, should not be ornate at the possible sacrifice of substance. Certainly the lack of uniformity in utility reports as rendered to the public greatly reduces their value for purposes of comparison. This is quickly borne in upon anybody who has attempted any statistical studies with the printed report as the only source of his material. It is difficult to be specific in comment of this kind, keep within bounds, and stimulate or even sustain the reader. This Professor Ripley does. His strictures are for the most part well deserved, and every financial editor whose duty it is to digest company statements will undoubtedly be inclined to agree not, perhaps, with all his suggested remedies but with his ideas with respect to what is essential in financial statements.

The needs which the Professor emphasizes are growing and the forms of reports which he commends, such as the excellent one of the Philadelphia Company, to mention just one, certainly are a most valuable publicity medium entirely aside from their practical value. "Stop, Look, Listen!" certainly is a provocative article. This is not the first time that Wall Street and the country at large have heeded Professor Ripley. His comments certainly will appeal to "the men who grow," and if they will condescend to stick with them to the finish, his remarks should prove helpful to "those who merely swell with the advance of the years."

A Major Process Often Has Valuable By-Products

SALESMANSHIP of transportation as developed on many modernized properties often has valuable by-products that cannot readily be calculated in advance. If the process of training car operators as salesmen is successful in its direct accomplishments, it is well enough worth the time and effort of property managers. But when applied to accomplish special results it adds a crowning touch to such efforts.

About 30 men of the transportation department of the Pennsylvania-Ohio lines organized and made a mass attack on property owners and in two days secured practically all the necessary easements for the steel towers of a new 40-mile transmission line. Prolonged and expensive delays to a necessary extension of facilities were thus obviated.

Enough that these men are better salesmen of securities. But here is tangible evidence of the additional advantages of salesmanship teachings. What man will not attack his daily job with greater spirit when he feels the essentiality of his being a part of such an organization?

Charging Depreciation on Undervalued Properties

OF SERIOUS import is the problem raised in the determination of depreciation charges for railways that have been transferred to new owners at prices below their intrinsic value. The basis on which the depreciation shall be calculated, and the rate which may be charged, may determine the success or failure of the enterprise if the new owners desire to give a continuing service. Such a situation has arisen in the case of the Jamaica Central Railways, Inc., of Queens Borough, New York City, the details of which are given in an article in this issue.

This railway was sold by the receiver at a price of about one-fourth its appraised value on a depreciated basis. For a time service was suspended. After a while the new owners decided to rehabilitate the system and resume operation. In setting up the accounts it was found that the rulings of the utility commission required charging off depreciation on a basis of nothing greater than the purchase price. This, of course, precluded the accumulation of a sufficient reserve to cover the continual reduction in real value of the road and its equipment due to depreciation.

The engineers who investigated the situation found that the average life of the elements of the property is only about six years. On the basis of the highest charges which can be set up, the property would have to last an average of about sixteen years before even its present-day depreciated value can be accumulated. When the cars and track are worn out a few years hence, heavy financing will be needed. Meanwhile, provided the fares are adequate to cover the costs of service on the basis prescribed, the car riders will be paying less than the true cost of the service.

Unless owners are allowed to set up enough reserve for depreciation in such cases as this, it is difficult to see how service can be continued in many communities where properties have been transferred for less than their worth. The industry and the regulatory bodies can well afford to give the problem the most serious consideration.

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Medical Survey in Fort Worth Has Raised Health Standard of Employees

Northern Texas Traction Company, Employing 610 Men Exclusive of Temporary Workers, Follows Closely the Health of Employees—461 Men Re-examined in 1925 and 360 During the Preceding Year

HEALTH and the pursuit of happiness have been fostered in Fort Worth by the Northern Texas Traction Company for many years. The physical condition of employees is under surveillance from the time of the rigid examination upon application for a position with the company until a separation occurs. The re-examination offered these men and urged upon them is perhaps one of the most important humanitarian accomplishments that industry can offer. Maladies in their initial stages are thus discovered and corrected whenever possible, thus extending the years of useful life and often avoiding the misery of a sickly old age.

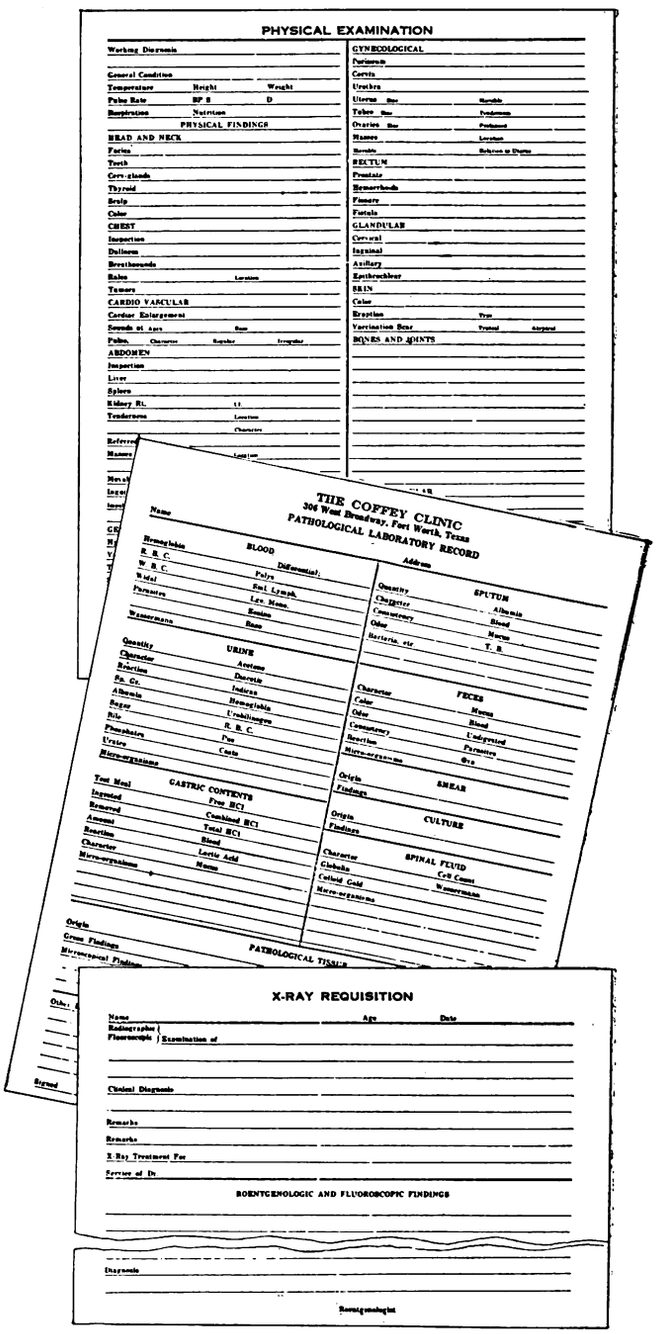
Following the re-examination of employees, corrective measures are recommended that have aided materially in raising the classification, even though because of the low yearly turnover the average age of employees has increased from 35 years to 39 years in a period of about four years. Over 90 per cent of all employees have been with the company five years or more, and 11 per cent have been in service twenty years or more.

Before the group reinsurance in outside companies was discontinued the work of the medical staff was so successful that a total reduction of 30 per cent in the reinsurance premiums was obtained because of the high health record on the property. The discontinuance of group reinsurance is only experimental and the company is not committed to continue this policy.

All employees, except colored and temporary men, are required to belong to the Mutual Aid Society, for which $1 per month dues are collected, the company contributing a like amount. Returns to the employees are in the form of sick benefits amounting to $2 per day for a total of 120 days, and $1 per day for 60 additional days, making a total of $300 possible benefits for any one sickness or accident. No benefits are paid for less than seven days. Illness and accident payments begin after the seventh day, although payments up to the first day of illness are retroactive. In addition, employees are allowed $15 a week hospital benefits in case hospital service is necessary.

Free medical attention is furnished to all employees without additional charge, and this attention includes all illness or accidents as well as major operations. Any prescription for drugs which the employee requires is also filled without additional cost to him. A death benefit of $500 is allowed to any employee of less than six months seniority, and after six months this becomes $1,000.

The primary value in the light of real accomplishment arises from the periodical examination of employees that is urged upon all men and women in the



Sample Blanks Used in the Examination of Northern Texas Traction Employees at the Coffey Clinic, Fort Worth, Tex.

A thorough initial examination of all prospective employees is required. These records shown above and on page 335 are kept in folders. Re-examination is urged on all employees and these further records with a notation of all incidental calls are recorded in the proper places on the permanent records of each man or woman employee.

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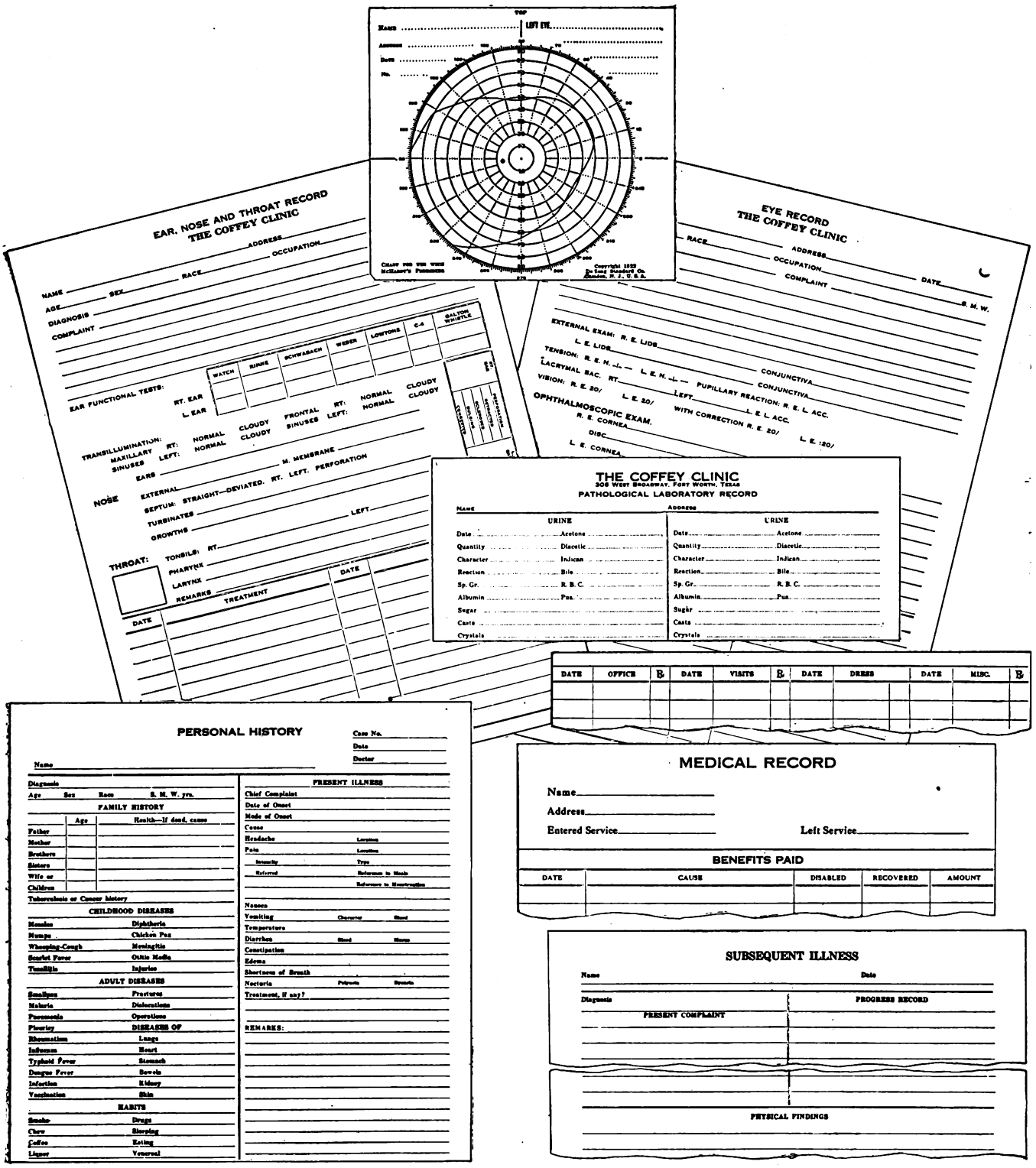

The Forms Used to Record Medical Examinations by the Northern Texas Traction Company Give a Complete Record of the Physical Progress of the Employee. From This Record Corrective Treatment Is Prescribed and Incipient Chronic Illnesses Prevented

service of the company as a part of the free service of the Mutual Aid Society. In this way corrective treatment is applied to incipient diseases before they become chronic. The result is that of 271 men who were examined both in 1924 and 1925, 150 men remained in the same health classification for the second year, 76 raised their grade and 45 dropped into a lower classification. While re-examination is not compulsory, the results have been so gratifying that more men are beginning to see the advantage of discovering incipient illness and correcting such troubles before they develop into a more serious condition.

Advantages to the Mutual Aid Society and the company are likewise obvious. A thorough examination before employment is required and this alone eliminates many undesirable prospects. This examination includes a thorough physical examination, special examination of eye, ear, nose and throat and laboratory tests of the

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blood and urine. This is the same routine which is followed up in the annual medical survey. If these general tests indicate possible complications the prospective trouble is further investigated to the end that definite corrective measures can be applied.

Five classifications, from to A to E, inclusive, are used. To be in class A requires practically perfect physical condition. Even filled teeth or slight troubles with the eyes, skin or throat will prevent an A classification. Of the eight men in this grade in 1924, only four could remain in 1925, because of a more severe standard required for this classification.

The complete classification of men examined in the years 1924 and 1925 are shown as follows:

Class	1924 Men	1924 Per Cent	1925 Men	1925 Per Cent
A	8	2.2	4	0.9
B	164	45.5	248	53.8
C	156	43.3	185	40.1
D	30	8.5	24	5.2
E	2	0.5	None	....
Totals	360	100.0	461	100.0

Of the 461 men examined in 1925, 271 had been previously examined in 1924 and the two years cover nearly all of the employees. It is seen that considering the group as a whole the number of employees in the higher classifications has been raised. The decrease in grade A is of little consequence. The increase of grade B and the decrease of C and D is of greatest importance in showing the increased average health conditions.

Further analysis of the physical condition of the male employees of the Northern Texas Traction Company shows the following defects observed in the reexaminations. These defects are divided into twelve classifications, as shown in the table in the next column.

This association of employees has full appreciation of the value of preventative medicine as taught them by Dr. Alden Coffey, who has been employed by it for the past eighteen years. The medical studies conducted through the co-operation of the Northern Texas Traction Company's employees and the enlargement of his

		Per Cent 1924	Per Cent 1925
1.	Eyes	13.6	8.7
2.	Ears	11.7	9.9
3.	Mouth	9.3	12.3
4.	Nose and throat	21.3	12.2
5.	Respiratory	0.8	0.1
6.	Genito-urinary	7.0	12.0
7.	Cordio-vascular	7.3	9.6
8.	Digestive system	14.9	14.4
9.	Nervous system	0.1	0.6
10.	Skin	3.0	7.6
11.	Mutilation and deformities	0.7	.8
12.	Miscellaneous, hernia, etc	10.3	10.9
	Total	100.0	100.0
	Total men examined	360	461
	Total defects	1,092	1,449
	Defects per man	3.03	3.1

private practice has resulted in the equipment of a modern clinic and enlargement of the medical staff, which at this time includes five doctors, all specialists in various lines, with six additional men and women trained in laboratory and general clinic work.

This clinic is equipped to perform a general medical and hospital service except major operations, the surgical work being carried on at one of the local hospitals. It is planned to establish a dental clinic in the near future, but at the present time only dental examination is performed, including X-ray of teeth as well as of the body.

Traffic Lines Easily Marked in Youngstown

CLEARANCE lines on the streets of Youngstown denoting the swing of cars rounding the curves are quickly applied by the use of the machine illustrated. This road marker is manufactured by the Continental Products Company, Euclid, Ohio. The proposed line to be marked on the pavement is fully sketched out and the machine pulled along over this, automatically leaving a clean, white band in its wake.

The cost of the machine was divided between the city and the Youngstown Municipal Railway. The work of marking the bands on the streets is done by city forces aided by an inspector of the railway. The words "car swing" are stenciled on the pavement to warn motorists against getting too close.

Clearance Lines at Car Curves and Stenciled Signs on Pavement Warn Motorists in Youngstown, Ohio

At left is shown the device for marking swing lines used in Youngstown. This is a labor saver and produces a clean white band. At the right, traffic line marker at work showing the swing line and the safety margin used in Youngstown, Ohio, by the Youngstown Municipal Railway. "Car swing" signs are painted by use of stencils.

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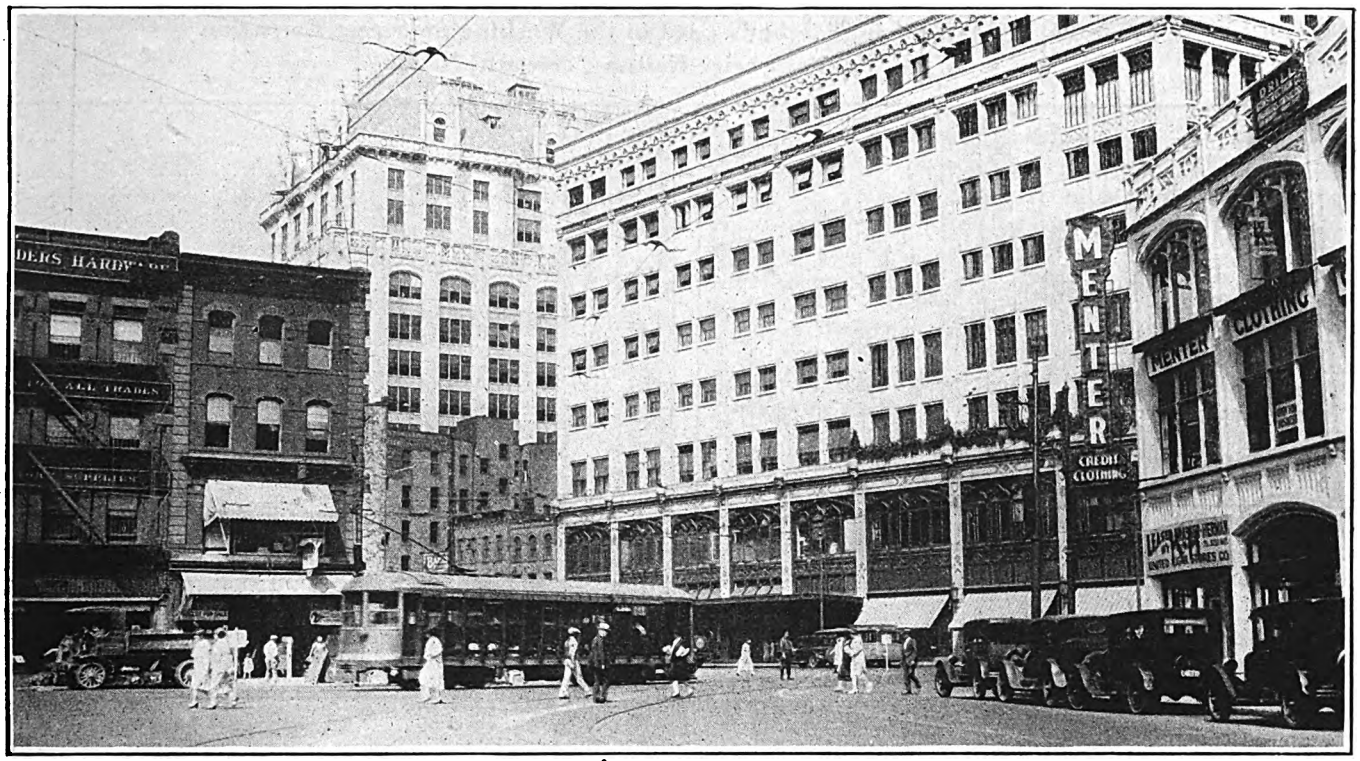

At the Intersection of Washington and Market Streets, Newark, N. J. Buildings on the Southeast and Northwest Corners Were Demolished in Order to Eliminate a Bad Jog, Thereby Making Possible the Installation of a Diagonal Crossing and Permitting Through Railway Operation on Washington Street

Track Extensions Improve Transportation Facilities in Newark

Public Service Railway Has Spent More than $300,000 to Develop a Second North and South Route Through Downtown Section, and Thereby Relieve Congestion on Broad Street — 1½ Miles of New Track Built

WITH the completion of the track construction work now in progress on Washington Street, Newark, N. J., the Public Service Railway will have a second double-track route passing north and south through the central business district of the city. To accomplish this, the company has spent considerably more than $300,000 in reconstructing the existing tracks on this street, and extending them to connect at the two ends with important routes leading to outlying sections. Approximately 1½ miles of new track have been built. In addition to this, the city government has spent a large sum to eliminate a troublesome jog at the intersection of Washington and Market Streets. It is planned to divert to this new route part of the railway service now operated on Broad Street, two blocks away, where congestion has become a source of delay to all track movements.

More than ten years ago, when plans were being made for the building of the Public Service Terminal in the heart of Newark, this improvement to Washington Street was included in the project. The primary purpose of building the Terminal Building was to reduce the number of cars crossing the busy intersection of Broad and Market Streets. Access to the terminal was arranged by subway from Washington Street on the west and by elevated structure from Mulberry Street on the east. The city agreed to undertake the improvement of both of these streets as its share of the plan to improve transportation facilities. An act was passed at that time by the State Legislature giving electric railways the right to construct connections between existing lines not more than half a mile apart. Connection of tracks on Washington Street with those on Broad Street and Clinton Avenue, came within this category.

Due to the war this comprehensive plan was only partly carried out. The terminal was built with its connections to Washington and Mulberry Streets, and certain improvements were made to the latter thoroughfare. The project of eliminating the jog in Washington Street, however, was delayed and consequently no effort was made by the railway to construct connections at the ends of this street.

Although the terminal project was not carried out entirely as planned, considerable relief was afforded to the Broad and Market Street intersection. As time went on, however, congestion again occurred. This was due in part to the development of extensive bus service and in part to the growing use of the private automobile. A recent traffic count showed more than

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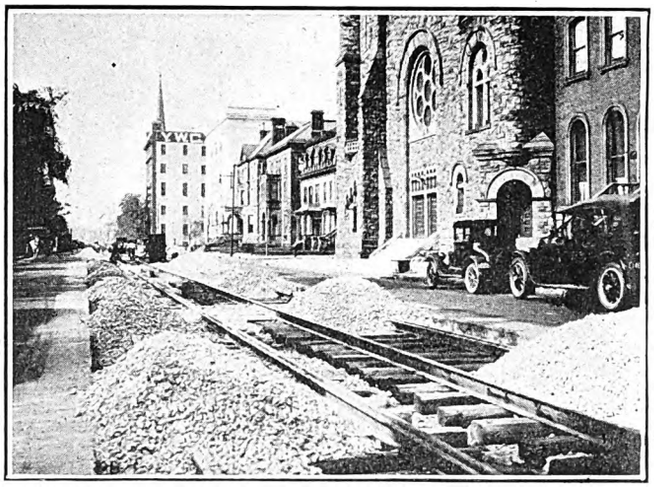
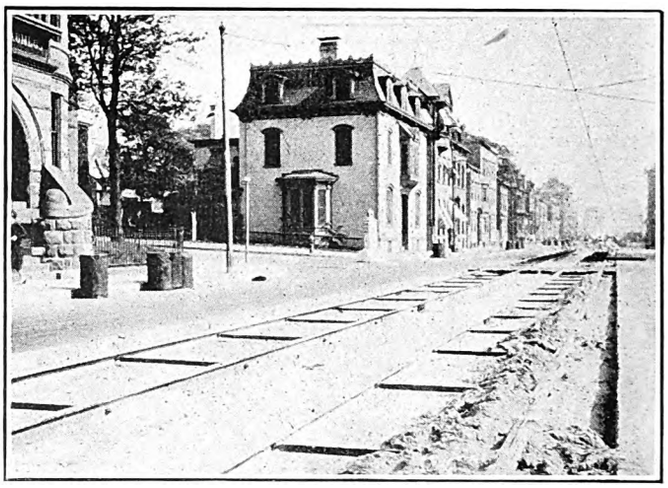
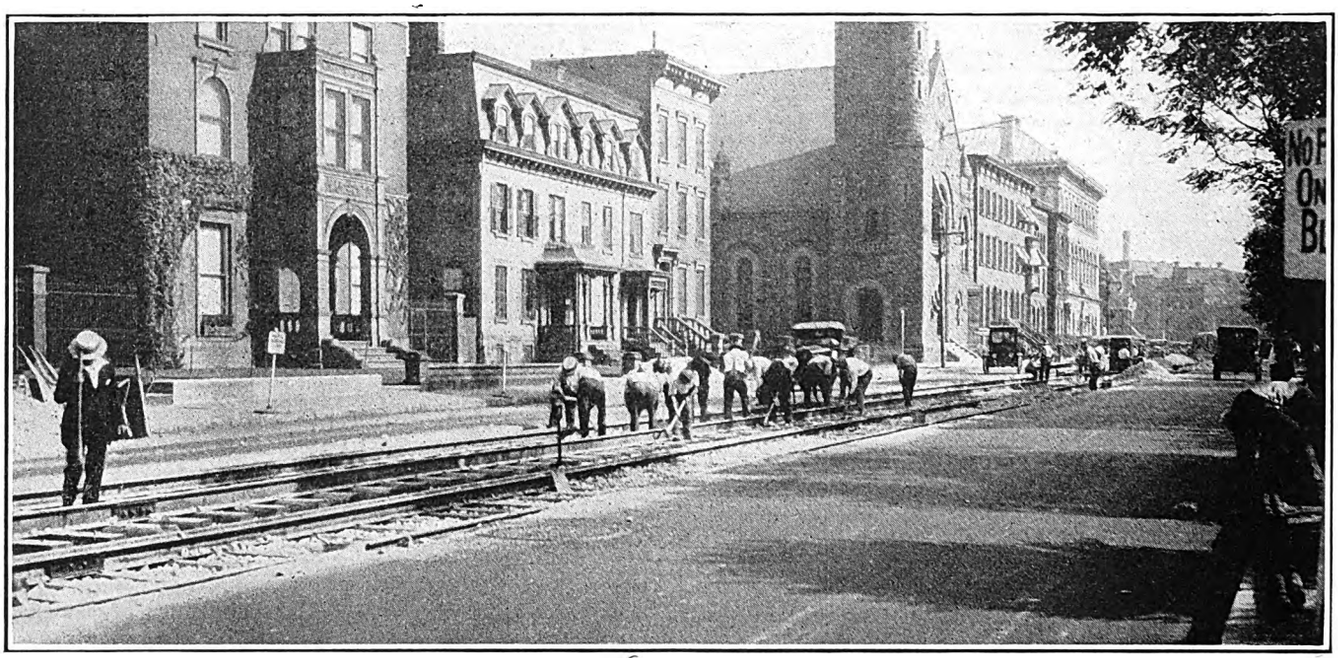
Track-Laying and Paving Methods Used in the Washington Street Extension of the Public Service Railway, Newark, N. J.



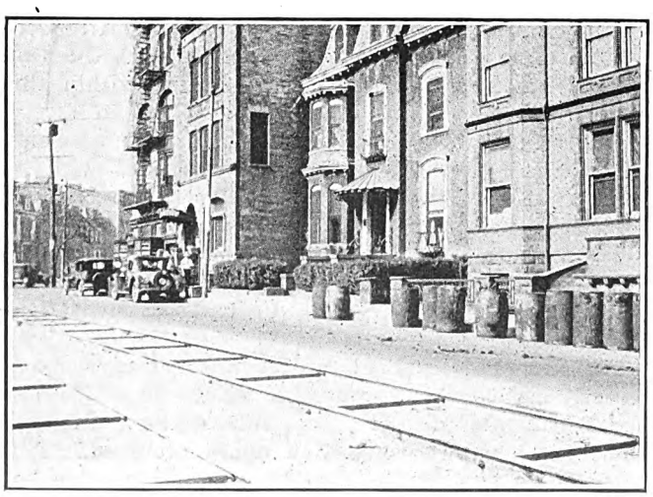
Track Structure Consists of 7-In. 101-Lb. Tram Rail on Wood Ties with Stone Ballast. This Is the Present Standard Type of Construction of the Railway for Use in Paved Streets



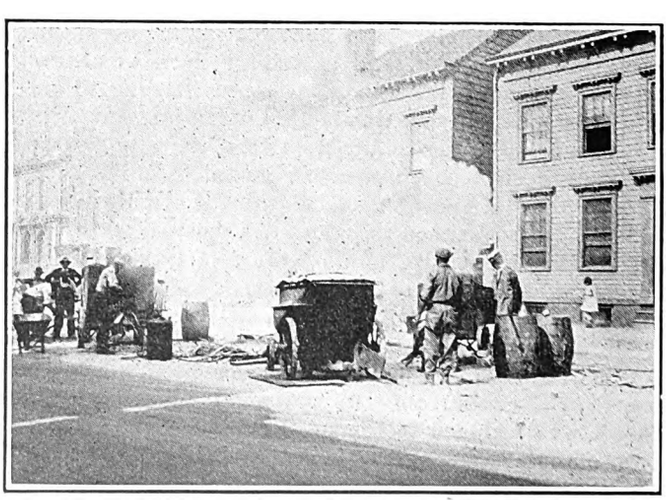
A Curb Separates Railway Area that is Paved with Granite Block from the Rest of the Street Paved with Asphalt. This Shows the New Track on South Washington Street



Tamping Ballast Under the Ties of the New Track on North Washington Street



Concrete Was Poured on the Ballast Even with the Tops of the Ties



Pouring Hot Mastic Filler between the Granite Paving Block

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2,700 vehicles crossing this intersection during the maximum hour. Of this number about two-thirds were on Broad Street as shown in the following table:

TRAFFIC COUNT AT BROAD AND MARKET STREETS

	Broad Street North Bound	South Bound	Both Directions
Cars	101	75	176
Buses	244	148	392
Vehicles	625	663	1,288
Total			1,856
	Market Street East Bound	West Bound	Both Directions
Cars	87	94	181
Buses	18	21	39
Vehicles	216	416	632
Total			852
Grand total			2,708

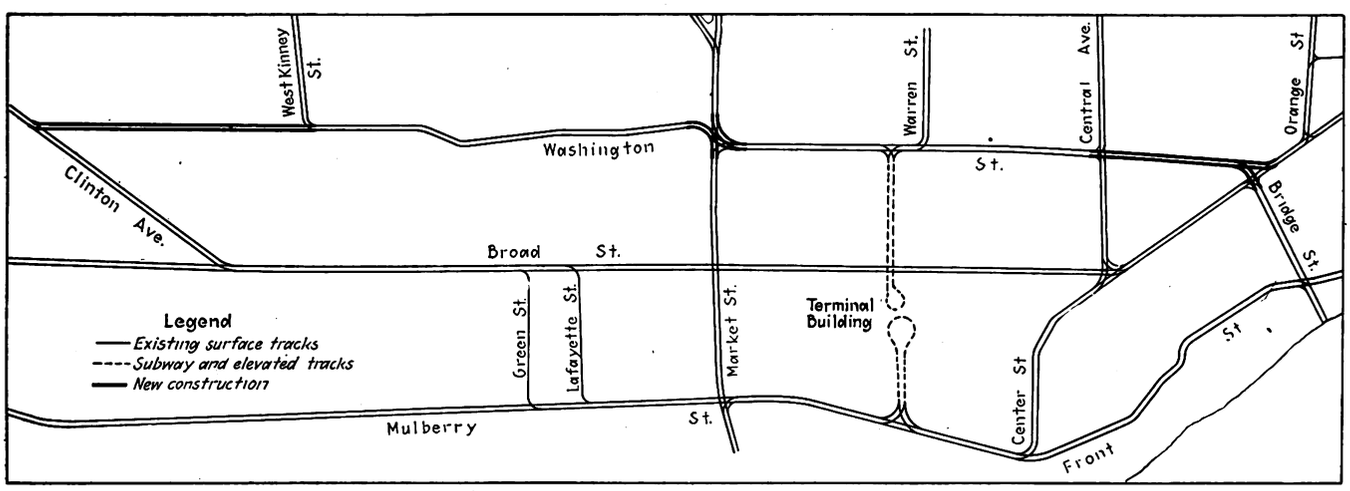
While the street cars are not a primary cause of the existing congestion as shown by these figures, their movement is seriously hampered under present conditions. The narrowness of Mulberry Street and its remoteness from the shopping district prevented its use as a relief artery. Creation of a through north and south route on Washington Street parallel to Broad Street, two blocks away, will make it possible to reroute a number of car lines to avoid congestion.

A little more than a year ago the city definitely undertook the straightening of Washington Street at Market, and the railway, as the first step of its program, undertook the reconstruction of existing tracks on that street. This involved the installation of complicated special trackwork at the above mentioned intersection. In June of the present year, the railway received authority to make the extensions at the two ends, totalling approximately 7,000 ft. of single track. Relationship between these extensions and the existing trackage is shown on an accompanying map.

On this job, the standard track construction adopted by Public Service Railway for paved streets was used. A 6-in. layer of stone ballast was laid on a dirt foundation compacted by a steam roller. Under special work this ballast was pneumatically tamped. Elsewhere it was hand tamped. Wood ties were placed on the ballast and concrete poured, leveled with the tie tops. The rail used was 7-in. 101-lb. tram. Lincoln welded joints were used, the plates being seam-welded and the bolts spot-welded. Less tendency for dirt to collect in the groove, and lighter weight are advantages of tram rail over grooved girder rail in the opinion of the management.

Granite block paving is used in the railway area, although the rest of the street is paved with asphalt. A granite curb was installed by the city about 18 in. from each of the outer rails to separate the two pavements. Re-cut blocks were used on a sand cushion. Between the rails the blocks are laid cross-wise while outside the rails they are laid longitudinally parallel to the granite curb. Mastic filler is used between the blocks with a top dressing of sand.

In accordance with the usual practice of the company, this construction work has been done by an outside contractor. The railway has found it difficult to secure sufficient labor for large track construction jobs on account of the seasonal nature of such work. General contractors on the other hand having work for their men throughout the year do not experience this difficulty. Installation of special track work at the intersection of Market and Washington Streets, and at the ends of the new connections has been done by the maintenance of way forces of the railway as it is thought that outside labor is not sufficiently skilled for this difficult work.



Track Layout in the Central Business District of Newark, Showing New Track Construction That Will Give Public Service Railway Another Through North and South Route

Pennsylvania-Ohio Employees Get Easements on New Right-of-Way

EASEMENTS for the steel towers of the new 40-mile transmission line between Youngstown and Toronto, Ohio, were recently obtained by trainmen and supervisors who were found proficient in the selling of the company's securities. Several campaigns of stock selling, accompanied by the salesmanship training that employees have received, have made possible the accomplishment of this unique stunt.

First an airplane survey was made over the proposed route of the 132,000-volt transmission line connecting the company's new power station on the Ohio River with the distribution substation just south of Youngstown. Since this route was largely through developed farm lands, it was decided to make a mass attack on the owners of this property so that easements could be obtained without giving the opportunity to work up opposition that often proves fruitful of delay and excessive costs.

Several teams were made up from men who had made the best records in the selling of securities. These men included the manager of railways, three superintendents, the machine shop foreman and almost twenty

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inspectors and trainmen. Suitable captains were selected and the territory was divided and assigned to each team. Explicit instructions were given and the necessary papers were prepared and distributed. When the zero hour arrived, the teams were all in readiness and in two days 93 per cent of the easements were obtained.

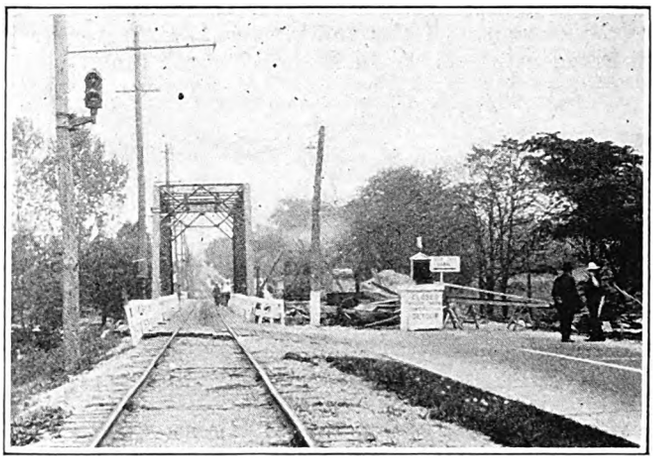
One man on one of the teams did not show up for three or four days but on his return his explanation was quite plausible. It happened that his man was then visiting in West Virginia, so he hopped in his automobile, drove down and came back with the easement papers in his pocket. Nothing remained but for the treasurer to pay the actual money agreed upon.

Traction Bridge Used by Highway Traffic

BY D. H. WALKER
Assistant Engineeer T. H., I. & E. Traction Company

WHERE the tracks of the Terre Haute, Indianapolis & Eastern Traction Company are parallel to the National Old Trails Highway, at a point a few miles west of Richmond, Ind., it was necessary that the Indiana State Highway Commission replace an old wooden bridge. A detour by road would have been long and over roads comparatively narrow for the heavy traffic on this highway. At some other bridges replaced at the same time in the immediate vicinity the Highway Bridge Department constructed a temporary detour and wooden trestle crossing the stream a few feet distant from the wrecked structure. Such a procedure would have been rather costly in this case owing to the nature of the stream bed and rather dense timber growth in the bottoms. The commission then obtained permission from the management of the traction company to divert highway traffic over the interurban bridge under certain conditions.

Accordingly the floor of the electric road bridge was covered with 3-in. planking spiked to the bridge ties. Guard rails were removed in order to provide a smooth surface. A guard fence, painted white, was erected on both sides for the length of highway travel on the interurban right-of-way. The turnoffs from the highway were made about 150 ft. distant from the bridge at each end in order to give the contractor room for tools and equipment while constructing the new bridge. As the rails were only a few inches above the pavement and no ditch existed between the track and highway it was easy and inexpensive to make a smooth passageway from the highway to our bridge.

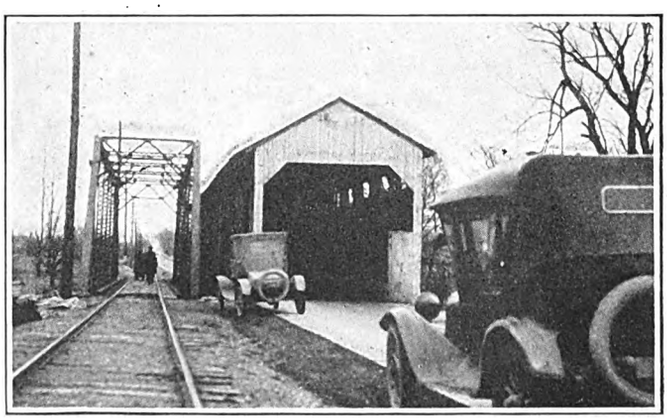


Railway and Highway Signals Interlocked Near Richmond, Ind., While Vehicular Traffic Temporarily Used the Bridge of the T. H., I. & E. Lines

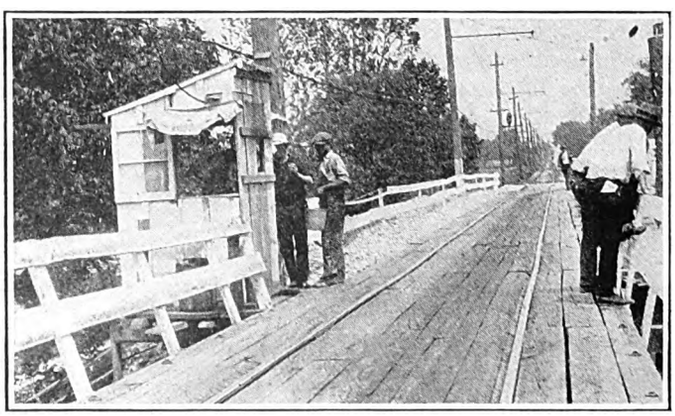
As this highway carries a heavy and constant stream of traffic it was necessary to prevent any vehicle from driving on the bridge when cars were approaching. It was also desired to slow up the interurban cars as little as possible. Naturally only one-way vehicular traffic could be accommodated, and means were thus necessary for stopping traffic after an interval in any one direction and then reversing the direction of the traffic.

Our electrical department worked out an interlocking control for block signals to handle the traffic. As can be seen in the accompanying illustrations each direction of highway traffic was faced by a control block showing "Stop" or "Go." These signals were of the type used for traffic control in the city streets. Our cars were controlled by blocks with standard red and green signal projectors, one being placed about 200 ft. ahead of the bridge at each end. The interlocking of signals provided three combinations. When the track blocks were green both directions of highway traffic were red. When eastbound highway showed green, "Go," blocks were red for westbound highway and in both directions on the track. Likewise, when westbound highway traffic was moving there were red blocks for east-bound highway and in both track directions.

A watchman's shanty was built at one end of the bridge and the control block for the signal placed there. From this shed he could see cars approaching from both directions and could likewise see the highway each way. The watchman was maintained 24 hours a day. The cars approached the bridge under full control and watchman stopped highway traffic before their arrival.



Railway and Old Highway Bridges as They Appeared Before Work Began



Watchman's Shanty with Long View in Both Directions, from Which Signals Were Controlled

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Depreciating a Property Sold Below Cost

Replacement of Elements When Worn Out Is an Important Consideration in the Charges to Depreciation Where Capital Invested Is Less Than the Physical Value—Rate Should Make Possible Continued Operation Over a Period of Years

NECESSITY for an adequate depreciation reserve has raised an interesting question in the case of the Jamaica Central Railways, Inc., Jamaica, N. Y. This property was recently reorganized from the defunct Long Island Electric Railway. It was purchased at a price far below the intrinsic value of the road. In connection with the operating accounts it was necessary to establish a rate for depreciation which would permit continued operation of the property over a period of years.

To this end a study was made for the road by Fisk & Roberts, consulting engineers of New York. This study included an analysis of the various elements owned by the company and subject to depreciation, the rules now in use by transit companies in New York City, and a forecast of the company's investment, which can be expected virtually to disappear within the next three years.

As a result of the study, it was recommended that an amount equivalent to 2.62 cents per car-mile be set aside as a depreciation reserve. The principal points raised are discussed in the following abstract:

Depreciation Reserve Necessary

The necessity of a depreciation reserve for street railways is recognized in the prescribed uniform system of accounts of the Transit Commission of New York, which provides that some definite rule shall be adopted by each company by which the total maintenance, including capital consumed in operation, accruing in a given year shall be charged during that year to operating expenses. However, the basis of the depreciation charge and the method of accumulating the fund are not specified by the Transit Commission, and within certain limits are optional with each company.

The uniform system of accounts as prescribed by the New York Transit Commission, which has jurisdiction over that part of the road in New York City, states, regarding road and equipment and other capital purchased, that when any road or other fixed capital in the form of a going or completed plant is purchased, an appraisal of such capital so acquired shall be made. The different constituent elements of the road (and equipment, if any) or other capital acquired shall be appraised at their structural values; i.e., at the estimated cost of replacement or reproduction less deterioration to the existing condition through wear and tear, obsolescence, and inadequacy. If the actual money value of the consideration given was at the time of the acquisition in excess of the appraised value, the excess shall be charged to the account. Other intangible street railway capital, and the appraised values of the constituent elements shall be charged to the appropriate accounts as designated in the following definitions of accounts for expenditures for road and equipment and other fixed capital. If the actual money value of the consideration given was not in excess of such appraised value, the actual money value shall be distributed through the accounts in proportion to the appraised value of the constituent elements.

Inasmuch as part of the property of the railway is outside New York City it falls within the jurisdiction of the Public Service Commission. Hence consideration had to be given to that commission's uniform system of accounts, which states in part:

> Depreciation accounts are provided in order that carriers may, through the creation of adequate reserves, equalize from year to year, as nearly as is practicable, the losses incident to important retirements of buildings, bridges, trestles, etc., or of large sections of continuous structures like track or electric line, or of definite units of equipment. "Losses" as used above means in each case the difference between the original cost to the accounting corporation of the property retired and its salvage value at the time of its retirement.
>
> The cost of replacing minor parts, which is not recorded by any entries in the road and equipment accounts, and which is commonly called the cost of "repairs" or "maintenance" as distinguished from the cost of "replacements" of large units, need not be provided for through depreciation charges. The amounts charged to depreciation accounts should be upon a basis determined to be equitable according to the carrier's experience and best sources of information and should in all cases be sufficient to provide during a period of years a reserve against which can be written off all losses sustained upon the retirement of property either when its natural life has expired or when it has become obsolete or otherwise inadequate for efficient service.
>
> While each corporation may determine for itself the amount to be reserved annually for depreciation as herein defined, the commission will necessarily, in deciding rate and other cases, have to pass upon the adequacy or inadequacy of such charges. As an indication of its policy in this respect, therefore, the suggestion is made, based upon the commission's experience in the regulation of electric railway utilities, that a depreciation charge amounting to not less than 2 per cent or more than 5 per cent per annum on the average total cost of all ways and structures or to not less than 2 per cent or more than 10 per cent per annum on the average total cost of all equipment, will, under normal operating conditions, be generally less open to question than rates which fall above or below these limits. It is also suggested that depreciation rates should preferably be stated in terms of a percentage of the cost of depreciable property, because it is believed that form of statement is, on the whole, the clearest and simplest way of expressing the normal depreciation charge and furnishes the readiest basis for comparison between companies. It is not necessary, however, that separate reserves shall be set up for each unit of depreciable property, nor even for each class of property, but it is the intention that a general depreciation reserve shall be maintained, adequate at all times to cover the losses which are realized when large units of equipment or important sections of continuous structures are retired from service as a result of wear and tear, obsolescence, or inadequacy.

Value of the Property

The investment of the present owners of the Jamaica Central Railways, Inc., in property subject to depreciation consists of the sum paid for the property, which was offered at public auction by the referee in the Long Island Electric Railway receivership, less that portion of the amount which represents non-depreciable real estate, and in addition all subsequent capital expenditures.

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In determining the value of the various items making up the property purchased at the foreclosure sale, the instructions from the system of uniform accounts of the New York Transit Commission were followed, particularly that portion which says that if the actual money consideration given was not in excess of the appraised value, it should be distributed in proportion to the said appraised value of the constituent elements.

At the foreclosure sale of the former Long Island Electric Railway the successful bid made on behalf of the present owners was $115,000, which was much less than any appraised value of the property. The estimated reproduction cost, less depreciation, as of the date of the foreclosure sale was $447,425. Of this amount $362,425 represented depreciable property used and useful for railway purposes.

TABLE I.—APPRAISED AND ADJUSTED VALUES, PROPERTY PURCHASED BY JAMAICA CENTRAL RAILWAYS

Account	Present Values	Costs Adjusted to Purchase Price
Way and structures	$199,509	$51,400
Substation equipment	10,937	2,820
Second Avenue cars	75,000	19,100
All other cars	7,300	1,880
Material and supplies	4,679	1,200
Buildings	65,000	16,730
Grounds	85,000	21,870
Total	$447,425	$115,000

Following the rule laid down by the commission, the distribution of the purchase price among these various accounts was determined. The corresponding figures, along with the appraised values, are given in Table I.

Various expenditures for capital account have been made since the foreclosure sale. These were found to total $79,531. Thus the cost of property purchased at the foreclosure sale and the after acquired property total $194,536. This does not represent the appraised value of the property owned by the railway, which, with the after acquired property included at actual cost would be $526,956.

The rule as laid down by the commission was followed and depreciation charges were based on the cost to acquire the property, rather than its appraised value.

Estimated Annual Depreciation

The amount of money which should be set aside annually to cover the depreciation of the company's property acquired at the referee's sale necessarily was based on three factors as follows:

The appraised present value of the property acquired at the referee's sale, fixed at $447,425 less $85,000 to cover land and grounds on which there is or should be no depreciation.

The adjusted values of the various items acquired at the referee's sale to correspond with the total purchase price of $115,000.

The addition of the various items of property purchased subsequent to the referee's sale.

Depreciation Rates

After an examination of the property making up the way and structures account, it was estimated that the average remaining life of all property making up this account is 3½ years, and after allowing for possible salvage value the annual rate was fixed at 25 per cent.

The substation equipment is old, obsolete and badly worn. Its replacement is under consideration at the present time. It was estimated that the maximum life of this station would not exceed three years, and should be depreciated at the rate of 30 per cent.

Of the rolling stock 25 passenger cars were appraised at $75,000, and written off to $19,100 to correspond with the purchase price of $115,000. With a life determined by the engineers at approximately five years, they were depreciated at 20 per cent.

The eleven other cars purchased are mainly service equipment. While in worse condition than the passenger cars, they are used less, and were also depreciated at 20 per cent.

Materials and Supplies

Materials and supplies taken over by the company at the referee's sale were appraised at $4,679. Adjusting this account in proportion to the purchase price they are valued at $1,200. As a result of the normal obsolescence and loss incident to handling such supplies, it was estimated that the account should be depreciated at 5 per cent per annum.

The buildings consist of a substation, carhouse, shop and passenger terminal. These buildings were appraised by the company's experts at $65,000, and, adjusted in accordance with the commission's rule, will be capitalized at $16,730. They are useful only for railway purposes, and it has been estimated that they have a future life of not more than ten years. Upon this basis the annual depreciation charge covering the buildings amounts to 10 per cent.

Depreciation of After Acquired Property

Six open cars purchased by the company since taking over the property were appraised at $12,000. The purchase price plus expenditures made in rehabilitation amounts to $8,463.24. Since the commission has suggested that all open car operation must be abandoned within the next two years, these cars have been depreciated at the rate of 50 per cent.

Ten Birney cars purchased have been appraised at their actual cost of $39,500. Since these cars were recently overhauled and repainted, they were depreciated at a rate of 15 per cent.

Spare motors were purchased in the amount of $1,000. Since they will meet with rather severe operating conditions, this equipment was depreciated at the rate of 20 per cent. The shop machinery taken over amounted to practically nothing, but subsequent to the sale the company has acquired new and second-hand machinery in the amount of $709. This equipment was depreciated at the rate of 15 per cent. Additional materials and supplies purchased amounting to $5,174.22, were depreciated to cover losses incident to handling and breakage amounting to 5 per cent. Office furniture and fixtures in the amount of $2,004 were estimated to depreciate at the rate of 10 per cent.

In acquiring the original property taken over the company incurred charges to capital account amounting to $20,000 to cover financing, legal and other organization expense prior to the acquisition of the property. This capital charge should be amortized over a period of not more than ten years, rather than be carried indefinitely as a capital expenditure.

Depreciation Charges Summarized

Tables II and III show the prorated cost of the original property purchased from the referee and the actual cost of all property acquired subsequently. Opposite each item is the estimated amount which should

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be set aside annually to provide an adequate depreciation reserve. The total of all property acquired on the basis of this actual cost is $194,531. The estimated annual depreciation reserve has been fixed at $33,071.50, or at the rate of 17 per cent on the adjusted purchase price of the entire property. However, on the basis of the appraised value of the property, the annual depreciation amounts to 6.28 per cent.

TABLE II—ADJUSTED COSTS AND ANNUAL DEPRECIATION OF PROPERTY PURCHASED AT REFEREE'S SALE

Account	Cost Adjusted to Purchase Price	Annual Rate	Depreciation Amount
Way and structures	$51,400	25	$12,850
Substation equipment	2,820	30	846
25 Second Avenue cars	19,100	20	3,820
Eleven other cars	1,880	20	376
Materials and supplies	1,200	5	60
Buildings	16,730	10	1,673
Grounds	21,870	..	.....
Total	$115,000		$19,625

TABLE III—ACTUAL COST AND ANNUAL DEPRECIATION CAPITAL EXPENDITURES SUBSEQUENT TO REFEREE'S SALE

Account	Actual Cost	Annual Depreciation
Way and structures	$1,350	$67
Six open passenger cars	8,463	4,230
Ten safety cars	39,500	5,925
One old trailer passenger car	25	25
Passenger car motors	1,000	200
Shop machinery	709	106
Materials and supplies	5,174	258
Furniture and fixtures	2,004	200
Organization expense	20,000	2,000
Miscellaneous	1,306	435
Total	$79,531	$13,446

Although the Transit Commission has looked with favor upon a combined maintenance and depreciation reserve, the results obtained by the New York companies seem to indicate that a better scheme, at least for the Jamaica Central Railways, would be to set aside a definite amount to cover depreciation reserve. With such a method in operation regardless of the maintenance charges, the company would be sure that adequate reserves were being set aside to replace property destroyed or worn out.

Since on any railroad the annual car miles operated should bear a close relation to the value of the property the engineers stated that in their opinion the safest way to accumulate such a reserve is to set aside monthly an amount based on the car miles operated. After a study which indicated that approximately 1,261,000 car miles will be run the first year, it was recommended that 2.62 cents per car mile be reserved from earnings, making a fund of some $31,000 at the end of the year.

Safety Code for Amusement Parks in Preparation

INITIATION of work on a national safety code for amusement parks, which will include specifications for the construction, operation and inspection of amusement devices, is announced by the American Engineering Standards Committee.

The code, the preparation of which was requested by the National Association of Amusement Parks, is being developed to provide protection for both employees and patrons. While the primary purpose of the work is to provide authoritative rules for voluntary adoption by the industry itself, it is being so carried out that the code may be used in the regulation of amusement parks by public bodies. Accordingly the national organizations of state and city officials having to do with such matters are officially participating in the preparation of the code.

The code will contain three main parts. The first section will deal with general conditions applicable to all devices and with the special conditions applying to particular devices, namely: to gravity, central pivot, cable driven and loose-car rides (structure, care, brakes, loading); to fun houses; and to walk-through devices. The second and third sections will deal with operations, and with inspection and maintenance, respectively.

The national organizations which are officially co-operating in the formulation of the code through representation on the sectional committee are: Building Officials Conference, National Association of Amusement Parks, National Bureau of Casualty and Surety Underwriters, International Association of Industrial Accident Boards and Commissions, National Safety Council, American Society of Mechanical Engineers, U. S. Department of Labor, International Association of Fairs and Expositions, and the Association of Governmental Labor Officials of the U. S. and Canada.

Highly Meritorious Booklets Issued at Chicago and Montreal

THE Chicago Surface Lines, Chicago, Ill., and the Montreal Tramways Company, Montreal, Canada, have both issued profusely illustrated booklets for educational and advertising purposes. The Chicago Surface Lines Year Book 1925-1926, is a 46-page booklet with a colored frontispiece, "In the Heart of the Shopping District." On Feb. 1 the company entered upon the last year of the franchise period. In many cities, under those circumstances the property has been allowed to deteriorate, but in the case of the Chicago Surface Lines it was never in better condition. More passengers were carried and more miles operated during 1925 than ever before. The growth and the service of the company are outlined with particular attention to the last three years, at which time the properties were just beginning to recover from the effects of the readjustment from war conditions. Their present efficiency is due largely to what has been accomplished since that time. Schedules have been revised to fit changed conditions, and more than 12,000,000 annual car-miles have been added to the service. In that same time 345 new cars have been built or purchased, 95 miles of track have been reconstructed and 15 miles added and a new system has been introduced by which all cars are being overhauled and repainted at the rate of once in two years. Passenger statistics for the year show an increase over 1924 of 24,783,119 rides. The company owns buildings, including among many others 16 operating carhouses, 57 storehouses and sheds, and two clubhouses, to the approximate value of $20,000,000. Economies have been effected in practically every department with marked increase in efficiency. Six photographs about the shops are reproduced and a great many photographs of different types of cars that have been used during the company's years of service. The booklet ends with a résumé of the constituent companies and their predecessors, an outline of the organization of the company and a list of the officers.

"Public Relations," put out by the Montreal Tram-

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ways Company, is frankly an advertising booklet. The company believes in advertising, as it says in the introduction, for three reasons: First, to gain and hold the support of the public; second, to educate the public up to intelligent co-operation with the management of the company; third, to stimulate business. The company served a population of 1,028,000. The total passengers carried during 1925 were 288,212,649. Snow is a factor to be reckoned with in Canada. The average yearly snowfall for the last 40 years was 119 in., and the average cost of snow and ice removal for the last two years was $425,000. Reproductions of 41 advertisements which have appeared in Montreal newspapers are included. An interesting one shows the way the price of each ticket is spent by the company; the average fare is 6.06 cents; of that 2.73 cents goes for salaries, 1.22 cents for operating expenses, 0.92 cents for interest on money loaned to the company, 0.67 cents to the city of Montreal for taxes, 0.25 cents for taxes other than the city of Montreal, 0.08 cents for the maintenance and renewal fund, 0.19 cents for dividends to stockholders. A map in the center of the book shows the various car routes in greater Montreal.

What One Car Said to Another

One of the Talks Given at Meeting of Women of the Philadelphia Company for Developing Contact with Outside Intersts

BY MRS. MARY C. BEST
Pittsburgh Railways, Pittsburgh, Pa.

EDITOR'S NOTE—Growing out of the Contact Club organized some years ago by officers and junior officers of the Philadelphia Company, the holding company operating the Pittsburgh Railways and other utilities in that city, a "sister club" was formed called the "Tact Club." The membership of this organization was limited to secretaries or other women in more responsible positions.

This talk was one of the best given at a recent meeting and is indicative of the work that women can do to promote the welfare of the railway companies providing they are allowed to expand their activities into outside fields.

SOME months ago when I became a member of this club, I was accused of having tried to obtain a position as operator of a one-man trolley car. I denied the charge, but afterwards I said to myself: "Well, I may never have any other kind of car to drive, so why not investigate this proposition of driving a one-man trolley car. It may have possibilities." And myself said to me, "It isn't a bad idea at all. Better look into it."

Since then I have been gradually acquiring some information concerning trolley cars and one night recently I had an exceptionally favorable opportunity. While walking out Craft Avenue past the carhouse, I heard unusual sounds coming from beyond the brick wall surrounding the yard. I listened, and presently discovered that two of the cars were having a little confidential talk over there. So I thought, "Here's a chance to learn something about these cars."

It seemed that a new one-man car was talking in a rather condescending manner to an old worn-out single trucker—one of the last of its race, which happened to be standing on an adjoining track. The dilapidated old car still had some spirit, however. "You need not be so superior," he said. "I know I am just a worn-out dinky, fit only to operate on the Toonerville line, but I have traveled many a mile in my time and carried many passengers."

"You a traveler," said the new car. "Why, you only came here from McKees Rocks, where you were built. And your longest trip was probably to Kennywood Park. I have already traveled all the way from Boston, Mass., where I was built.

"The men who made me, put into my construction materials from all over the world. They used a design originated by the Pittsburgh Railways, the low-floor, center-entrance type of double truck-car, with four so-called 'baby' motors. Can you imagine 160 horses prancing along the streets with each car? Pittsburgh would look like Red Gulch, Ariz., on a rodeo day. These motors of mine were built by the Westinghouse company here in Pittsburgh, but the iron, steel and copper came from the Great Lakes region in Minnesota. Eight different kinds of wood from the forests of North America form parts of me, and there are also rattan from Java, cotton from the Southern States and rubber from South America.

"As an up-to-date car, I am equipped with the most modern safety devices, so that my operator has less to worry about than when operating other types. These devices include eight wheel brakes, operated by air, but which may be operated by hand in case of necessity, a safety stop light at the rear to warn auto drivers when I am about to stop and the newest type of life guard or fender. I have four sand boxes, so sand will flow from all boxes onto the rail when making an emergency stop. The mechanism which opens and closes my doors is interlocked with my air brake apparatus, so that it is impossible for my doors to be opened without first applying the air brakes, and the operator cannot put on the power to start me without closing the doors. My controller is also equipped with safety devices, so that if the operator removes his hand from my controller without applying his foot to the foot valve, my circuit breaker is knocked out, emergency air and sand applied, and I am brought to a stop in a hurry."

"How interesting," murmured the old car politely. "But tell me, do you like Pittsburgh now that you are here?" "Oh, yes," said the new car. "Life here has its ups and downs, to be sure. To say nothing of its ins and outs, which must be learned by the operator. Also, innings and outings, now that the baseball and picnic season has arrived."

"And do you not find the Pittsburgh climate injurious to your complexion?" asked the old-timer. "You can see how dull and grimy I have become."

"Not at all," answered the one-man car. "You see, the only paint I have ever used is 'Duco,' the new finish which is almost impervious to the effect of climate and has a lovely glossy surface, and a shining exterior being fashionable for cars, though not for noses, I never have to carry a powder puff. Also, since the shops have inaugurated their present repainting schedule, I shall get a new coat of Duco every two years and scrubbed by Mr. Leschke's new shower bath machine ever so often."

The conversation ceased abruptly, for one of those aforesaid valets came along just then. But I hope you will agree with me that operating a one-man car would not be such a bad job and some day, if I can fix it up with the personnel department, you may see me in the operator's cab. Then I shall expect you all to come and take a ride with me.

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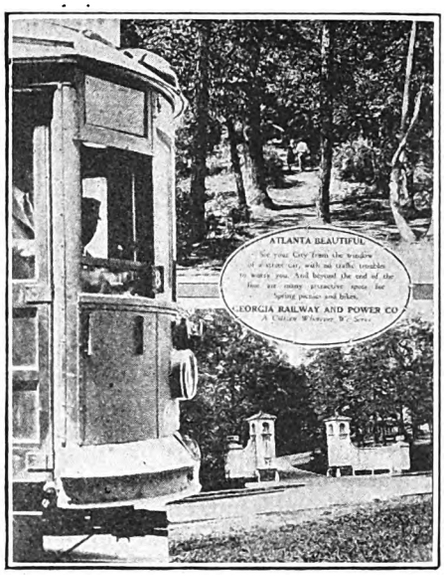
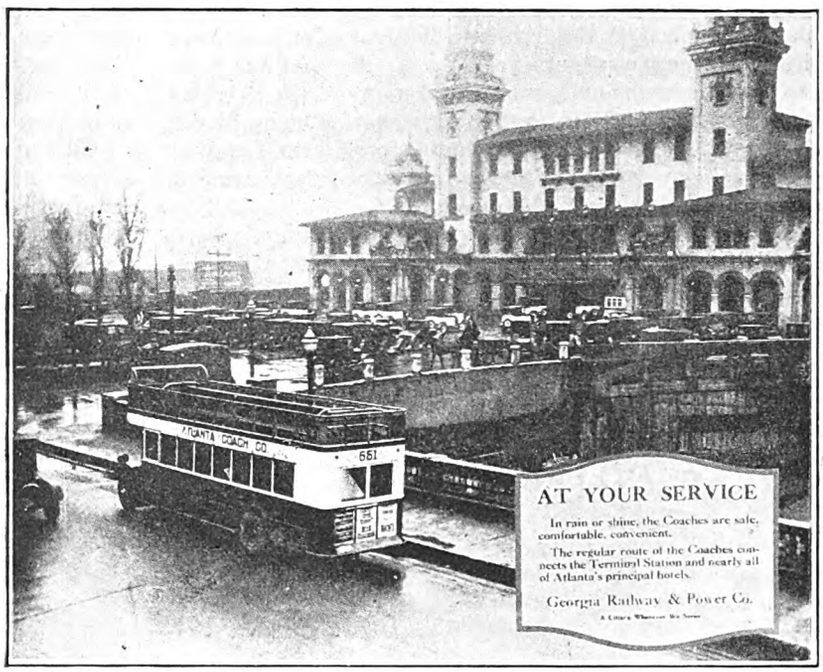
Atlanta Uses Rotogravure Supplements to Advertise Service



ROTOGRAVURE supplements prepared for Sunday newspapers, and sometimes for issues of daily papers on other days than Sunday, have become a well established feature of journalism. The interest which the views in these supplements has for readers gives them an excellent advertising value which many merchants recognize, but the number of railways which have used such media extensively for advertising is limited.

An exception is the Georgia Railway & Power Company, which has included the rotogravure sections of the Atlanta newspapers in a campaign the company has been conducting for the past few months to build up the street car and coach riding habit. The illustrations on this page are reproductions of some of the advertisements placed by the company. As will be noted, they are directed largely to automobile owners, because the company believes that a good source of additional patronage for its cars and buses may be encouraged from this class.

The campaign has been conducted under the direction of L. K. Starr, manager public relations department of the company. Mr. Starr says that while it is impossible to tell exactly what effect these particular advertisements have had, there has been an encouraging increase in the patronage of the two services, following the beginning of the campaign.



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Novel Radio Stunt Provides Valuable Advertising

USE of the radio as an advertising medium has been developed in an unusual way by the Northern Texas Traction Company, Fort Worth, Tex. The programs are broadcasted semi-monthly from station WBAP of the Fort Worth *Star-Telegram* and *Record-Telegram*.

In June, 1925, the company first started using the radio, but soon decided that a change from the conventional type of program was needed in order to hold the attention of the unseen audience. Consequently, in January, 1926, an act was inaugurated which was so refreshing in its novelty that a total of 2,612 "fan letters," a record for station WBAP, were received after the first program.

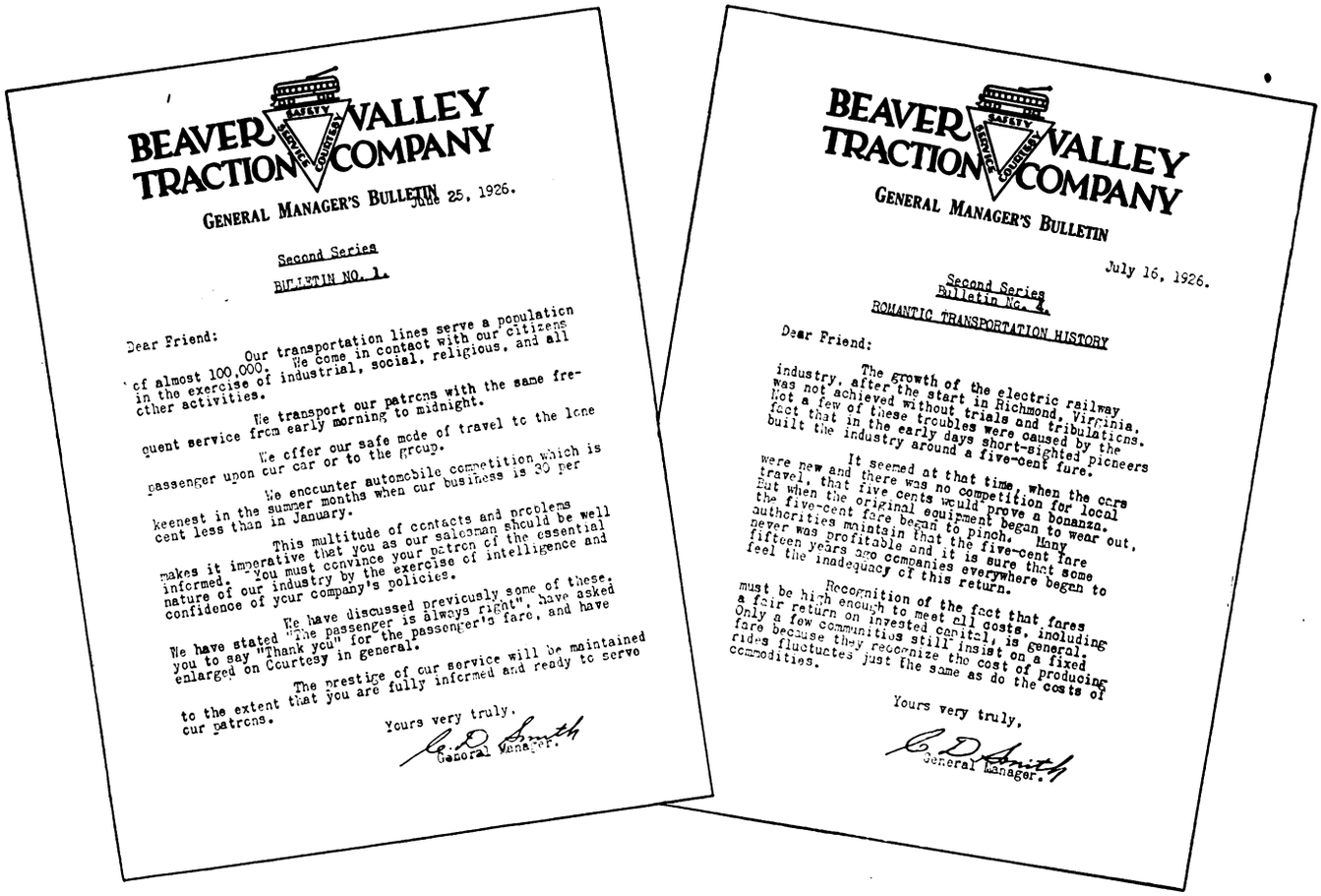
This popular stunt consists in a round trip between Fort Worth and Dallas on the "Crimson Limited," the non-stop interurban train of the company. A specially constructed noise-making device in the studio faithfully reproduces all the sounds made by interurban trains in actual operation over the line, such as the conductor's singal bell, warning gong, motor pick-up, click of wheels, and whistle. With this realistic obbligato the announcer describes the passengers, scenery, incidents of the road, etc., with so much enthusiasm that many of the listeners are reported to believe that the program is being broadcasted while the train is actually going over the line. New incidents of the trip are introduced from time to time to give variety to the program.

Recently the company erected its own studio, where, in addition to the trip on the "Crimson Limited," entertainment is furnished by three orchestras and various vocal artists, many of whom are recruited from the company's own employees.

The advertising advantage of these programs is tremendous and varied. In the first place, the emphasis put on efficient and courteous service creates a higher *esprit de corps* among the employees and their families. Moreover, as far as the general public is concerned, the radio not only provides direct contact with the majority of potential patrons, but it also offers an opportunity for follow-up advertising in connection with the mass of "fan mail" which is continually coming in. Every communication is immediately answered by a letter, over the signature of the general passenger agent, containing a souvenir time-table. Thus, by this means the "Crimson Limited" has become known to countless people who could not have been reached by any other method.

Building Good Will with Manager's Weekly Bulletins

WEEKLY bulletins telling of the romantic history of the transportation industry are being issued to employees and friends by the Beaver Valley Traction Company, New Brighton, Pa. Various modern aspects of the business are also explained, in order to give the employees and patrons an insight into the real problems which the company has to face. From the employees' standpoint, the success of the experiment is an interesting justification of the theory that a man can do his job better when he understands why he is doing it. As good will builders among patrons of the company they also play an important role.



BEAVER VALLEY TRACTION COMPANY

GENERAL MANAGER'S BULLETIN

June 25, 1926.

Second Series

BULLETIN NO. 1.

Dear Friend:

Our transportation lines serve a population of almost 100,000. We come in contact with our citizens in the exercise of industrial, social, religious, and all cther activities.

We transport our patrons with the same frequent service from early morning to midnight.

We offer our safe mode of travel to the lone passenger upon our car or to the group.

We encounter automobile competition which is keenest in the summer months when our business is 30 per cent less than in January.

This multitude of contacts and problems makes it imperative that you as our salesman should be well informed. You must convince your patron of the essential nature of our industry by the exercise of intelligence and confidence of your company's policies.

We have discussed previously some of these. We have stated "The passenger is always right", have asked you to say "Thank you" for the passenger's fare, and have enlarged on Courtesy in general.

The prestige of our service will be maintained to the extent that you are fully informed and ready to serve our patrons.

Yours very truly,

C. D. Smith
General Manager.

BEAVER VALLEY TRACTION COMPANY

GENERAL MANAGER'S BULLETIN

July 16, 1926.

Second Series
Bulletin No. 4.

ROMANTIC TRANSPORTATION HISTORY

Dear Friend:

The growth of the electric railway industry, after the start in Richmond, Virginia, was not achieved without trials and tribulations. Not a few of these troubles were caused by the fact that in the early days short-sighted pioneers built the industry around a five-cent fare.

It seemed at that time, when the cars were new and there was no competition for local travel, that five cents would prove a bonanza. But when the original equipment began to wear out, the five-cent fare began to pinch. Many authorities maintain that the five-cent fare never was profitable and it is sure that some fifteen years ago companies everywhere began to feel the inadequacy of this return.

Recognition of the fact that fares must be high enough to meet all costs, including a fair return on invested capital, is general. Only a few communities still insist on a fixed fare because they recognize the cost of producing rides fluctuates just the same as do the costs of commodities.

Yours very truly,

C. D. Smith
General Manager.

Typical General Manager's Bulletins Issued by Clinton D. Smith to Employees and Citizens

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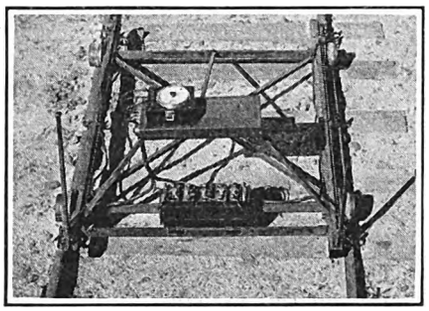
Maintenance Notes

Light Weight Car Used for Bond Testing

BY A. O. MANGOLD
Electrical Supervisor Southern Pacific System, Beaverton, Ore.

OWING to infrequent interurban train service on the electrified lines of the Southern Pacific Company at Portland, Ore., the testing of bonds by use of the return propulsion current was found to be very inefficient and costly. In order to obtain more reliable results with a saving in labor, we constructed, at the Beaverton shops, a portable testing car, which, after a year's service, has proved very successful. The cost of testing rail bonds has been reduced 65 per cent, and we have been able more accurately to determine the condition of the bonds than was possible before.

The bond testing car is very light and is easily propelled and operated. Its total weight is but 124 lb. and the car less battery weighs but 80 lb. It consists of a wood frame supporting a series of contacts for each rail, which are raised and lowered from the operating position by two small levers. Five saw-blade contacts are provided on each side, the two outer ones being connected through a switch on the instrument table to an Edison storage battery, which provides a flow of current when necessary across the joint to be tested. The remaining three contacts on each side are connected to a Roller-Smith direct reading bond tester in the usual way. In testing a bond the car is rolled over the joint so that the word BOND, which is stenciled on the operating rod, is over the center of the plate, and the contacts are lowered on that side by the operating lever. If sufficient propulsion current is flowing in the rail to give a good indication on the instrument a reading is taken and recorded on the report sheet carried on the shelf beside the instrument. The contacts are then raised by the lever and the car is moved to the next joint. However, should there be no propulsion current flowing, or an insufficient amount to actuate the instrument galvanometer, the push switch is depressed and the battery provides the necessary current. It has been found that the saw blade contacts offer just the right resistance in the power circuit to limit the current to 15 amp., which gives a good reading on the bond tester. The battery holds up very well for 10 to 12 miles of testing.

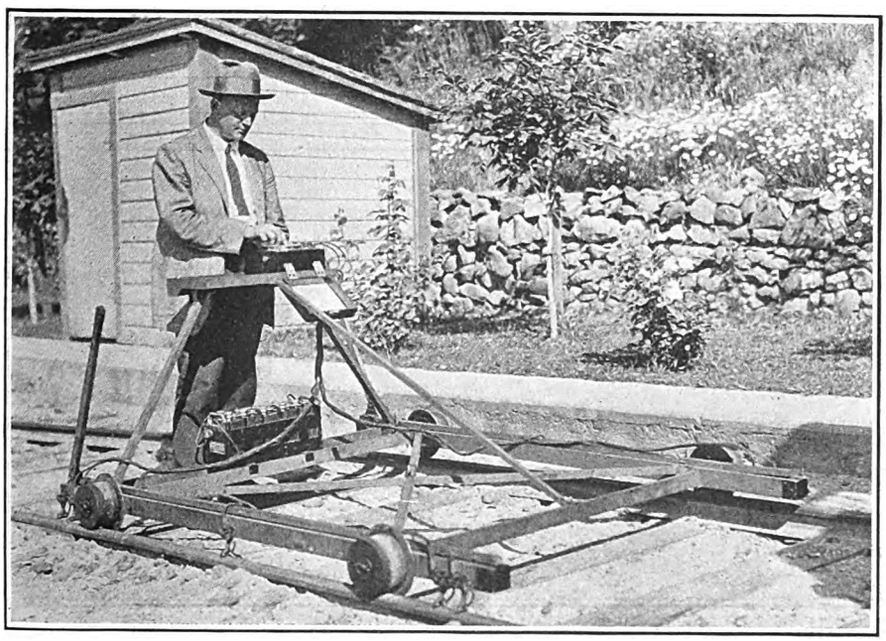


Top View of the Bond Testing Car with Instrument and Battery in Place

It was necessary to produce a car that would not be classified as a loaded push car and be subject to the transportation rules, which would limit its usefulness. The car had to be light in weight, yet strong enough to carry the equipment and stand service on the rails. It had to be simple, quick to set up and knock down and easy to operate. It also had to be very compact when disassembled so that it could be handled on passenger equipment or on light motor cars, and so it could be easily removed from the track by one man.

The car and its equipment were made light enough to be easily lifted from the track by one man, which takes it out of the "loaded push car" class. Lightness and strength were obtained by making the entire frame of spruce reinforced by wrought iron where necessary. The wood frame also provides insulation between the rails, so the car can be used in signal zones without operating the signals. An Edison battery was used on account of its ruggedness and light weight.

Simplicity in assembling and disassembling the outfit was obtained by having most of the folding parts hinged together and the wiring cable provided with plug and socket connectors, plainly marked so that errors in connections would be avoided. Compactness was obtained by arranging the folded parts so that very little space is necessary for storage. The two main parts (sides folded) can be stood up in the corner of a passenger car or laid along the tie rods of a motor car. Concentration of the weight of instrument and battery at the rear end of the car enables the operator to lift the entire outfit from the rails should necessity arise.



The Test Car Is Rolled Over the Joint to Be Tested and the Operator Takes a Reading on the Instruments

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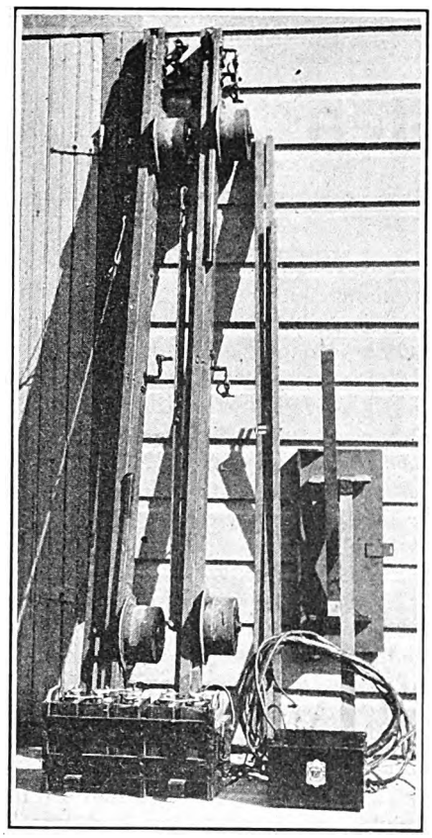


The Test Car Folds Up so as to Take Little Space in Storage

The electrified lines on the Portland division included a signal zone 20 miles in length that formerly required two men from twelve to fourteen days to test, and then with very unreliable results, as the tester was found to work best only when trains were in the immediate vicinity of the testing crew. The time of the men in between trains was practically lost. Signal failures due to defective bounding were frequent.

With the new testing car and outfit this same section of track is now covered in four to five days with accurate readings obtained at each joint. No signal failures have resulted from defective bonds since the car was placed in service.

A glass cover constructed for the instrument makes the car usable in all kinds of weather. The apparatus was designed and constructed by the Southern Pacific Company at its Beaverton shops under the direction of R. D. Young, shop foreman, and the writer.

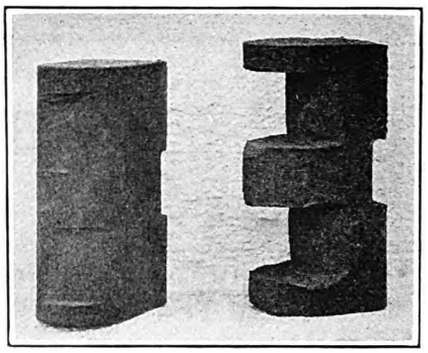
Special Steel Used for Wear Blocks of Swing Links

BOLSTER swing link bearing blocks are subjected to rather hard service. On the trucks of cars operated by the New York, Westchester & Boston Railway hardened steel wearing blocks were used originally and a service of from eight to ten months was obtained before these were worn to such an extent as to require replacement. The company is now using Nuttall B.P. process steel for these swing link bearings and a much longer service is obtained.

The accompanying illustration shows two wearing blocks which have been in service the same length of time. The one on the left is of B.P. process steel, while that on the right is of special hardened steel, of the type previously used. The one on the right has worn to such an extent that it is necessary to replace it, while very slight wear has occurred on the wearing block shown at the left.

Preventing Splitting of Wooden Dust Guards

IN MAKING dust guards of wood, the Department of Street Railways, Detroit, Mich., found a tendency for the wood to check and split along the grain. This tendency has been overcome by placing a piece of tin across the end, so that it extends lengthwise across the grain of the wood. This has effectively prevented the trouble. An accompanying illustration shows a storage rack with dust guards of this construction.

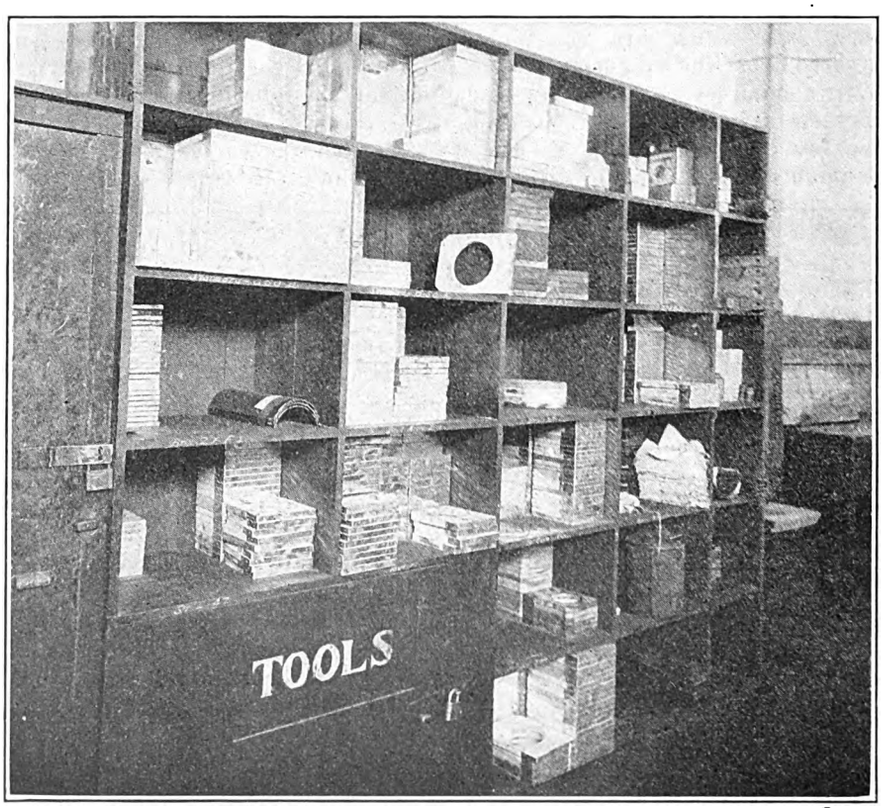


These Two Bolster Swing Link Wearing Blocks Have Had the Same Service

The one on the right, made of hardened steel, has worn so that replacement is necessary. The one on the left, made of B.P. process steel, shows very little wear.

Steel Cabinet for Storing Open Paint

UNUSED odds and ends of paints and oils left around a paint shop not only look untidy but are an extreme fire hazard. The illustration shows a four-door steel cabinet designed and built in the Chattanooga Railways shop for keeping open paints and oils. The walls and doors are constructed of steel plates stiffened by small structural shapes that have been welded to the plates. At night all opened cans of paint and oils generally found around a car paint shop are stored away and the doors locked. The shelves in the cabinet to the right are recessed



Wooden Dust Guards Are Constructed with Tin Reinforcing Strips at the End to Prevent Splitting When Installed in Motors in the Department of Street Railways, Detroit, Mich.

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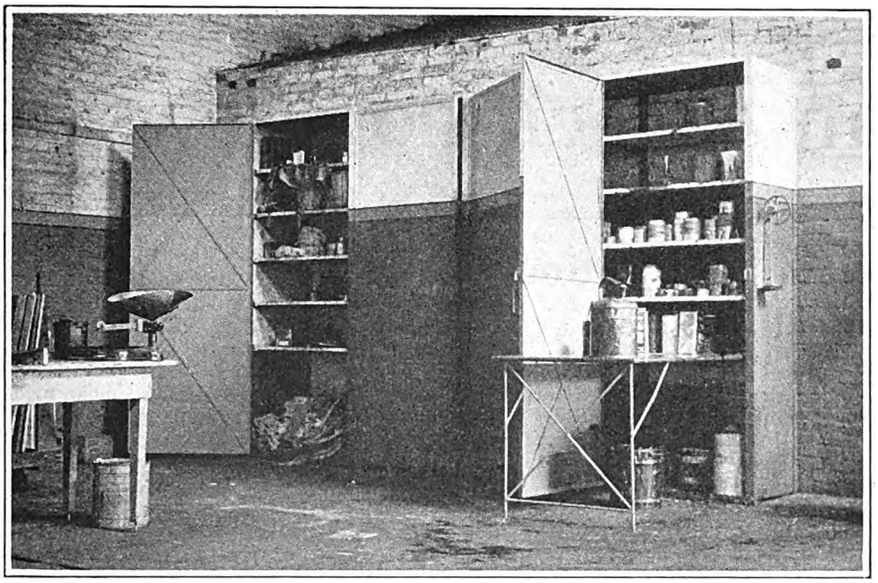


Steel Cabinet Built by the Chattanooga Railway Shop for the Storage of Paints and Oils in Use in the Painting of Cars

slightly to allow the steel table to be folded up and the door closed over it. Only clean rags are kept in the cabinet in the bin on the left. All oily rags are burned at the close of the day. Self-closing waste cans are provided for other trash. This arrangement is not only a precaution against fire but also makes it possible to keep the paint shop in the same immaculate condition as the rest of the shop.

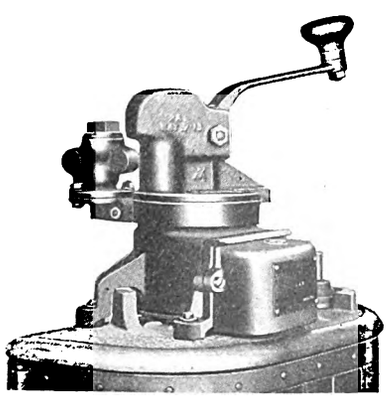
The Chattanooga Railway is part of the Tennessee Electric Power Company recently placed under Hodenpyl-Hardy management.

New Equipment Available

Handle Switch Prevents Burned Fingers

TO REPLACE the ratchet switch used for controlling the line switch on "K" controllers, the Westinghouse Electric & Manufacturing Company has developed the type "TA" handle switch. It makes use of a 24-deg. lost motion between the handle and the controller drum, to insure the operation of the line switch before the main controller drum is moved.

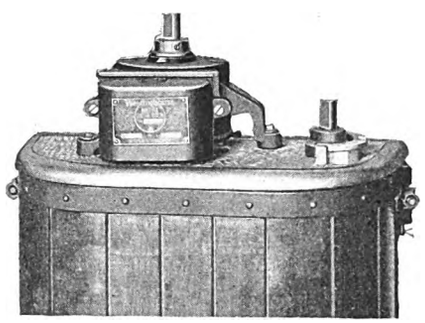
As the controller is notched up, the handle first passes through the angle of lost motion, closing the contact in the line-switch control circuit. The control circuit is completed on the first notch through the spot ground contact and is completed on all other positions through the line switch interlock. As the controller is notched off the handle passes through the lost motion, breaking the control circuit and dropping out the line switch before the drum moves. This reduces the controller maintenance expense, as there is little or no burning of the controller fingers, contacts and arc barriers. The operation of the handle switch is the same as the ratchet switch in so far as the overload trip is concerned.



Handle Switch Applied with Standard Safety Device

Standard safety device handles used in conjunction with dead-man control can be used with the TA switch without any modification of the dead-man attachment or the switch. The switch is mounted well within the dimensions of the cap plate. This is accomplished without modification of the cap plate, handle switch or controller handle, except for the drilling and tapping of the mounting holes. In most cases no machining is necessary either inside or outside of the controller. The only requirement necessitating work inside the controller is adding the spot ground contact and finger, in case these are not already mounted in the controller. The location of the device on top of the cap plate makes it accessible for inspection, all working parts being reached by removing the cover plate.

The original "K" controller handle can be used with the handle switch, making it unnecessary for the operating company to duplicate this part. To add to the convenience of operation, however, a new low-type knob grip has been developed. This flat top grip seems to be more restful and has met with general approval among the operators who have used it. The total height of the handle above the cap plate, with the new low knob,



Westinghouse TA Handle Switch Applied on Standard "K" Controller

is $10\frac{9}{32}$ in. for the standard high type "K" controller handle, and $9\frac{13}{32}$ in. for the standard low type handle. In further refinement, the manufacturer has produced a handle the total height of which is $7\frac{1}{4}$ in. above the cap plate.

Tractor Welders Now Available

ELECTRIC arc welding equipment assembled in a complete unit with gas-engine drive is being brought out by the General Electric Company, Schenectady, N. Y. The equipment can be mounted on Fordson tractors for portable use at points remote from power lines. The General Electric Company does not market the complete outfit.

In such a combination, the same gas engine drives both the tractor and the generator which supplies the current for the welding electrodes. The tractor is equipped with rubber tires and can be driven to the job at a speed of from 15 to 18 m.p.h. The belt is then connected to the generator and the outfit is ready for welding operations.

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American Association News

Program for Cleveland Convention Announced

PREPARATION for the meetings of the American Electric Railway Association and its affiliated associations at the Cleveland convention, Oct. 4-8, are rapidly nearing completion. Sessions of the American Association will be held in the mornings of Monday, Tuesday and Thursday. Those of the affiliated associations will be held in the afternoons of the same days.

All day Wednesday and Friday morning have been set aside for inspection of the exhibits. Friday afternoon will be devoted to inspection trips to plants of near-by manufacturers.

All meetings will be held at the Cleveland Public Auditorium and annex, East Sixth Street, between Lakeside and St. Clair Avenues.

Following are the tentative programs for the meetings, as revised by association headquarters to Aug. 27:

AMERICAN ASSOCIATION

Monday Morning, October 4

9 A.M. TO 10 A.M.

REGISTRATION AND DISTRIBUTION OF BADGES at booths at entrance to Cleveland Public Auditorium.

10 A.M. TO 1 P.M.

Meeting Held in West Wing of Auditorium

General Topic: Unified Transportation Service in the Public Interest.

ADDRESS OF WELCOME.

ADDRESS OF PRESIDENT.

ADDRESS—"Selling the Service—Intercity," by Britton I. Budd, president Chicago Rapid Transit Company, Chicago.

ADDRESS—"Selling the Service—City," by Thomas Fitzgerald, vice-president Pittsburgh Railways, Pittsburgh, Pa.

ADDRESS—"Modern Equipment," by Samuel M. Curwen, president the J. G. Brill Company, Philadelphia, Pa.

ADDRESS—"The Car—Show Window of the Industry," by Edwin B. Meissner, president and general manager St. Louis Car Company, St. Louis, Mo.

ADDRESS—"Manufacturer Co-operation," by E. F. Wickwire, vice-president the Ohio Brass Company, Mansfield, Ohio.

Discussion.

Tuesday Morning, Oct. 5

10 A.M. TO 1 P.M.

Meeting Held in West Wing of Auditorium

General Topic: Street Congestion—Let's Reduce It.

REPORT OF COMMITTEE ON NOMINATIONS AND ELECTION OF OFFICERS.

ADDRESS—"Progress and Trends During Year," by Lucius S. Storrs, managing director American Electric Railway Association, New York, N. Y.

ADDRESS—"The High Cost of Congested Streets," by Col. C. O. Sherrill, city manager, Cincinnati, Ohio.

ADDRESS—"The Business of Street Management," by G. B. Anderson, manager of transportation Los Angeles Railway, Los Angeles, Cal.

ADDRESS—"Provide Now for Future Transportation," by Col. Sidney D. Waldon, president Rapid Transit Commission, Detroit, Mich.

ADDRESS—"Co-operation and Traffic Control," by R. F. Kelker, Jr., Kelker, De Leuw & Company, engineers, Chicago, Ill.

Discussion.

Tuesday Evening, Oct. 5

General Evening Session

9 P.M.

Arena Floor of Auditorium

MEETING UNDER AUSPICES OF THE ADVISORY COUNCIL.

OPENING ADDRESS by B. C. Cobb, vice-president Hodenpyl, Hardy & Company, Inc., New York, N. Y., chairman Advisory Council.

ADDRESS—"The Public Service—Its Obligations and Rewards" (speaker to be announced later).

AWARD OF CHARLES A. COFFIN PRIZE—F. R. Coates, Henry L. Doherty & Company, New York, N. Y., president American Electric Railway Association.

ADDRESS OF ACCEPTANCE.

INFORMAL DANCING.

Wednesday, Oct. 6

This entire day has been set aside by the officers of the association for the inspection of manufacturers' exhibits. No formal convention sessions of the American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

Thursday Morning, Oct. 7

10 A.M. TO 1 P.M.

Meeting Held in West Wing of Auditorium

General Topic: New Capital, Where and How to Get It.

ADDRESS—"Modern Management and Operation," by R. F. Carbutt, Henry L. Doherty & Company, New York, N. Y.

ADDRESS—"Electric Railway Financing," by H. L. Stuart, president Halsey, Stuart & Company, Inc., Chicago, Ill.

ADDRESS—"Intercity Business Possibilities," by T. A. Kenney, Hodenpyl, Hardy & Company, Inc., New York, N. Y.

ADDRESS—"Provide Now for Future Transportation," by Alfred H. Swayne, vice-president General Motors Company, New York, N. Y.

ADDRESS—"Industrial Education," by Edward Dana, general manager Boston Elevated Railway, Boston, Mass.

DEMONSTRATION—"Foremen's Conference," conducted by H. H. Norris, educational director Boston Elevated Railway, Boston, Mass.

General Discussion.

AWARD—*Forbes Magazine* Public Relations Contest.

AWARD—*Electric Traction* Speed Contest.

REPORTS OF SPECIAL COMMITTEES.

UNFINISHED BUSINESS.

NEW BUSINESS.

INSTALLATION OF OFFICERS.

ADJOURNMENT.

Friday Morning, Oct. 8

10 A.M. TO 12 NOON

Inspection of Manufacturer's Exhibits.

AFTERNOON

Inspection of Local Manufacturing Plants.

ACCOUNTANTS' ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 4:30 P.M.

Meeting Held in Room E-251, Mezzanine Floor, Auditorium

ADDRESS OF WELCOME—By Urban F. von Rosen, C. P. A., accountant for the City Street Railroad Commissioner, Cleveland, Ohio.

ANNUAL ADDRESS OF THE PRESIDENT.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE.

ANNUAL REPORT OF THE SECRETARY-TREASURER.

APPOINTMENT OF CONVENTION COMMITTEES ON (*a*) Resolutions; (*b*) Nominations.

REPORT OF COMMITTEE ON BUS ACCOUNTING—M. W. Glover, general auditor West Penn Railways, Pittsburgh, Pa., chairman.

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Discussion.

REPORT OF COMMITTEE ON STANDARD CLASSIFICATION OF ACCOUNTS—M. W. Glover, general auditor West Penn Railways, Pittsburgh, Pa., chairman.

Discussion.

ADDRESS—"The Accountant," by Carl H. Nau, C. P. A., president, Nau, Rusk & Swearingen, certified public accountants, Cleveland, Ohio.

Tuesday Afternoon, Oct. 5

2 P.M. TO 4:30 P.M.

Meeting Held in Lecture Room, Exhibition Hall, Auditorium

Joint Session 2 p.m. to 3 p.m. Accountants' and Engineering Associations.

REPORT OF JOINT COMMITTEE ON ENGINEERING ACCOUNTING—T. B. Mac Rae, general auditor Chicago Rapid Transit Company, Chicago, Ill., and Robert B. Rifenberick, consulting engineer, Toledo, Ohio, co-chairmen.

Discussion.

ADDRESS—"A Message on Depreciation," by Henry E. Riggs, professor of civil engineering University of Michigan, Ann Arbor, Mich.

Discussion.

At the close of the discussion of the above paper, the members of the Accountants' Association will adjourn to their own meeting room (E-251), where the Accountants' Session will be continued.

REPORT OF COMMITTEE ON STORES ACCOUNTING—R. A. Weston, special accountant The Connecticut Company, New Haven, Conn., chairman.

Discussion.

REPORT OF COMMITTEE ON FARE COLLECTION—E. A. Tuson, general auditor Public Service Railway, Newark, N. J., chairman.

Discussion.

Wednesday, Oct. 6

This entire day has been set aside by the officers of the association for the inspection of manufacturers' exhibits. No formal convention sessions of the American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

"GET TOGETHER LUNCHEON" at 12:30 at one of the hotels. This is to be an informal gathering of accountants and railway men interested in accounting subjects for the purpose of becoming better acquainted.

Thursday Afternoon, Oct. 7

2 P.M. TO 4:30 P.M.

Meeting Held in Room E-251, Mezzanine Floor, Auditorium

REPORT OF COMMITTEE REPRESENTING THE ACCOUNTANTS' ASSOCIATION AT THE ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS—W. L. Davis, auditor Lehigh Valley Transit Company, Allentown, Pa., chairman.

Discussion.

REPORT OF THE COMMITTEE ON FREIGHT ACCOUNTING—O. H. Bernd, Secretary Des Moines City Railway, Des Moines, Ia., chairman.

Discussion.

REPORT OF COMMITTEE TO REVIEW THE PROCEEDINGS OF THE ACCOUNTANTS' ASSOCIATION—J. E. Heberle, assistant to the president, the Capital Traction Company, Washington, D. C., chairman.

Discussion.

ADDRESS—"Income Taxes," by Albert F. Elkins, manager Peat, Marwick, Mitchell & Company, certified public accountants, Cleveland, Ohio.

Discussion.

REPORTS OF CONVENTION COMMITTEES: (*a*) Resolutions; (*b*) Nominations.

ELECTION OF OFFICERS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST-PRESIDENT'S BADGE.

INFORMAL ROUND-TABLE DISCUSSION OF ACCOUNTING MATTERS.

ADJOURNMENT.

CLAIMS ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 5:30 P.M.

Meeting Held in Second Floor Lounge, Auditorium

READING OF MINUTES OF PREVIOUS MEETING.

ANNUAL ADDRESS OF PRESIDENT.

ANNUAL REPORT OF EXECUTIVE COMMITTEE.

ANNUAL REPORT OF SECRETARY-TREASURER.

APPOINTMENT OF THE NOMINATING COMMITTEE.

ADDRESS—"Accident Prevention and Claims," by Charles B. Scott, president National Safety Council, Chicago, Ill.

PAPER—"Methods of Discouraging Litigation in Accident Claims," by Trevor C. Neilson, claim agent East St. Louis & Suburban Railway, East St. Louis, Ill.

PAPER—"Automobile Claims and Methods of Handling Them Where Insurance Companies Are Involved," by William G. Marshall, superintendent of claims, Pittsburgh Railways, Pittsburgh, Pa.

PAPER—"Bonus System—Its Value in Claim Work," by G. T. Hellmuth, claims attorney Chicago, North Shore & Milwaukee Railroad, Chicago, Ill.

PAPER—"Bus Accidents — Their Causes and Successful Methods of Prevention," by H. V. Drown, general claim agent Public Service Railway, Newark, N. J.

Discussion.

Tuesday Afternoon, Oct. 5

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

JOINT SESSION, CLAIMS AND TRANSPORTATION & TRAFFIC ASSOCIATIONS.

REPORT OF COMMITTEE ON TRAFFIC CONGESTION—A. R. Myers, president Erie Railways, Erie, Pa., chairman.

FORMAL DISCUSSION—By a traffic captain, a traffic engineer, a consulting engineer and a railway operating engineer.

GENERAL DISCUSSION.

REPORT OF JOINT COMMITTEE ON ACCIDENT PREVENTION—M. W. Bridges, safety engineer Chicago Rapid Transit Company, Chicago, Ill., and H. K. Bennett, safety manager United Electric Railways, Providence, R. I., co-chairmen.

FORMAL DISCUSSION by Claims men and Transportation men.

GENERAL DISCUSSION.

Wednesday, Oct. 6

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The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

Thursday Afternoon, Oct. 7

2 P.M. TO 5:30 P.M.

Meeting Held in Second Floor Lounge, Auditorium

PAPER—"Motion Pictures as a Means of Combating Fraudulent Suits," by C. M. McRoberts, General Claim Agent, Los Angeles Railway Corporation, Los Angeles, Cal.

REPORT OF COMMITTEE ON MEDICAL AND SURGICAL WORK—Dr. Frederick L. Mosser, surgeon Third Avenue Railway System, New York, N. Y., chairman.

PAPERS—"Practical Methods of Obtaining Greater Efficiency from the Medical Departments of the Street Railway Companies," by Dr. Frederick L. Mosser, surgeon Third Avenue Railway System, New York, N. Y.; Dr. Hart E. Fisher, Chief Surgeon, Chicago Rapid Transit Company.

PAPER—"Observation on the Physical Examination of Electric Railway Employees," by Doctor Benjamin E. Sibley, surgeon Boston Elevated Railway, Boston, Mass.

PAPER—"The Uses and Value of Medical Testimony," by Dr. H. Stuart MacLean, chief surgeon Virginia Electric & Power Company, Richmond, Va.

PAPER—"Health Service Examination and Organization of a Medical Staff for the Care of Injured Patrons of a Public Utility," by Dr. Ernest W. Miller, surgeon Milwaukee Electric Railway & Light Company.

PAPER—"Should Industrial Surgery Be Done by Industrial Surgeons?" by Dr. Arthur S. Driscoll, surgeon Richmond Light & Railroad Company, Staten Island, New York, N. Y.

REPORT OF COMMITTEE ON RESOLUTIONS.

REPORT OF COMMITTEE ON NOMINATIONS.

ELECTION OF OFFICERS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST-PRESIDENT'S BADGE.

ADJOURNMENT.

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ENGINEERING ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 5:30 P.M.

Meeting Held in Lecture Room, Exhibition Hall, Auditorium

General Subject: Way and Structures.

ADDRESS OF PRESIDENT.

REPORT OF EXECUTIVE COMMITTEE.

REPORT OF SECRETARY-TREASURER.

REPORTS OF SPECIAL WAY AND STRUCTURES COMMITTEES:

Review of Engineering Manual—W. R. Dunham, Jr., executive engineer department of street railways, Detroit, Mich., chairman.

Design of Switch Tongues and Hard Centers for Special Trackwork (progress report)—E. M. T. Ryder, way engineer Third Avenue Railway System, New York, N. Y., chairman.

CO-OPERATION WITH WELDED RAIL JOINT COMMITTEE—W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

Surface Hardening of Rails—A. T. Spencer, assistant to general manager Toronto Transportation Commission, Toronto, Canada, chairman.

Discussion.

Design of Steam and Electric Railway Crossings—*V. Angerer, vice-president William Wharton, Jr. & Company, Inc., Easton, Pa., chairman.

Arc Welding Processes for Repairs to Rails and Manganese Steel (progress report)—Chester F. Gailor, consulting engineer, New York, N. Y., chairman.

Discussion.

Design of Buildings for Maintenance, Storage and Operation of Buses, and Design of Joint Railway and Bus Terminals—John R. McKay, chief engineer Indiana Service Corporation, Fort Wayne, Ind., chairman.

Discussion.

ELECTRIC RAILWAY CARHOUSES AND CARS—H. E. Bachman, superintendent of distribution Public Service Railway, Newark, N. J., chairman.

REPORT OF STANDING COMMITTEE ON WAY AND STRUCTURES—H. H. George, assistant to chief engineer, Public Service Production Company, Newark, N. J., chairman.

REPORT OF SPECIAL COMMITTEE ON RAIL CORRUGATION (progress report)—W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

REPORT OF COMMITTEE ON WOOD PRESERVATION—A. P. Way, engineering department, American Electric Power Company, Philadelphia, Pa., chairman.

Discussion.

Tuesday Afternoon, Oct. 5

2 P.M. TO 5:30 P.M.

Meeting Held in Lecture Room, Exhibition Hall, Auditorium

Joint Session 2 p.m. to 3 p.m., Engineering and Accountants' Associations.

General Subject: Equipment

REPORT OF JOINT COMMITTEE ON ENGINEERING ACCOUNTING—Robert B. Rifenberick, consulting engineer, Toledo, Ohio, and T. B. MacRae, auditor Chicago Rapid Transit Company, Chicago, Ill., co-chairmen.

Discussion.

ADDRESS—"A Message on Depreciation," by Henry E. Riggs, professor of civil engineering, University of Michigan, Ann Arbor, Mich.

Discussion.

At the close of the discussion of the above paper the members of the Accountants' Association will adjourn to their own meeting room to continue their regular program, the engineers remaining in the Lecture Room where the Engineering Association will be continued.

REPORTS OF COMMITTEES:

Engineering Symbols—H. W. Codding, assistant engineer Public Service Production Company, Newark, N. J., chairman.

Discussion.

Engineering Manual—Charles R. Harte, construction engineer The Connecticut Company, New Haven, Conn., chairman.

Discussion.

Heavy Electric Traction—H. F. Brown, assistant electrical engineer, New York, New Haven & Hartford Railroad, New Haven, Conn., chairman.

Discussion.

Equipment—P. V. C. See, superintendent car equipment Northern Ohio Power & Light Company, Akron, Ohio, chairman.

Discussion.

Unification of Car Design—H. H. Adams, superintendent shops and equipment, Chicago Surface Lines, Chicago, Ill., chairman.

Discussion.

Reduction of Noise in Car Operation—H. S. Williams, assistant superintendent of equipment Department of Street Railways, Detroit, Mich., chairman.

Discussion.

Wheel Mounting and Check Gauges—C. W. Squier, associate editor ELECTRIC RAILWAY JOURNAL, New York, N. Y., chairman.

Discussion.

Tuesday Afternoon, Oct. 5

2 P.M. TO 4 P.M.

PURCHASING AGENTS AND STOREKEEPERS

Session held under the auspices of the Committee on Purchases and Stores, Engineering Association.

Meeting Held in Room D-245, Mezzanine Floor, Auditorium

ADDRESS OF WELCOME by Charles R. Harte, president American Electric Railway Engineering Association.

INFORMAL TALK—Frank R. Coates, president American Electric Railway Association.

REPORT OF COMMITTEE ON PURCHASES AND STORES—P. F. McCall, manager of commissary, Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., chairman.

REPORTS OF OTHER COMMITTEES.

Discussion of committee reports.

ADDRESS—"Co-ordination of Operating Budget with Purchases of Material," by Dr. Charles Reitell, head of Department of Accounting and Industry, University of Pittsburgh.

ADDRESS—"The Relation of Purchases and Stores to the Utility Business," by William E. Wood, vice-president Virginia Electric & Power Company, Richmond, Va.

ADDRESS—"Saving in Time Which Could Be Made If Purchasers of Materials Would Supply Full Catalog Information When Ordering Equipment Supplies," by Henry S. Day, manager transportation division Westinghouse Electric & Manufacturing Company, Boston, Mass.

General Discussion.

Wednesday, Oct. 6

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The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

Thursday Afternoon, Oct. 7

2 P.M. TO 5:30 P.M.

Meeting Held in Lecture Room, Exhibition Hall, Auditorium

General Subject: Power.

REPORTS OF COMMITTEES:

Power Generation and Conversion—L. D. Bale, superintendent of power, The Cleveland Railway, Cleveland, Ohio, chairman.

Discussion.

Power Transmission and Distribution—Charles H. Jones, general manager Chicago, South Shore & South Bend Railroad, Chicago, Ill., chairman.

Discussion.

Automatic Substations—Adrian Hughes, Jr., superintendent of bus transportation United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

Purchases and Stores—P. F. McCall, manager of commissary, Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., chairman.

Discussion.

Committee to Co-operate with the U. S. Department of Commerce on Simplification and Standardization—R. H. Dalgleish, chief engineer Capital Traction Company, Washington, D. C.

REPORT OF REPRESENTATIVES ON THE MAIN COMMITTEE OF THE AMERICAN ENGINEERING STANDARDS COMMITTEE—Charles R. Harte, construction engineer, the Connecticut Company, New Haven, Conn., and R. H. Dalgleish, chief engineer the Capital Traction Company, Washington, D. C., representatives.

REPORT OF COMMITTEE ON NOMINATIONS—L. C. Datz, care. of Newman Saunders & Company, Inc., St. Louis, Mo., chairman.

Discussion.

ELECTION OF OFFICERS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST PRESIDENTS' BADGES.

ADJOURNMENT.

*Deceased, May 5, 1926.

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TRANSPORTATION AND TRAFFIC ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

ANNUAL ADDRESS OF PRESIDENT.

ANNUAL REPORT OF EXECUTIVE COMMITTEE.

ANNUAL REPORT OF SECRETARY-TREASURER.

APPOINTMENT OF CONVENTION COMMITTEE ON RESOLUTIONS.

REPORT OF COMMITTEE ON NOMINATIONS.

ELECTION OF OFFICERS.

REPORT OF COMMITTEE ON MERCHANDISING TRANSPORTATION. This report is treated under six general headings and will be presented as follows:

1. *Courtesy, Salesmanship and Appearance of Transportation Employees*—R. N. Graham, manager of railways Pennsylvania-Ohio Electric Company, Youngstown, Ohio, chairman.

2. *Special Classes of Service and Rates of Fare*—C. D. Smith, general manager Beaver Valley Traction Company, New Brighton, Pa.

3. *Maximum Use of Existing Facilities*—S. E. Emmons, assistant general manager United Railways & Electric Company, Baltimore, Md.

4. *General Company Interest in Civic Problems*—J. B. Donley, director of public relations, Pittsburgh Railways, Pittsburgh, Pa.

5. *Advertising*—A. C. Spurr, general manager Wheeling Traction Company, Wheeling, W. Va.

6. *Design and Care of Equipment*—John A. Dewhurst, associate editor ELECTRIC RAILWAY JOURNAL, New York, N. Y.

Discussion.

PUBLICITY SHOP TALK

Series of talks by practical railway and advertising men.

Tuesday Afternoon, Oct. 5

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

JOINT SESSION, TRANSPORTATION AND TRAFFIC AND CLAIMS ASSOCIATIONS.

REPORT OF COMMITTEE ON TRAFFIC CONGESTION—A. R. Myers, president Erie Railways, Erie, Pa., chairman.

Formal Discussion by a traffic captain, a traffic engineer, a consulting engineer and a railway operating engineer.

GENERAL DISCUSSION.

REPORT OF JOINT COMMITTEE ON ACCIDENT PREVENTION—M. W. Bridges, safety engineer Chicago Rapid Transit Company, Chicago, Ill., and H. K. Bennett, safety manager United Electric Railways, Providence, R. I., co-chairmen.

Formal Discussion by transportation men and claims men. (Names to be announced later.)

GENERAL DISCUSSION.

Wednesday, Oct. 6

This entire day has been set aside by the officers of the association for the inspection of manufacturers' exhibits. No formal convention sessions of the American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths where the most modern equipment and latest appliances are on display.

Thursday Afternoon, Oct. 7

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

REPORT OF COMMITTEE ON BUS OPERATION.

This report is treated under fourteen general headings and will be presented as follows:

1. *Introduction*—J. B. Stewart, Jr., general manager Cincinnati Street Railway, Cincinnati, Ohio, chairman.

2. *Rates of Fare—Interurban*—E. D. Dreyfus, advisory engineer West Penn Railways, Pittsburgh, Pa., and D. A. Scanlon, general superintendent of railways, Northern Ohio Power & Light Company, Akron, Ohio.

3. *Taxation During Development Period*—C. B. Cooke, Jr., president Westchester Street Railway, Philadelphia, Pa.

4. *Proper Agency to Operate Buses in Competitive Territory—Steam or Electric Railroads*—A. Shapiro, assistant general manager Washington Rapid Transit Company, Washington, D. C.

5. *Terms of Franchise*—S. W. Greenland, care of Newman, Saunders & Company, St. Louis, Mo.

6. *Chartered Coach and Bus Operations*—Adrian Hughes, Jr., superintendent of bus transportation, United Railways & Electric Company, Baltimore, Md.

7. *Package Express Delivery, Including Handling of U. S. Mail*—R. B. Hill, superintendent of operation Los Angeles Railway, Los Angeles, Cal.

8. *Utilization of Motor Buses in Developing Better Public Relations*—C. H. Chapman, manager The Connecticut Company, Waterbury, Conn.

9. *Problems of Supporting Non-paying Route Extensions*—R. H. Smith, Electric Bond & Share Company, New York, N. Y.

10. *Underlying Reasons for Better Service at Higher Rates of Fare*—D. L. Fennell, superintendent of transportation Kansas City Railways, Kansas City, Mo.

11. *Steps to Be Taken to Protect Rate Base with Respect to Development Expense*—A. T. Warner, assistant to vice-president in charge of operation Public Service Railway, Newark, N. J.

12. *Tire Mileage Contracts*—M. L. Harry, division manager Illinois Power & Light Corporation, Decatur, Ill.

13. *Liability Insurance*—R. N. Graham, manager of railways, Pennsylvania-Ohio Electric Company, Youngstown, Ohio.

14. *Double-Deck Bus Operations*—B. W. Arnold, assistant general manager Chicago, North Shore & Milwaukee Railroad, Milwaukee, Wis.

REPORT OF COMMITTEE ON RESOLUTIONS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST PRESIDENT'S BADGE.

ADJOURNMENT.

Inspection of Manufacturing Plants Being Arranged

PURSUANT to requests from railway operators and engineers, various manufacturers in the Cleveland district are planning inspection trips through their factories at the time of the annual convention. Several of the manufacturers, in advising the association of their plans, stated that they did not wish to do anything which would be detrimental to the attendance at either the convention meetings or the convention exhibit. They therefore suggested that a definite time be designated for such inspection trips.

The executive committee of the association discussed the situation and voted that no inspection trips should be planned until 12 o'clock noon, Friday, Oct. 8. After this time the convention meetings will be over and the exhibits closed. Therefore, inspection trips scheduled from this time will in no way interfere with the convention.

Those who desire to make such inspection trips are urged to schedule them Friday afternoon, Oct. 8, and Saturday, Oct. 9. The manufacturers are requested to make their plans in accordance with the above schedule and thus avoid inspection trips during the time the convention is in session. This, it is believed, will avoid any dissatisfaction on the part of the exhibitors and will not detract from the attendance at the convention meetings.

Information relative to the various inspection trips will be published from time to time and will appear also in the final official convention program.

Transportation and Tickets to the Convention

EVERY trunk line passenger association in the country has authorized the sale of round-trip tickets to the Convention in Cleveland at the rate of one and one-half the single way fare on presentation of the official certificate on purchase of ticket at the local ticket office.

One certificate is good for any member of the association, including dependent members of his family. These round-trip tickets may be purchased for the going trip beginning Sept. 30 to Oct. 6 inclusive. On the return trip the passenger must reach original starting point not later than midnight of Oct. 14 and must make this trip by the same route as the going trip. Regulations of the roads regarding limited trains and stop-over privileges will be adhered to.

Return tickets will be validated at Cleveland, Ohio, by agents at the regular ticket offices of the lines over which tickets read into that city or at the registration desk, where agents will be available from Oct. 4 to 8 inclusive.

A special train, composed of modern, all-steel Pullman equipment for day service will be operated by the New

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York Central Railroad from Chicago on the following schedule:

Lv. Chicago	10:30 a.m., C.T.,	Sunday, Oct. 3
Lv. La Porte	11:51 a.m., C.T.,	Sunday, Oct. 3
Lv. So. Bend	12:25 p.m., C.T.,	Sunday, Oct. 3
Lv. Elkhart	12:55 p.m., C.T.,	Sunday, Oct. 3
Lv. Toledo	4:45 p.m., E.T.,	Sunday, Oct. 3
Ar. Cleveland	7:10 p.m., E.T.,	Sunday, Oct. 3

Special Pullmans for delegates only will be reserved for those wishing to leave Chicago at 11:10 p.m., Sunday, Oct. 3, on the Chicago-Cleveland special, arriving in Cleveland at 7:40 a.m., Monday. If enough reservations are made for this train to run as a special, the train will immediately follow the regular 11:10 p.m. train.

Delegates from northern Indiana can have reservations made for the special leaving Chicago at 10:30 a.m., Sunday, Oct. 3, to be taken at La Porte at 11:51 a.m., South Bend 12:25 p.m., Elkhart, 12:55 p.m.

Michigan delegates wishing to leave Detroit Sunday night by boat can purchase round-trip reduced fare tickets to Cleveland and return. These will be honored by the Detroit and Cleveland Navigation Company, leaving Detroit at 11:30 p.m., arriving in Cleveland at 6:45 a.m.

Railroad tickets for these special trains must be secured from railroad companies' ticket agents. Pullman reservations should be made with H. J. Kenfield, vice-chairman transportation committee, 431 South Dearborn Street, Chicago, Ill.

Reserve Seats for Theater Party on Oct. 6

ONE of the entertainment features scheduled for the Cleveland convention is a special theater party to be given at B. F. Keith's Palace Theater on the evening of Wednesday, Oct. 6. The Palace seats 3,200 persons and is Cleveland's finest vaudeville theater. Every seat has been reserved for delegates and their guests so that a 100 per cent A.E.R.A. evening is assured. Moving pictures taken at the convention will be shown, while a number of the acts will deal with convention celebrities and convention events.

In addition to these special features, several of the country's outstanding entertainers have been engaged and at least nine of the best vaudeville acts will be selected from other Keith theaters in Ohio. Transportation facilities have been arranged to bring these performers to Cleveland and an all-star entertainment is anticipated.

The committee in charge has mailed a notice to all members of the association. Seat reservations at a fixed price of $1.50 each may be made in advance. These reservations will be assigned strictly in the order of receipt—first come, first served. While the theater has ample capacity, early reservations are essential to assure the best seats.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Sept. 9—Central Electric Railway Master Mechanics' Association, annual convention, Hotel Rieger, Sandusky, Ohio.

Sept. 10-11—Central Electric Traffic Association, annual meeting, Yellow Banks Hotel, Webster Lake, Ind.

Sept. 17-18—Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

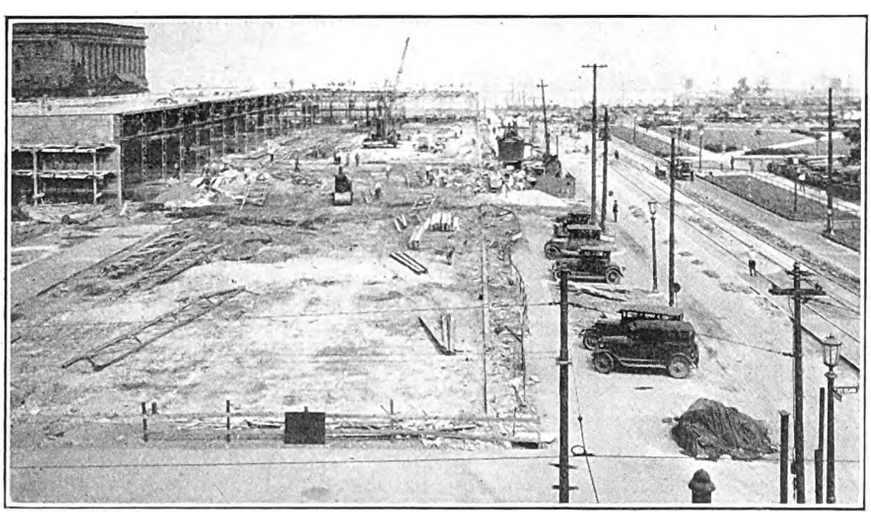
Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

November 16-19—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.

Fred Dell, director of exhibits of the American Electric Railway Association, reported that at the close of business of Aug. 27 the total square footage assigned to prospective exhibitors at the convention to be held in Cleveland in October was 114,393 sq.ft.

Cleveland Convention Facilities Progress



WORK continues to be rushed on the additional facilities for the coming convention and exhibit in Cleveland. The third view of the work, from approximately the same point as those published in this paper last week, shows 25 bays of steel erected, the plastering and roofing almost completed. Plumbing and service lines are all installed. More than 60 per cent of the concrete floor is in place, only the area in the immediate foreground remaining to be done. Meeting rooms are ready for the ceilings and the interior of the structure shown for the placing of service lines and equipment. At the right, the Cleveland Railway is completing the paving of the tracks in East Third Street, which provide the connection between the steam roads and the convention and service facilities. This picture was taken Friday afternoon, Aug. 20, seven days after the last one published.

News of Other Associations

Central Master Mechanics to Meet in Sandusky on Sept. 9

NOTICE has been sent out to members of the Central Electric Railway Master Mechanics Association that the next meeting has been set for Sept. 9. It will be held at the Hotel Rieger, Sandusky, Ohio, beginning at 9 a. m. Eastern standard time.

The meeting will be devoted to four-minute talks by members telling of their greatest accomplishments during the past year. A representative of the Kuhlman Car Company will explain what was accomplished by purchasing freight cars in a bulk order.

In the afternoon the standards committee and the safety appliance committee will present reports, following which an inspection will be made of the Sandusky shops of the Lake Shore Electric Railway.

Central Traffic Men Meet Sept. 10-11

IN ACCORDANCE with the action taken at its last meeting, the next regular meeting of the Central Electric Traffic Association will be held at the Yellow Banks Hotel, Webster Lake, Ind., on Sept. 10-11.

The morning session on Sept. 10 will be called to order at 9 o'clock and will be in the nature of a round-table discussion. Necessary committee work will be done the same afternoon. The session of Sept. 11 will be devoted to reports of committees and such other business as may be properly presented.

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The News of the Industry

Wage Terms Fixed in Detroit

The tentative wage increase for the platform men of the Department of Street Railways at Detroit, Mich., announced the latter part of June, which provides an advance of 2 cents an hour, was put into effect after having been agreed to by the employees. It has been estimated that the increase will cost the department approximately $210,000 annually, but no increase in fares has been necessary and no increase is anticipated as a result of the added cost of operation due to the wage increase.

The tentative agreement provided that the wage increase should take effect in two steps of 1 cent each, on July 1 and Aug. 1, so the full effect of the increase will be included in the report of operating expenses for the month of August.

The tentative agreement provides the following rates for motormen, conductors and motor coach operators: First six months, 67 cents an hour; second six months, 71 cents an hour; thereafter, 75 cents an hour. The hourly rate for one-man car operators and operators of motor coaches or buses seating 35 passengers or more are: First six months, 72 cents; second six months, 76 cents; thereafter, 80 cents.

A number of special requests and provisions were included affecting scheduled weekday runs, the percentage of total number of runs to be completed within certain specified consecutive hours, and the allowance of additional time bonuses for long runs.

Local Service Withdrawn in Delaware, Ohio

City service at Delaware, Ohio, was discontinued on Aug. 20 by the Columbus, Delaware & Marion Electric Company in keeping with its declaration that the moment street improvements on thoroughfares traveled by the city cars were begun the service would stop. Preliminary work on West William Street was started on Aug. 19 and the next day the cars were missing from the city streets.

Since June, 1899, the company has been operating the cars as a requirement of its franchise for right-of-way over Delaware streets for interurban cars. The franchise expired in 1924, but the company continued to operate the cars. When the City Council proposed street improvements, the company served notice it could bear none of the cost and that the cars would be taken off. The company has, however, offered to operate buses in lieu of the cars. Whether or not the city will make any effort to compel the continuation of the operation of the cars is unknown, but such action is not deemed likely.

The company contends that the lines paid $13 over operating expenses in January, 1914, but that this was the only month in the 27 years of operation by the company that they more than broke even.

The lines were built by a company of Delaware citizens in 1891 at a cost of $91,000. A few years later they were sold at sheriff's sale to another Delaware company for $13,500. In 1899 they were purchased by the Columbus, Delaware & Marion Railway, the predecessor to the Columbus, Delaware & Marion Electric Company, for $55,000.

Matters remained unchanged for several days. Now, however, the City Council is considering a new franchise presented by the railway and definite action probably will be taken at a meeting of the Council called for Aug. 30. One provision of the new franchise is the installation of a bus service by the railway to take the place of the city street cars, recently discontinued. Under this plan the Council will have the privilege of fixing the fare, but if the fixed rate fails to care for operating expenses in any one month the company reserves the right to increase the fares by steps of 1 cent at a time until operating expenses are met. In no case, however, is the fare to exceed 12 cents. After a reserve fund of $5,000 has been built up, fares will be lowered.

$187,000,000 for Rapid Transit at Detroit

Piecemeal Construction of System Suggested—Assessment Plan of Payment for Construction Proposed—Equipment to Be Bought With Funds Secured by Bonds

AN INITIAL rapid transit system proposed for the city of Detroit and adjacent municipalities costing $187,789,000 and involving a total of 46.6 miles is recommended by the Rapid Transit Commission in its report just submitted to the City Council. The plan calls for four lines, covering routes in both north and south and east and west directions. Of the 46.6 miles of route proposed, 42.7 will be in Detroit, and of the total construction cost, $172,001,000 is to be borne by Detroit.

The four routes include: Vernor Highway Crosstown line 11.2 miles long, which it is planned to build as the first unit; the Woodward-Fort North and South line, 7.5 miles long; the Salina-McGraw-Grand Boulevard-St. Jean - Crosstown line, 14.3 miles long; and the Grand River-Jefferson-Mount Elliott-Gratiot-West Side and East Side line, 13.6 miles long.

The routes will be submitted to the voters at the November election and if the plans are approved the last step essential to the rapid transit system will have been completed.

Under the plan announced the taxpayers as a whole will pay 17 per cent of the constructions costs; property adjacent to the subways and the stations will pay 51 per cent, and 32 per cent of the cost will be borne by the car riders, the law providing that a rate of fare shall be charged sufficient to meet that proportion of the cost.

It is proposed to make each year's budget for the next ten years carry an item of $4,300,000 for subway purposes, all of which is to be raised by taxation; $12,900,000 will be raised annually for the next ten years by special assessments levied against property adjacent to the lines.

As only construction costs of the railroad structures are included in the above figures, mortgage bonds will be issued to buy equipment. These bonds will not be a lien against the city but rather against the equipment itself. The commission reports that the $172,000,000 construction estimate covers the cost of the railroad structure through the streets, either under, above or on the surface, or the cost of the so-called "permanent way" of the lines in Detroit. This is the cost in which the Detroit public is chiefly interested because the money to meet it must be raised by local assessment and taxation of the city at large.

The commission further states in its report that the cost of equipping the lines for operation, with tracks, signals, cars, power, yards, shops and other equipment appurtenances and for right-of-way real estate will be paid for by the passengers' fares. The equipment bonds will therefor be self supporting.

Among the conclusions set forth by the commission are that the initial system, except for a short length of elevated line made desirable by the exigencies of location, should be constructed as a two-track tunnel way system—that is to say, in subway at stations and in tunnel between stations, thus avoiding the disturbance of the sub-surface structures in the streets to a very large extent, and reducing to a minimum the interference with street traffic during the prosecution of construction work.

It is recommended that because of the limitations imposed by the rapid transit act, a continuous construction program be followed and that work be started in the first year on the Vernor Highway crosstown line, and in each year thereafter on one of the other lines, in succession and in the order noted previously and that the work be

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prosecuted continuously so that all of the lines may be completed and placed in operation within the thirteenth year of the construction period—the first within six years, the second within eight years, and the last two within twelve and thirteen years respectively after the construction work begins.

It is recommended that the cost of constructing and equipping the initial system be financed under the "pay as you go" assessment plan already approved by the people by a referendum vote, in order that all of the beneficiaries of such a rapid transit system, the taxpayer, the land owner and the rider, may each pay his proper share of the cost of the system and the service on it.

After studying the commission's recommendations the City Council unanimously carried a motion that the ordinance be placed on order of first and second reading, and a date for a public hearing on the report will be set in the near future.

Safety Move by New York Interurban

As a result of the inquiry conducted by the Public Service Commission relative to speed of interurban cars operated by the Schenectady Railway between Albany and Schenectady, N. Y., the company has agreed to limit the running time of express trains between the two cities to 30 m.p.h. and of local trains to 26 36 m.p.h. The railway will also place on its poles at 1,000-ft. distances warning signs to motorists with the legend "Warning, Motorists! Be careful if you cross railroad tracks."

Strike Leader at Indianapolis Apprehended

No action was taken on Aug. 23 by federal authorities relative to bringing Harry Boggs, former president of the Indianapolis street car men's local union, before Judge Robert C. Baltzell of the United States district court for arraignment on a charge of contempt of court. Boggs, it was reported, was desirous of coming into court and entering a plea to the charge.

Boggs is alleged to have incited acts of violence in connection with the strike of the union employees of the Indianapolis Street Railway. He fled from the city shortly before he was cited for contempt of court. He is charged with violating the order of Judge Baltzell, which prohibited any one having knowledge of the order from influencing employees of the railway to violate their labor contracts with the company and go on strike.

Boggs pleaded guilty in the United States District Court on Aug. 25 of a charge of contempt of court in connection with the recent strike. Among other things he was charged with inciting acts of violence by employees of the company by encouraging them to "cut loose." He was charged with violating the order by Judge Robert C. Baltzell which prohibited any acts of violence or other methods of interfering with the operation of the cars. Judge Baltzell took Boggs' case under advisement.

It is understood the court will not pass sentence on Boggs until Albert Ward, United States District Attorney, returns from a motor trip in the East. Judge Baltzell said he wished to learn more about Boggs' case in order to make his punishment what it should be. Mr. Ward is expected to return by Sept. 1.

In speaking in his own behalf, Boggs told Judge Baltzell that he was appointed president of the local union by Robert B. Armstrong and John M. Parker, two vice-presidents of the national organization, and that he took all his orders from them.

"They called me into a little room every morning before each meeting," Boggs said, "and they told me what to say and do and I did it."

Parker and Armstrong recently were sentenced by Judge Baltzell to 90 days imprisonment in the Marion County jail. They appealed their cases.

Boggs denied that he knew anything about a federal injunction and said that Parker and Armstrong told him he was not violating the law.

The Indianapolis public is hearing little about the strike, even though it never has been called off by the strikers and all attempts to call it off resulted in overwhelming votes in favor of a continuance. There now is no interruption to traffic and for two or three weeks there has been no vandalism.

New York Syndicate Reported to Have Made Proposal to Chicago

An unidentified syndicate of New York bankers, through Judge John Harlan, offered on Aug. 25, to take over Chicago Surface Lines with the bondholders' consent at the present valuation when the franchise expires on Feb. 1. They ask the Mayor for an immediate hearing. They would organize a new company, accept a twenty-year franchise and safeguard present bondholders by refunding all outstanding issues. Prior lien sinking funds bonds senior to the present outstanding bonds would provide the capital for extensions costing $40,000,000. The syndicate would operate supplementary buses and consolidate with the elevated. They offer to build subways cheaper and faster than other proposals or to lease any city built tubes. The suggestion has aroused a great deal of discussion in Chicago and New York, but the details so far made public are so intangible that except in one or two cases, where the plan has been severely criticised, financiers and others have been loathe to talk about it.

Franchise Requested at Springfield, Ohio

Request for a franchise to operate in the city has been presented to officials of Springfield, Ohio, by the Springfield Suburban Railway. The railway hauls freight to Springfield from Maitland, for two Springfield concerns, The Crowell Publishing Company and The William Bayley Company. Since Feb. 9, 1923, the company has been operated by sufferance, according to City Manager Flack, under a franchise granted originally to the Springfield & Troy Traction Company. This franchise does not expire until March 16, 1928. The original franchise was granted in 1903 when the first line was built under the direction of former Gov. Asa Bushnell. Later the grant was transferred to the Springfield, Troy & Piqua Traction Company. That company operated the line until Nov. 29, 1916, when the name was changed to the Springfield Terminal & Power Company. In 1922 the road was abandoned following foreclosure proceedings, and in the following year the property was transferred to the Springfield Suburban Railway.

Railway Commissioner Defeated at Nebraska Primary

The Republican primary resulted in a defeat for Thorne A. Browne, chairman of the Nebraska State Railway Commission, and the nomination of John H. Miller, a traveling salesman, who will oppose Floyd L. Bollen, a democratic lawyer, at the election. Mr. Browne was a man of outstanding achievements and ability, who had served seven years as a commissioner following three years as secretary. He handled most of the rate and service cases of the utility with a fairness and understanding of their problems that won regard for him. He wrote the opinion in the Omaha fare case, and that city gave Miller 4,000 majority, a group of socialists leading a fight that made this decision an issue. His defeat, however, was a surprise, as no open opposition developed outside of Omaha. Mr. Browne has resigned from the commission and will begin work on Sept. 15 for the Omaha Chamber of Commerce as its industrial secretary.

New Parking Ordinance Aids Chicago Traffic

Enforcement of the new ordinance which prohibits parking within 50 ft. of traffic signal lights in business districts of Chicago is speeding up the movement of traffic to an unprecedented degree, police and Surface Lines officials say. The restriction is serving to promote better vision at street intersections, facilitate loading of passengers and minimize delay at congested street corners.

A regulation to prevent the blocking of vehicular and pedestrian traffic by building construction companies has also been proposed by the police traffic division.

"Statewide Home Rule Fight Contemplated in Illinois"

Forewarnings of a vigorous statewide fight to place the power to regulate the public utilities of Illinois in the hands of the city governments were given recently between city officials of Peoria, Alton, Kewanee and Jacksonville and Mayor Dever's home rule committee.

Chief among the aims of the conference, announced at that time, was the arrangement of a series of meetings in various cities of the state to spread the gospel of home rule.

Voters are to be urged, it was said, to induce their legislative representatives to take the rate-fixing power out of the jurisdiction of the present

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Illinois Commerce Commission and vest it in cities which elect to take it. The proposals for this change, which emanated from the committee on local transportation of the Chicago City Council, have been referred to previously in the ELECTRIC RAILWAY JOURNAL.

Under article six of the commerce commission act, a city may vote on home rule but the number of voters required to sign the referendum petition is excessively large and, even with that, the regulatory powers which cities would have over their utilities is greatly limited.

Mayor Dever explained that if a city was satisfied with being under the commission's orders it might remain there, but if one was not satisfied then the conference wanted to make it possible for that city to do its own rate fixing for public utilities.

Plans for Chicago's Transportation

Subway Advisory Commission Proposes Unified System with $36,000,000 Program of Rapid Transit Construction—Modern Elevated Structures Favored

CONSOLIDATION of Chicago's rapid transit and surface car systems is considered fundamental in the report of the sub-committee on subways reporting to the local transportation committee of the Chicago City Council. Limited subways in the central part of the city are recommended, the trackage so built as to become elevated upon entering territory in outlying sections, when the damage to abutting property becomes low enough to make the elevated more economical.

The tone of the report is distinctly favorable to modern elevated structures but condemns forcibly the present elevated lines in Chicago and New York which are characterized in the report as noisy in operation and unsightly in their design.

Special assessments to property benefited are definitely stated to be the logical means of financing at least 55 per cent of the cost of the improvements, making due allowance for damage to property directly abutting elevated structures to be constructed. Part of the special assessment may be raised, according to the recommendations, by a voluntary subscription plan, the balance of the construction cost to come from the traction fund providing that such action were allowed by the court.

ESTIMATED COST $36,400,000

The sixteen recommendations of the report are quite specific. They propose the consolidation into one company of the street railways constituting the Chicago Surface Lines with the Chicago Rapid Transit Company, and that the transportation committee take the initiative and draft such ordinances as are necessary to bring about the consolidation. Such amendment of the State Constitution as is necessary to grant power to the city to make improvements to be paid for in part by special assessment of the property that would be benefited.

As to routes, extensions of the elevated on Ashland Avenue, and on Wells and Polk Streets are planned. A subway on State Street and one on Washington Street, Jackson Boulevard and Michigan Avenue, all main arteries in the traffic plan, are proposed.

In each case the recommendation provides specifically for the method of financing in part by special assessment of property.

In a summary of costs the report presents an estimate of $36,400,000 covered by the following general items:

	State Street Subway	Washington-Michigan-Jackson Blv'd Subway	Total
Train level including stations	$16,900,000	$9,900,000	$26,800,000
Pedestrian level	4,050,000	1,450,000	5,500,000
Total structures	$20,950,000	$11,350,000	$32,300,000
Operating equipment	3,000,000	1,100,000	4,100,000
Grand total	$23,950,000	$12,450,000	$36,400,000

The report, dated August, 1926, was formally presented to the committee at a meeting on Aug. 23. On the following day the sub-committee on traction program met with members of the transportation interests, represented by Leonard A. Busby for the Chicago City Railway and associated lines and Weymouth Kirkland for Henry A. Blair of the Chicago Railways. These companies comprise the Chicago Surface Lines, now operating all of the street railway cars in Chicago. The franchises of these two companies expire Jan. 31, 1927. Britton I. Budd appeared for the Chicago Rapid Transit Company. Banks were represented by Frank O. Wetmore, chairman of the board First National Bank; A. W. Harris, president Harris Trust Company, and J. E. Blunt, vice-president Illinois Merchants Trust Company.

The program of attack in the construction of suitable ordinances and necessary legislation was discussed. Opinion was divided between the necessity of first agreeing on a franchise and then seeking necessary enabling legislation or the reverse of this program. Mr. Blair has heretofore favored the enactment of enabling legislation before considering the context of a franchise, whereas the consensus of opinion seemed to favor first agreeing on the terms of a franchise, then after test at a general election, to seek the necessary enabling legislation. Mr. Kirkland stated that Mr. Blair was willing to cooperate but in his opinion the procedure he favored was one that would produce the best results.

A motion was unanimously passed as an expression of opinion by the conference, that a committee consisting of one member from each of the interests involved meet with the corporation counsel and chairman, D. S. McKinlay, and outline a plan for consideration.

While Chicago Surface Lines officials are not in full accord as to the proper course to be followed in negotiating a new franchise ordinance, the opportunity for continued delay in the settlement proceedings was removed on Aug. 24 when the City Council voted to permit the company to prepare a list of controversial points to be submitted two weeks hence.

The Council's decision was made during a meeting attended by traction officials, local bankers and Aldermen when a deadlock among the traction representatives threatened to undo much of the encouraging progress recently effected. Henry A. Blair, president of the Surface Lines, requested a delay to permit the various company lawyers to agree on the legislation that will be needed for the new ordinance, but Leonard A. Busby, president of the Chicago City Railway, and Britton I. Budd, president of the Chicago Rapid Transit Company, were in favor of proceeding with the consideration of an ordinance at once and meeting the legal technicalities as they arose. The elevated lines are not asking a franchise or permission to consolidate with the Surface Lines, but Mr. Budd declared they are willing to go along with public sentiment.

While they were divided on other points, the traction officials and bankers appeared to be of one mind, however, in their attitude toward local regulation of the consolidated transit properties. The sentiment of the majority of them was voiced by Albert W. Harris, chairman of the Harris Trust & Savings Bank, who said that he was in favor of home rule for Chicago, but he was not for home rule if by that was meant the City Council is to run the street railways. He could not raise any money under such a program.

Mr. Budd suggested that inasmuch as the subject is not essential to the settlement the question of regulation be put aside for the time being.

As a result of the co-operative attitude displayed city officials now believe that Chicago will be able to go to the state Legislature next spring and set forth just what enactments will be needed to settle its traction affairs.

No Change at Newark, Ohio

The latest available news from Newark, Ohio, indicates that the transportation situation in that city is unchanged. A citzens' committee is endeavoring to have operation restored on the lines of the Southern Ohio Public Service Company and is urging the City Council to take the initiative. The company has commenced track reconstruction on lines in the heart of the city to take care of the interurban traffic. No final agreement has been reached as regards the return of the street cars. The reasons for the withdrawal of service were reviewed in the ELECTRIC RAILWAY JOURNAL of Aug. 14.

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New Franchise in Peoria

An ordinance has been adopted granting a twenty-year franchise for railway operation in Peoria, Ill. The Illinois Power & Light Corporation, pending signature of the ordinance by Mayor Louis Mueller, will continue to operate the cars. The company has agreed to pave between rails when necessary, to spend $150,000 on improvements and to transport city employees free. Efforts made to postpone action until next year were defeated. Plea was made, also, for a tax of 4 per cent of the gross receipts by the city, but opponents pointed out that in cities where such tax was exacted no agreement was made covering paving between rails or other improvements. Several other minor objections were raised by the opponents to the franchise.

Grand Rapids Regrets Mr. Madigan's Retirement

Great regret has been expressed by the Grand Rapids Railway, Grand Rapids, Mich., at the retirement of John C. Madigan, long general superintendent. Mr. De Lamarter, vice-president and general manager of the company, in a few words in the employees' monthly publication says Mr. Madigan will be missed both as an executive and as a friend. He says:

"As a street railway executive, Mr. Madigan has few equals. As a man he is one of the most lovable characters I've ever met."

Both Division 836, Amalgamated Association, and the company's Employees Benefit Association entertained Mr. Madigan at farewell gatherings. At these meetings Mr. Madigan expressed himself well satisfied with the co-operation and loyalty shown him by the organization during his years of service. Mr. Madigan's retirement was recorded in the ELECTRIC RAILWAY JOURNAL of July 3.

Matters Still Unsettled in Pontiac

The City Commission of Pontiac, Mich., has failed to take any definite action on a new proposal of the Detroit United Railway, looking towards a solution of the city's transportation problems. The company proposed a plan for construction on South Saginaw Street, the main artery, whereby it would put in double tracks, providing the city absorbed the rest of the cost of the improvement. Investigation of a plan for operation of buses and street cars, in combination, the company stated, involved $750,000, a sum too large for it to handle at this time.

Car Stop Referendum in Cincinnati

In order to settle a difference of opinion among the car riders, regarding traffic stops at Peebles Corner, one of the busiest terminal points in Cincinnati, Ohio, the Cincinnati Street Railway conducted a referendum on the rear platforms of its cars, the ballots being distributed by the conductors. The car riders were asked to express a preference between the present boarding station and the original ones. By a majority of about 2,000 votes the present traffic stops in which the Peebles Corner terminal is used were approved. The traffic stops now in force were made by the railway at the request of the city administration in order to facilitate traffic at that point. Walter A. Draper, president of the railway, has transmitted the results of the election to Col. C. O. Sherrill, City Manager, for consideration.

Armored Money Car for Seattle Municipal Railway

The public utilities committee of the City Council at Seattle, Wash., has approved a request of C. R. Jackson, superintendent of public utilities, for the purchase of a 1-ton armored truck at a cost of $1,500 for use in transporting receipts of the Municipal Railway from the carhouses to banks and from banks to carhouses. The car will carry an armed guard. It will displace the present system of using a small, worn-out truck fitted with an iron chest. He estimated the cost of employing a regular armored bank truck for this purpose at $5,010 yearly. The cost to the city for using its old car is $4,355. Mr. Jackson declared this can be reduced with a new car. The car will also transport tokens and transfers.

Another Store Stages a Sale by Street Car

When the Culbertson's Store at Spokane, Wash., chartered all street cars bound for the downtown district for one hour on the morning of a large annual sale, the Spokane United Railways carried 3,637 passengers for the merchandise concern. Signs reading "Culbertson's Free Car" were carried on the dashboard of each car and anyone who boarded a car was carried free regardless of destination. There was an average of 28 passengers on each car, and the management of the store was well pleased with the results obtained. The usual 7-cent ticket fare was paid by the store to the railway.

Electrification of Virginian Nearing Completion

The work of electrifying the Virginian Railway between Roanoke, Va., and Princeton, W. Va., a project which was embarked upon about the first of the year, will be completed by Sept. 15, and electrically-operated locomotives may be expected to run into the Roanoke yards by that date. Already the huge job of electrifying the Roanoke yards is estimated to be about 80 per cent complete. These yards will be a more important part of the Virginian system after the electrification than they are at present, due to the fact that coal shipments from the West will be brought to Roanoke for classification and weighing before being carried farther eastward by steam locomotives.

Completion of the project will give the Virginian a continuous electrified right-of-way from Elmore, near Mullens, W. Va., to Roanoke, a distance of 134 miles. Operation of electric trains began over the 36-mile stretch between Elmore and Princeton on Sept. 21, 1925.

The entire electrification project, including the portion of the road between Princeton and Elmore, will cost the Virginian about $15,000,000.

Rapid Transit for Seattle Reagitated

The City Planning Commission of Seattle, Wash., through its special committee on rapid transit, has completed a report of rapid transit and grade separation and submitted the report to the City Council for its consideration. The committee, headed by William Pitt Trimble, recommends the linking of the present system of surface tracks with subway and elevated lines at a cost estimated at $4,000,000. The committee believes its recommendations, if followed out, would relieve downtown traffic congestion. The Eighth Avenue South subway, it is estimated, would cost $1,000,000 and the ordinance which authorizes the condemnation of sites required for broadening Eighth Avenue and to provide entrances to the subway has been prepared for passage. On the Westlake Avenue North program, the municipal railway system has purchased the necessary new rails and requires $62,000 to relay the tracks and better the roadbed, in order to speed up the street cars and cut down the running time between Times Square and the south end of the Fremont Bridge by several minutes.

The subject of rapid transit for Seattle was reviewed in an article in the ELECTRIC RAILWAY JOURNAL for May 29, page 938, and was made the text of an editorial at that time.

Results Reported Under New Tacoma Grant

An improvement in the earnings of the Tacoma Railway & Power Company, Tacoma, Wash., under the new fare basis was reported recently to the City Council in a conference between company officials and City Commissioners, but the increase is said not to have been up to expectations, following the city's agreement to eliminate jitneys. The week of July 26-Aug. 1, which came the nearest to representing conditions contemplated by the transportation agreement, was the best so far computed. Decreased riding over the similar period of last year remains an outstanding feature of the railway reports, but this is accounted for in part by the fact that passes were in full use last year. For the week computed, the decreased riding amounted to 10.1 per cent, while revenues decreased to $22,422 from $23,126 for the similar week of last year, or 3 per cent.

Operating of the Tacoma municipal belt lines under the new fare and interchange of transfers with the Tacoma Railway & Power Company during July resulted in an increase in passengers on the municipal line and an increased net passenger revenue. The belt line netted $3,877 on passenger business during July as against $3,627 for the similar month of 1925, a gain of $349 for the municipal line.

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No Need Seen for Buses at Fort Smith

R. C. Coffy, vice-president and general manager of the Fort Smith Light & Traction Company, Fort Smith, Ark., declared recently that surveys by the company's engineers and other experts had shown that there was no need for the addition of buses to supplement the car service, since the company already operates cars to practically every portion of the city. He said that when six Birney safety cars were purchased recently it marked a definite policy of the company against buses.

Car and Bus Lines United in Portsmouth

The long, drawn-out struggle for a unified bus and railway transportation system in Portsmouth, Va., has been brought to a conclusion by the passage of an ordinance to that effect by the City Council. The stock and equipment of the Consolidated Bus Corporation has been sold to the Virginia Electric & Power Company. The price involved was more than $100,000. The Virginia Electric & Power Company will operate buses to Park View, Prentis Place and the Navy Yard and a double-track railway system to Port Norfolk and Pinners Point.

Wages of Covington Employees Being Arbitrated

Wage increase demands of employees of the Cincinnati, Newport & Covington Street Railway, Covington, Ky., are being arbitrated by company officials and delegates of the men. The employees have set 60 cents an hour as the new wage figure for motormen and conductors. This is an increase of 7 cents an hour over the present scale. The contract between the company and the employees, members of the Amalgamated Association, expired on Aug. 4.

They Certainly Made a Fuss Over Her

A farewell dinner was held on Aug. 18 at the Old Kirk Inn, Beaver, Pa., for Miss Elma C. Graham, chief clerk, who has resigned her position with the Beaver Valley Traction Company to accept the position of educational secretary with the Beaver County Health Association.

The affair was attended by about 40 members of the organization. It was in charge of J. R. Marshall, chairman of the committee. Talks were made by Clinton D. Smith, general manager; J. R. Marshall, superintendent of transportation, and others of the foremen and invited guests. A pen and pencil set, engraved with her initials, was presented Miss Graham as a token of the regard in which she was held by her associates.

Regret was expressed at Miss Graham's departure; she received many congratulations on her ability, and the best wishes of all for her continued success. A dance was held following the dinner. The printed program of the affair, decorated with funny little illustrations, was a knockout.

News Notes

42-Mile Run for One Man Car.—Competition has become keen for the honor of operating the longest one-man car route in Ohio. Significant as was the statement made in the JOURNAL of Aug. 21 that the Stark Electric Railroad was operating a run between Canton and Salem, a distance of about 32 miles, it has since been brought to light that the Cincinnati, Georgetown & Portsmouth Railroad, Cincinnati, Ohio, has been operating a 42-mile line with one-man cars since April 1, 1923.

Relief from Paving Costs Asked.—In accordance with the recent advertising campaign of the Harrisburg Railways, Harrisburg, Pa., against bearing the cost of paving between the street car rails, the company has appealed to a committee of the school board to join it in asking the city to relieve it of the cost of paving in extending the tracks of the company to the New John Harris High School.

Booklet of Instructions from Milwaukee Electric.—With a view to increasing mutual understanding between street car patrons and the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., an illustrated leaflet has been issued by this company which clearly describes just how to use all cars in city service. Illustrations on the inside of the leaflet suggest the observance of instructions which will promote convenience to all passengers in their use of the four different types of cars in use in the city.

School Children to Pay Regular Fare.—Practice of granting reduced fares to school children will be discontinued by the Sioux City Service Company, Sioux City, Ia. The new ruling will require high school pupils of the age of twelve years or more to pay regular adult fares. The 3-cent fare will be charged younger pupils. Fares have been 5 cents and 2½ cents, respectively, for children attending school if they used pass books purchased through the Board of Education. The Board will have to pay the higher rate for those pupils entitled to free transportation.

New Grand Rapids Cars Arouse Wide Interest.—The leadership of Grand Rapids, Mich., in the improved type of electric cars recently put into service by the Grand Rapids Railway is receiving attention in many cities. The papers of that city have reproduced an article from the New York *Times* commending the company on its progressive policy. In addition one of the local papers, the Grand Rapids *Press*, has commented editorially on the *Times* article. The *Press* characterized the account in the *Times* as "the occasion of another tribute to the courage and progressiveness of our local utility; and, incidentally, not bad advertising for the Furniture City."

Time-table of Express Bus Service.—A time-table folder showing a map of the new express bus service has been issued by the Northern Ohio Power & Light Company, Akron, Ohio. The buses run, for the most part, on a twenty-minute schedule. A brief word is said on the folder of the comfort, speed and safety of the new line of service. Special buses may be chartered by private parties for in or out of the city trips.

Trolley Company Wins Stay in Yonkers.—The intended sale of fifteen motor bus franchises by the City of Yonkers, N. Y., has been stayed until Sept. 10 by Supreme Court Justice Taylor, who has taken under advisement an application by the Third Avenue Railway System and its subsidiaries in Yonkers to prevent the sale. Justice Taylor ordered the postponement to give him more time to decide the motion. The railway contends that the buses will compete with its lines and that if the franchises are to be sold they should go to a single purchaser. It is reported that the Third Avenue System intends to buy the franchises and operate buses on those which do not compete.

Tokens and Holder on Sale in Baltimore.—The United Railways & Electric Company, Baltimore, Md., has placed on sale at nearly 100 stores and other locations a holder for the street car fare tokens. It is pointed out that this holder "solves the mystery of the missing token." The holder contains thirteen tokens. It sells for $1. The token fare in Baltimore is 7½ cents.

Two-Cent Transfer Fee Approved.—The Alabama Public Service Commission has approved application by the Birmingham Electric Company, Birmingham, Ala., of a 2-cent transfer charge for transfer from its Mountain Terrace line to other lines and from other lines to the Mountain line. The company had announced the beginning of through service from the end of the Mountain Terrace line into what is known as the loop district of the city of Birmingham. The 2-cent transfer charge, it was stated, is applied on other similar lines.

Railroad Would Operate Over Interurban.—The Southern Pacific Railroad, San Francisco, Cal., has applied to the Interstate Commerce Commission for authority to operate under trackage rights over the line of the Fresno Interurban Company in common with the Atchison, Topeka & Santa Fe Railway, under lease, as authorized by the commission. The rights would be secured under a rental basis and cover trackage from a point of connection with the Santa Fe near Fresno, a distance of 17.6 miles, for the purpose of affording transportation facilities to agricultural interests. The terms of the rental are not stated.

Denver Tramway Loathe to Resume Service.—The Denver Tramway, Denver, Col., remains firm not to resume car service on Eighteenth Street between the Union depot and Broadway. The territory is being served by buses of the Yelloway company. The business men of the street passed a resolution asking the railway to replace its cars or the city to give the Yelloway company a franchise to operate buses. Something must be done along about Sept. 1 because the bus company is giving a 30-day free service.

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Recent Bus Developments

Unusual Sightseeing Tour in Southern California

The Pacific Electric Railway, Los Angeles, Cal., and the Gray Line Motor Tours are operating what bids fair to become one of the most popular sightseeing trips in southern California. It is known as the Movie Studio-Mount Lowe Trip. Its particular appeal to the sightseer lies in the fact that its route traverses Hollywood, passes the palatial homes of famed movie artists, enters the Lasky ranch, home of Paramount Pictures, and climaxes with a trip to Mount Lowe. A trained guide accompanies and explains the various interesting features.

Starting at 8:30 a.m. daily from the Clark Hotel, on Hill Street between Fourth and Fifth, the tour leaves in large upholstered observation coaches through the business section of Los Angeles to Hollywood, passing en route Echo Park, Angelus Temple and the residence of Aimee Semple McPherson. From Hollywood the coaches pass at close hand the palatial residences of prominent motion picture stars, thence over Cahuenga Pass through the San Fernando Valley.

A stop is made at the mammoth picture-making plant and the sightseer may view the working ground and sets of such stars as Theodore Roberts, Pola Negri, Richard Dix, Jack Holt, Lois Wilson and others of equal rank, under contract with Famous Players-Lasky Corporation. The Lasky Ranch, 1,600 acres in extent, is entirely devoted to the production of Paramount Pictures.

After the studio visit the tour passes the new plant of the First National Pictures Corporation. Thence the journey leads to the picturesque foothills of North Glendale, thence into the heart of Glendale.

Leaving Glendale, the route continues through one of the most graphic sections of southern California, over a range of mountains on a newly completed boulevard, entering the aristocratic Flintridge Estates. An inspiring scenic panorama of the lofty Sierra Madre Mountains, later to be visited by rail, is to be viewed upon leaving the Flintridge district.

Then comes Pasadena, entrance to which is made through the Arroyo Seco and over Devil's Gate Dam.

A tour is made through the residential section of Pasadena to Montana and Fair Oaks, where begins the journey to Mount Lowe.

South Shore Line Asks New Bus Route

Petition for a motor coach route between Gary and Hammond, Ind., 10 miles distant from each other, was filed by the Shore Line Motor Coach Company with the Indiana Public Service Commission on Aug. 12. It is proposed to operate from the company's terminal on North Broadway, Gary, over Fifth Avenue and Hemstock Road to its Hammond bus terminal on State Street. The route would be considerably shorter than the interurban line of the Gary Railways, an associated company, and would also serve additional territory, the petition points out.

Salt Lake-Ogden Line Approved

Utah Public Service Commission Approves Appeal of Interurban to Parallel Its Railway Lines

Bus service is to be established between Salt Lake City and Ogden, Utah, completing the link of bus line connections from Salt Lake City north to the Idaho state line.

The Public Utilities Commission of Utah has issued to the Bamberger Electric Railroad, which operates between Salt Lake City and Ogden, a certificate of convenience and necessity to operate a bus line, independent of its passenger service.

Action has been deferred, however, on the application of the Utah Light & Traction Company for permission to withdraw its service on its railway line to Centerville (a point which is also on the Bamberger line) about 15 miles north of Salt Lake City, in the event the bus line certificate is granted. This application will be treated by the commission as an independent case.

Service on the railroad buses has been ordered restricted to points between Salt Lake City and Ogden north of Centerville. Transportation facilities between Salt Lake City and Centerville were held to be adequate as already established.

Express service on the new line is also to be restricted to prevent it from interfering with the freight business already handled by the Salt Lake-Ogden Transportation Company, which operates a freight truck line between these cities. Only such express as may be handled by the regular passenger coaches without impairment of the passenger service may be hauled by the railroad buses under the commission's order.

In this case the commission overrides the protests by the Davis County School Board, the County Farm Bureau of Davis County, the Davis County Taxpayers' Association, incorporated towns within Davis County, the American Railway Express Company, and the conditional protests of the Utah Light & Traction Company and the Salt Lake-Ogden Transportation Company. The service was favored by the Chambers of Commerce of Logan, Utah and Ogden, Utah.

More than 70 per cent of the passenger service between Salt Lake City and Ogden originates at points outside of Davis County. The maintenance of the road is paid from proceeds of the gasoline tax. The truck service between Salt Lake City and Ogden by the Salt Lake-Ogden Transportation Company is adequate. The transportation facilities between Salt Lake City and Centerville are adequate. These are the findings made by the commission in overruling and protests and in restricting the express and passenger service.

The commission ruled that there was some public demand for bus service between the two points, but holds to its policy recently established, of granting existing transportation agencies authority to enter the bus field in the hope that private automobile owners may be induced in some measure to patronize the buses, thus enabling the rail lines to regain some of their lost passenger business.

The commission expects the Bamberger Railroad to operate a modern passenger bus system in such a manner as will fully meet the requirements and serve the convenience of the public, not as an auxiliary to its present rail service, but as an independent unit. Jurisdiction is reserved to the commission to enter such supplemental orders as it deems necessary to this end.

Rights of Central New York Operator Restricted

The Public Service Commission on July 30 granted to Herbert M. Parke, now operating bus lines out of Rome, N. Y., a certificate covering the extension of his present routes, but imposed a number of restrictions. He is, for instance, prohibited from carrying local passengers between the terminal in Utica and Deerfield Corners, from point to point in the city of Rome and through passengers between the terminal in Utica and the terminal in Rome.

An application by the Utica Clayville Motor Bus, Inc., now operating bus lines from Utica southerly, for a certificate to operate a line between Utica and Sylvan Beach by way of the State road in Floyd and Marcy and Rome was denied.

Inasmuch as the Parke and the Utica Clayville company's applications covered the same operating territory, both were considered together by the commission. Evidence submitted showed that Parke has been operating bus lines for eight years and that he had never had an accident.

The New York State Railways and the New York Central Railroad opposed the granting of a certificate covering a line between Rome and Utica. The evidence on the hearings was to the effect that the present through service between the two cities was ample, but that there is little if any service to persons wishing to travel between intermediate points in Marcy and Floyd or to Rome or to Utica. Floyd and Marcy town officials and representatives of the Utica State Hospital, Marcy division, urged that a certificate be granted for a bus line along the Utica-Rome river road. The commission held that there was sufficient demand for service to justify the issuance of a certificate. The commission says:

> The question is then raised as to which of the operators should receive the certificate. What the Utica-Clayville corporation in reality desires is the right to operate excursion buses from Utica to Sylvan Beach, with the short-haul business as a minor incident. There was little testimony showing the public need of such excursion

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business. Parke now not only has the right to carry passengers through this territory but is also authorized to do local business through the territory. He therefore is in a position to offer the traveling public the service that the corporation offers and in addition give local service.

The evidence showed that the New York State Railways operated south of the barge canal and the New York Central between Utica and Rome and that the only competition with these carriers would be on through passengers, which Parke under the certificate must not handle.

Buffalo-Toronto Bus Service

Through de luxe bus service between Buffalo and Toronto, Ont., has been started by the International Bus Corporation, Buffalo, N. Y., a subsidiary of the International Railway, and the Toronto Transportation Commission.

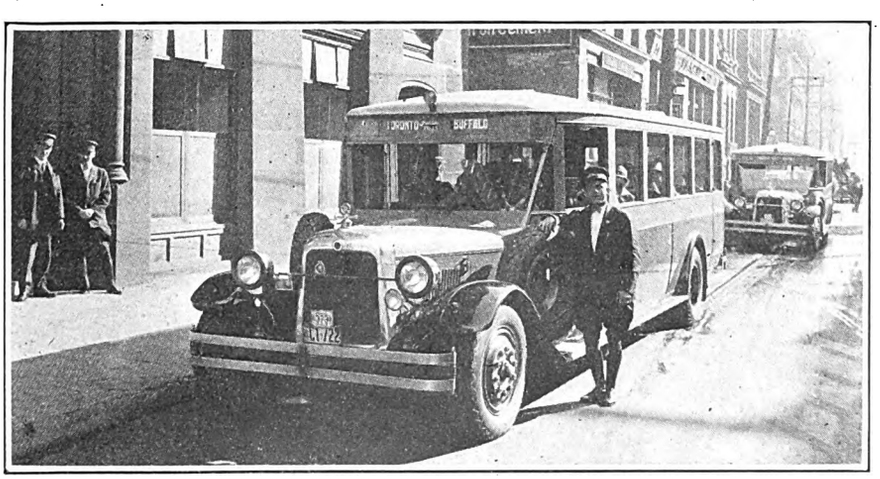
TORONTO--NIAGARA FALLS--BUFFALO
Daily Motor Coach Service
Leave Front and Yonge daily—9 a.m., 2 p.m., 8 p.m. (Daylight-Saving Time)
Leave T.T.C. Office, Queen and Roncesvalles daily—9.15 a.m., 2.15 p.m., 8.15 p.m.
Toronto–Niagara Falls, Round Trip $4.50
Toronto, Niagara Falls, Buffalo, Round Trip . . $6.75
Leave Niagara Falls daily—9 a.m., 2 p.m., 9 p.m. (Daylight-Saving Time)
TICKETS GOOD FOR 10 DAYS

$14.25 TWO-DAY TOUR $14.25
ALL EXPENSES INCLUDED
TORONTO-NIAGARA FALLS-BUFFALO
Leave Front and Yonge, daily—9.00 a.m. (D.S. Time)
Leave T.T.C. Office, Queen and Roncesvalles—9.15 a.m.
Return next day, arriving at Toronto 6.00 p.m.
Two-Day Tour includes motor coach tour, luncheons at The Refectory, Niagara Falls, meals and room at Hotel Touraine, Buffalo, and Sight-seeing Tour of Buffalo.

TORONTO TRANSPORTATION COMMISSION
Operating "THE GRAY LINE" Motor Coach Tours
35 YONGE ST. Adelaide 8001

Appeal to the Public for Patronage

The route is by way of Niagara Falls. Three round trips are made daily. The International Bus Corporation takes passengers from Buffalo to Niagara Falls, Ont., where tourists are transferred to de luxe buses of the Toronto Transportation Commission. An all-expense tour includes luncheon at Niagara Falls, Ont., and overnight accommodations at the Walker House in Toronto. The round trip fare for the tour, including meals and sleeping accommodations, is $14.25, while the round trip fare for transportation alone is $6.75. Buses leave Buffalo at 7:30 and 11:30 a.m. and 7:45 p.m. The route from Buffalo to Toronto is 119 miles.



One of the Toronto-Buffalo Buses Ready to Start

Railway Abandons Non-Paying Bus Line.—Another electric railway in Indiana has received permission to abandon its bus service. The Indiana Public Service Commission has authorized the abandonment of the bus line operated between Fort Wayne and the Indiana-Ohio state line by the Fort Wayne, Van Wert & Lima Traction Company. The commission said that the loss sustained by the line from Jan. 1 to June 30 of this year was nearly $10,000. Every community through which the bus line passes is served by electric railway.

Bus Substitution Upheld. — The Eugene Street Railway, Eugene, Ore., has been upheld in its application to substitute buses for street cars on the Eugene-Springfield run. The route now used by the railway is to be taken over by the Southern Pacific Railroad as a part of its new line upon completion of the Cascades cut-off to Klamath Falls.

Buses to Fill the Gap.—The Bus Transportation Company, a subsidiary of the Denver Tramway, Denver, Col., has asked the State Public Utilities Commission for permission to operate buses between Denver and Arvada, Col., about 8 miles. The tramway lines do not pay. The commission has the matter under advisement. If the right to operate buses is granted, it is likely that during the dull season the tramcars will be taken off and buses will take care of traffic.

Traction Company Leaves Ohio Bus Line.—Lease of the Springfield, Mechanicsburg & Delaware Bus Company was obtained on Aug. 4 by the Dayton & Columbus Transportation Company, the bus subsidiary of the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio.

Bus Companies Refused Permits in Milwaukee.—Requests of the American Coach Company and Edwin Kroeling, Menomonee Falls, for permission to operate bus service in the downtown section of Milwaukee, Wis., in competition with the street car and bus lines of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., were turned down by the Railroad Commission at a special hearing, at which city officials were also present to oppose the granting of permits. The City Council has adopted the policy of refusing permits to operate buses pending completion of the city-wide transportation survey now under way.

Steam Railroads Oppose Rochester Bus Line.—Claiming that their companies would, perhaps, lose as much as 80 per cent of their business, representatives of two steam railroads, the Dansville & Mount Morris and the Buffalo, Rochester & Pittsburgh, opposed the application of the Rochester Interurban Bus Company, a subsidiary of the New York State Railways, Rochester, N. Y., to operate buses connecting Livonia, Hornell and Long Point. Receivers for the Dansville & Mount Morris claimed that the Erie Railroad, with a line that also parallels the proposed bus route, had withdrawn opposition because of an agreement with the promoters of the bus route.

Recommends Combining Seattle Lines.—Combining of the 24th Avenue Southwest and Admiral Way bus lines of the Seattle Municipal Street Railway, Seattle, Wash., has been recommended by D. W. Henderson, superintendent, who declares that better service can be given by this combine. He also opposed the proposed extension of the Beacon Hill car line, on the ground that this line showed a loss of $10,000 in 1925 over the previous year.

Decides to Retain Baltimore Bus Line.—The United Railways & Electric Company, Baltimore, Md., has notified the Maryland Public Service Commission that it will continue to operate its bus line between Baltimore and Chesaco Park, a development in the eastern suburbs of the city. The company recently announced that it would not continue the service but later decided to keep the line in operation.

Bus Permit Refusal May Cause Higher Fares.—Permission for the trial operation of city bus service during the months of July, August and September having been flatly refused by the Marinette City Council, the Menominee & Marinette Light & Traction Company, Menominee, Mich., announces that application will be made to the Railroad Commission for an increase in fares and adjustment of service inasmuch as the operation of the railway in that city is being carried on at a loss. An attempt was to be made to determine if the transportation system in Marinette could be placed on a satisfactory basis through the operation of combined railway and bus service.

New Garage for Altoona Buses.—The Altoona & Logan Valley Electric Railway, Altoona, Pa., and the Logan Valley Bus Company, a subsidiary, have taken possession of the new concrete and steel garage adjoining the carhouse. This building houses the fleet of eighteen buses, two tower cars and four service trucks made necessary by the recent buses purchased. Eight new machines were secured during the past few months. The Logan Valley will purchase four more buses for use on the West Tyrone and Nealmont routes in Tyrone. The company plans to abandon 12 miles of track.

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Financial and Corporate

$71,718 Increase in Net in Detroit

Interesting Comparisons Contained in Report of Auditor Hauser to the City Officials

The balance of net income of the Department of Street Railways at Detroit, Mich., for the year ended June 30, 1926, was $613,378 after the payment of sinking fund charges. The balance of net income for the year ended June 30, 1925, was $541,660. The past year shows an increase in the balance of net income over the year ended June 30, 1925, of $71,718 or 13.2 per cent.

PASSENGER MOVEMENT IS ON INCREASE

During the past year ended June 30, 1926, 498,881,346 passengers were carried by the rail lines and 17,885,596 by the coach lines, a total of 516,766,941 passengers compared with a total of 458,208,396 passengers carried during the year ended June 30, 1925, divided 454,036,811 rail lines and 4,171,586 coach lines. In other words, the Department of Street Railways carried 58,558,545, or 12.8 per cent more passengers, in the year ended June 30, 1926, than in the year ended June 30, 1925.

Density of passengers, i.e., total passengers per car-mile, is an index of service. In the year ended June 30, 1926, the rail lines operated 55,823,983 car-miles and carried 498,881,346 passengers or at the rate of 8.94 passengers per car-mile, compared with 48,300,107 car-miles operated in the year ended June 30, 1925, and 454,036,811 passengers carried or at the rate of 9.40 passengers per car-mile, so that a less crowded condition existed in the cars during the year ended June 30, 1926, than in the year ended June 30, 1925, by about 5 per cent.

Speed of service as reflected by the car-miles per car-hour is also another index of service. This factor of service for the year ended June 30, 1926, shows an average car speed for the rail lines of 9.4 miles an hour compared with 9.2 miles an hour for the year ended June 30, 1925. The car movement has been speeded up about 0.2 mile an hour.

In the year ended June 30, 1926, the coach lines operated 5,775,695 coach-miles and carried 17,885,595 passengers, or at the rate of 3.10 passengers per coach-mile compared with 1,218,308 coach-miles operated in the year ended June 30, 1925, and 4,171,585 passengers carried, or at the rate of 3.42 passengers per coach-mile.

The coach movement shows an average coach speed for the year ended June 30, 1926, of 9.7 miles an hour.

STATEMENT OF ASSETS

Resources and funds provided in excess of disbursements for capital costs, or amount at June 30, 1926, available for future capital costs, were $296,048 as disclosed by the accompanying statement. Stated differently, the current and working assets are in excess of the current and working liabilities by $296,048.

The accrued interest, operating reserves, and sinking fund reserves are all funded with cash and securities 100 per cent, and at June 30, 1926, consist of the following:

Sinking funds for debt	$5,827,880
Special deposits for interest	296,584
Injuries and damages fund	860,966
Repairs and renewals fund	179,283
Total	$7,164,714

Of this amount $1,500,000 is loaned on behalf of the Department of Street Railways to the City of Detroit on its demand notes drawing interest at 4 per cent.

These facts are all taken from the report made by William M. Hauser, auditor of the municipal railway system under the direction of H. U. Wallace, the general manager, under recent date to the city and the railway officials.

RESOURCES AND FUNDS AVAILABLE AT DETROIT

Resources and Funds Provided	
Construction bonds voted April 5, 1920	$15,000,000
Purchase bonds voted April 17, 1922	4,000,000
Detroit United Railway obligation voted April 17, 1922	17,080,000
Additions and betterments bonds voted April 2, 1923	5,000,000
Deposits for land sales	430,841
Balance of earnings for the period from February 1, 1921, to June 30, 1926, after the payment of (a) operating expenses (b) taxes (c) interest, etc. (d) sinking funds	4,584,589
Total resources and funds provided	$46,094,430
Disbursements	
For road and equipment	$44,666,419
For cash—working funds	114,600
For material and supplies	1,017,361
Total disbursements	$45,798,381
Resources and funds provided in excess of disbursements for capital costs, or amount at June 30, 1926, available for future capital costs	$296,048

INCOME AND STATISTICAL STATEMENT OF DETROIT MUNICIPAL RAILWAY

	Year Ended June 30 1926	Year Ended June 30 1925
Income		
Operating Revenue		
Railway operating revenue	$23,200,361	$21,262,763
Coach operating revenue	1,340,720	297,754
Total operating revenue	$24,541,081	$21,560,518
Non-operating income	235,034	213,137
Total revenue from all sources	$24,776,115	$21,773,656
Operating Expenses		
Railway operating expenses	$17,527,553	$15,261,599
Coach operating expenses	1,328,937	300,155
Total operating expenses	$18,856,491	$15,561,754
Net revenue from all sources	$5,919,624	$6,211,901
Deduct		
Taxes assignable to operation	$695,128	$716,414
Other deductions	450	485
Interest on funded debt:		
On purchase bonds	152,577	158,230
On construction bonds	785,875	785,875
On additions and betterments bonds	217,682	112,551
On purchase contract (D. U. R.)	824,909	884,495
Total interest	$1,981,045	$1,941,152
Total deductions	$2,676,624	$2,658,051
Net income	$3,243,000	$3,553,849
Disposition of Net Income		
Sinking Funds:		
For purchase bonds	$133,000	$133,000
For construction bonds	545,742	571,351
For additions and betterments bonds	163,360	520,319
For purchase contract (D. U. R.)	1,787,518	1,787,518
Total sinking funds	$2,629,621	$3,012,189
Balance for the period	$613,378	$541,660

COMPARISON OF OPERATING STATISTICS OF DETROIT MUNICIPAL RAILWAY

	Year Ended June 30 1926	Year Ended June 30 1925
Railway revenue car-miles	55,823,983	48,300,107
Coach revenue coach-miles	5,775,695	1,218,308
Railway revenue car-hours	5,927,506	5,252,021
Coach revenue coach-hours	595,848	.....
Railway revenue passengers	370,456,658	338,155,230
Railway transfer passengers	128,424,688	115,881,581
Railway total passengers	498,881,346	454,036,811
Coach revenue passengers	16,740,647	4,171,585
Coach transfer passengers	1,144,948	.....
Coach total passengers	17,885,595	4,171,585
Total revenue and transfer passengers	516,766,941	458,208,396
Railway operating revenue per car-mile	41.56 cents	44.00 cents
Coach operating revenue per coach-mile	23.21 cents	24.44 cents
Railway operating expenses per car-mile	31.39 cents	31.59 cents
Coach operating expenses per coach-mile	23.01 cents	24.64 cents
Railway operating revenue per car-hour	$3.91	$4.05
Coach operating revenue per coach-hour	$2.25	.....
Railway operating expenses per car-hour	$2.96	$2.91
Coach operating expenses per coach-hour	$2.23	.....
Ratio of transfer passengers to revenue passengers—railway	34.67%	34.27%
Ratio of transfer passengers to revenue passengers—coach	6.84%	.....
Railway revenue passengers per car-mile operated	6.64	7.00
Railway transfer passengers per car-mile operated	2.30	2.40
Total railway passengers per car-mile operated	8.94	9.40
Coach revenue passengers per coach-mile operated	2.90	3.42
Coach transfer passengers per coach-mile operated	.20	.....
Total coach passengers per coach-mile operated	3.10	3.42
Ratio of railway operating expenses to railway operating revenue	75.55%	71.78%
Ratio of coach operating expenses to coach operating revenue	99.12%	100.81%

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Income of Brooklyn-Manhattan 48 per Cent Over July, 1925

The regular monthly statement of the Brooklyn-Manhattan Transit Corporation for July, 1926, shows an increase in total operating revenue of $347,595 while the total operating expense increased only $60,945 over July, 1925. The net income has increased $241,033, or 48 per cent over the same month last year. The statement follows:

COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES OF BROOKLYN-MANHATTAN TRANSIT SYSTEM

	July, 1926	July, 1925
Total operating revenues	$4,171,774	$3,824,179
Total operating expenses	2,572,649	2,511,701
Net revenue from operation	$1,599,125	$1,312,477
Taxes on operating properties	282,532	262,206
Operating income	$1,316,592	$1,050,271
Net non-operating income	70,703	99,431
Gross income	$1,387,295	$1,149,702
Total income deductions	649,714	653,154
Net income	$737,581	$496,548

Successor to Cumberland & Westernport Railway Chartered

A charter has been granted the Cumberland & Westernport Transit Company, Cumberland, Md., to take over and carry on the business previously conducted by the Cumberland & Westernport Electric Railway.

The authorized capital stock is 3,930 shares of preferred of no par value and 9,755 shares of common of no par value. The preferred provides for dividends of $5 per share per annum. The directors named in this charter are David D. Price, James T. Chambers and Thomas W. Price, Frostburg, Md. and Walter C. Capper, Paul L. Hitchins and F. Brooke Whiting.

The application for a charter will be followed later by the reorganization of the railway, which is still in the hands of the receiver. As soon as the recent sale under foreclosure is ratified by the court and the receivership terminated the new company will take hold.

Subsidiaries in Washington to Merge

The City & Suburban Railway, Washington, D. C., and the Georgetown & Tenleytown Railway, controlled by the Washington Railway & Electric Company, may be merged into the parent company in the near future. The stockholders of the W. R. & E. have been called to meet on Oct. 10 to consider the question. Officials explain that this proposal bears no particular signifiance to the broad problem of bringing about a consolidation of the Washington Railway & Electric and the Capital Traction systems.

The merger of these two subsidiary lines with the Washington Railway & Electric system, it was said, could be carried out under the old merger act of 1900. The only relation the elimination of these two separate companies bears to the question of a general merger is that it represents a preliminary step that would be necessary in a general consolidation.

$700,000 Indiana Service Issue Offered

A new issue of $700,000 of 6 per cent perferred stock of the Indiana Service Corporation was offered to investors on Aug. 13 by the Utility Securities Company, Chicago. The Indiana Service Corporation, a subsidiary of the Midland Utilities Company, furnishes electric light and power and city and interurban railway service to 30 communities in and around Fort Wayne, Ind.

The present stock issue will be sold at $92.50 a share to yield about 6.50 per cent. The last preferred stock of the company was a 7 per cent issue and was sold on the basis of a fraction above the 7 per cent yield. The new 6 per cent stock is on a parity in every respect with the 7 per cent issue, except as to the annual dividend rate and the callable price. Seven per cent stock with a par value of $2,050,000 is now outstanding.

A controlling interest in the Indiana Service Corporation was acquired by the Midland Utilities Company more than a year ago.

Deficits Pile Up on Toronto Radials

According to the Toronto, Ont., *Star* Con. Gibbons on Aug. 4 deplored the delays on the part of the city in taking over the York Radial Railways.

"We ought to take them over and deal with them afterwards," he said, referring to the settlement of finances and other details involved in the transfer.

A report submitted to the board of control for the eight months ended June 30 showed a deficit on the three lines of $197,063. The deficits on the individual lines were: Metropolitan, $102,425; Scarboro, $30,188; Mimico, $64,449.

The matter was laid over for a full board.

Con. Gibbons expressed regret that the transfer of these lines should be delayed again and again while these deficits were allowed to pile up.

$106,441 Surplus Reported by International Railway

The net income of the International Railway, Buffalo, N. Y., for the six months ended June 30, 1926, was $106,441 compared with a deficit of $244,015 for the similar period of 1925. The complete statement as made public by the company follows:

INCOME ACCOUNT OF INTERNATIONAL RAILWAY

Six Months Ended June 30	1926	1925
Operating revenue	$5,353,187	$5,169,779
Operation and taxes	4,532,241	4,649,752*
Operating income	$820,946	$520,027
Non-operating income	20,233	17,229
Gross income	$841,179	$537,256
Income deductions	734,738	781,271
Net income	$106,441	$244,015

*Adjusted to include 3c. per hour additional wage paid December 31, 1925, retroactive to January 1, 1925.

Conspectus of Indexes for August, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War High	Since War Low
Street Railway Fares* 1913 = 4.84	Aug. 1926 **7.36**	July 1926 **7.36**	Aug. 1925 **7.28**	June 1926 **7.37**	May 1923 **6.88**
Electric Railway Materials* 1913 = 100	Aug. 1926 **153.1**	July 1926 **154.1**	Aug. 1925 **151.6**	Sept. 1920 **247.5**	Oct. 1924 **148.5**
Electric Railway Wages* 1913 = 100	Aug. 1926 **225.9**	July 1926 **225.7**	Aug. 1925 **222.6**	Sept. 1920 **232.0**	March 1923 **206.8**
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	Aug. 1926 **203.6**	July 1926 **203.2**	Aug. 1925 **201.0**	July 1920 **256.4**	May 1922 **167.4**
Eng. News-Record Construction Cost (General) 1913 = 100	Aug. 1926 **208.3**	July 1926 **207.8**	Aug. 1925 **204.6**	June 1920 **273.8**	Mar. 1922 **162.0**
U. S. Bur. Lab. Stat. Wholesale Commodities 1913 = 100	July 1926 **150.7**	June 1926 **152.3**	July 1925 **159.9**	May 1920 **246.7**	Jan. 1922 **138.3**
Bradstreet Wholesale Commodities 1913 = 9.21	Aug. 1 1926 **12.64**	July 1 1926 **12.74**	Aug. 1 1925 **14.24**	Feb. 1 1920 **20.87**	June 1 1921 **10.62**
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	July 1926 **157.0**	June 1926 **159.7**	July 1925 **159.9**	July 1920 **219.2**	Mar. 1922 **138.7**
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	July 1926 **166 0**	June 1926 **167.0**	July 1925 **168.7**	July 1920 **204.5**	Aug. 1922 **154.5**
Steel Unfilled Orders (Million Tons) 1913 = 5.91	July 31 1926 **3.603**	June 30 1926 **3.479**	July 30 1925 **3.54**	July 31 1920 **11.118**	July 31 1924 **3.187**
Bank Clearings Outside N. Y. City (Billions)	July 1926 **19.18**	June 1926 **18.93**	July 1925 **18.71**	Oct. 1925 **20.47**	Feb. 1922 **10.65**
Business Failures Number	July 1926 **1661**	June 1926 **1574**	July 1925 **1451**	Jan. 1924 **2231**	Aug. 1925 **1353**
Liabilities (Millions)	**89.86**	**49.34**	**31.80**	**122.95**	**27.22**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads. Previously the wage index applied to 144 railways. The change is due to dropping some roads where the number of trainmen has been reduced to a total of less than 100.

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Railway-Bus Merger Terms for New York Approved

The New York Transit Commission issued an order on Aug. 25 permitting the Fifth Avenue Coach Company to purchase all of the common stock, 90,200 shares, of the New York Railways Corporation at $10 a share. Permission to buy the stock was granted after a two-day hearing. No objection was raised to the purchase.

Elmer Schlesinger of the law firm of Stanchfield, Chadbourne & Levy told Commissioner Godley that the purpose of the sale was to co-ordinate surface transportation in Manhattan. This, he said, was a necessary step in the handling of the present problem.

Commissioner Godley asked Frederick T. Wood, president of the Fifth Avenue Coach Company, whether it would take an issue of bonds to pay for the stock. Mr. Wood replied that the company has a cash surplus sufficient for the purchase of the stock and that it proposed to pay for the stock out of that surplus.

The Fifth Avenue Coach Company and the New York Railways made a joint application for a bus franchise through the New York City Omnibus Corporation last May. In return for the desired franchise the railway, which controls about 75 miles of tracks, proposed to eliminate 25 miles of tracks on which 200 cars are now operated and replace them with buses. It proposes to operate buses crosstown for a 5-cent fare and north and south for a 10-cent fare. It agreed to issue transfers.

The New York Railways lines include the Sixth and Seventh and Lenox Avenue lines, as well as the surface lines on lower Broadway and Lexington Avenue, and the Eighth, Fourteenth, 23d, 34th and 116th Street crosstown lines.

Under a plan of reorganization made public by the company in February, 1924, the total capitalization of the new company was said to be $41,503,000, a decrease of $49,863,445 from that of the old company. On this capitalization the annual fixed charges showed a decrease of $1,129,050, and the annual charges, including interest on income bonds, a decrease of $1,399,533. The fixed charge securities showed a decrease of $23,908,898.

Of the old company securities in the hands of the public, totaling $91,366,445, there remained undisturbed or privileged to conversion bonds in the amount of $14,653,000. The total which remained undisturbed under the new plan, and which did not carry the conversion privilege, was stated to be $12,803,000.

No action has yet been taken by the city on the application made in behalf of the companies for bus operating rights. The filing of this appeal, which incidentally was widely misunderstood as to its purport, was made the subject of editorial comment in the ELECTRIC RAILWAY JOURNAL at the time.

Twelve-Mile Abandonment Sought.—The Hudson Valley Railway, Glens Falls, N. Y., has applied to the Public Service Commission for approval of a declaration of abandonment of that part of its line between Lake George and Warrensburg, a distance of 6 miles, and the Thomson and Greenwich line, a distance of 6.27 miles, alleging that those parts of its electric system are no longer necessary for the successful operation of railway or the convenience of the public.

24 per Cent Increase Over 1925 Period for Baltimore Lines

The half-yearly statement of operations of the United Railways & Electric Company, Baltimore, Md., shows that net income for the period, after all deductions, covered dividend requirement, for the six months with $50,606 to spare. Total increase for the six months compared with the corresponding period in 1925 was $90,080. Gross revenues showed an increase of $84,203.

The company's best month in net income of this year so far was May, although the biggest percentage of increase in net income came in January. June, while it showed a small increase in gross revenue and an even smaller increase in net, disclosed a decrease in revenue passengers of 40,245.

STATEMENT OF EARNINGS AT BALTIMORE FOR PERIOD FROM JAN. 1 TO JUNE 30

	1926	Increase
Passenger revenue	$8,316,898	$70,774
Other revenue	110,937	13,428
Total	$8,427,835	$84,203
Operating expenses:		
Way and structures	$461,256	z$48,059
Equipment	471,203	z16,620
Power	744,051	57,627
Conducting transportation	2,598,711	z42,917
Traffic	31,944	3,220
General and miscellaneous	759,142	15,735
Trans. for Inv.—Cr.	x5,385	3,618
	$5,060,924	z$27,394
Depreciation	421,391	4,210
Total	$5,482,316	z$23,184
Net operating revenue	$2,945,519	$107,387
Taxes	845,354	z187
Operating income	$2,100,164	$107,574
Non-operating income	47,736	1,298
Gross income	$2,147,901	$108,873
Fixed charges	1,688,070	18,793
Net income	$459,830	$90,080

x Credit. z Decrease.

Net income by months was as follows:

	1926	1925	Increase	Per Cent
January	$70,135	$35,530	$34,604	97
February	27,606	31,032	*	11
March	102,917	85,839	17,077	19
April	81,049	65,964	15,084	22
May	104,860	78,225	26,635	34
June	73,261	73,157	103	..
	$459,830	$369,750	$90,080	24

* Decrease.

Service Orders Made at Madison

The Wisconsin State Railroad Commission has ordered the Madison Street Railways, Madison, Wis., to discontinue its railway service on Harrison Street and temporarily discontinue its service on Regent Street until the Regent Street line may be connected with the Breeze Terrace line.

The commission has further ordered the railway to start a bus service from Monroe Street to the Forest Hill Cemetery to replace the railway service. The buses, according to the commission's order, must be scheduled to meet every regular car on the Monroe Street line.

The principal reason for the proposed discontinuance of the Harrison Street line is the undesirable crossing with Keyes Avenue made necessary by the fact that the railway tracks cross the Illinois Central Railroad on a bridge which is much higher than the grade of Keyes Avenue, the latter being adjacent to the right-of-way of the railway.

Mayor A. G. Schmedeman has appointed a committee to confer with the railway with the idea of reaching a settlement whereby this service will not be discontinued. This committee will investigate the matter and report to the Common Council at its next meeting.

Receiver Appointed for Utah Interurban

Upon petition of the Westinghouse Electric & Manufacturing Company, the Utah-Idaho Central Railway, operating between Ogden, Utah and Preston, Idaho, has been placed in the hands of P. H. Mulcahy, general manager, as receiver. Action of the Westinghouse company was based upon a past due indebtedness of $4,259. The complaint also alleged that the railroad was insolvent and unable to meet its obligations.

According to Joseph Scowcroft, president of the railway, the road's financial difficulties are due largely to the encroachment of the motor truck upon the road's freight business and to heavy losses in passenger business due to the private automobile.

The Utah-Idaho Central line was originally designed as a passenger carrier. With the remarkable popularity of the automobile, however, this business fell off, and efforts were directed towards getting freight traffic. This also decreased with the increased use of the truck, and the earnings of the company were not enough to meet its obligations.

The road was constructed in 1914 and 1915 between Ogden and Preston, a distance of 95 miles. The company also has 3 miles of trackage in Logan, Utah, and 20 miles in branches at Plain City and Quinney, Utah. The estimated value of the property is $6,000,000. Bonds are said to be held mostly by Ogden people.

Line to Be Dismantled in New Jersey.—The Burlington County Transit Company, Hainesport, N. J., has been ordered by the Northampton Township Committee to remove its rails and roadbed on Main and Washington Streets, Mount Holly, N. J.

$800,904 in Claims Against Indiana Road. — Claims totaling $800,904 against the Union Traction Company of Indiana have been filed in the circuit court at Anderson, Ind., by Arthur W. Brady, receiver of the company. The list includes claims accrued against the Union Traction prior to the present receivership. In accordance with an order of the court issued on Feb. 5, the receiver gave notice to all creditors and the claims filed have been examined and audited. Some have been allowed and others disapproved subject to confirmation by the court.

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Personal Items

New Officers for Market Street Railway

Announcement is made that at recent meeting of the stockholders of the Market Street Railway, San Francisco, Cal., the following new directors were elected: William M. Abbott, M. McCants, Halford Erickson, A. W. Foster, Samuel Kahn, Hunter Liggett, Jesse W. Lilienthal, Jr., J. J. O'Brien, Moritz Rosenthal, M. B. Starring, George W. Willcutt.

Messrs. Erickson and McCants were elected to fill vacancies made by the resignation of H. T. Scott and the death of Leander S. Sherman.

The resignation of Mason B. Starring as president of the Market Street Railway was tendered and accepted at the meeting of the company's new board of directors. His resignation was offered in deference to the company's new management, the Byllesby Engineering & Management Corporation, and to leave him free to attend to his own large business interests.

The directors elected officers for the current year, but did not elect a successor to Mr. Starring at the present time. Announcement was also made that Samuel Kahn, executive vice-president, will perform the duties of president in the interim.

These officers were elected: Samuel Kahn, executive vice-president; Halford Erickson, vice-president; William M. Abbott. vice-president and general counsel; George B. Willcutt, vice-president and secretary; A. M. Dahler, treasurer; E. M. Massey and M. A. Morrison, assistant secretaries.

Charles S. Stephens Advanced at Honolulu

Charles S. Stephens has been promoted to superintendent of transportation of the Honolulu Rapid Transit Company, Ltd., Honolulu, Hawaii, succeeding Alexander Pratt. Mr. Stephens started with the company as conductor in 1901. He was appointed timer in 1902 and was promoted to assistant superintendent in 1903. He has served in the last-named capacity ever since.

Officers of New Connecticut Bus Company Announced

Announcement has been made of the personnel of the Hartford & Spring field Coach Company, Warehouse Point, Conn., the successor to the Hartford & Springfield Street Railway. Arthur L. Linn, Jr., is the president of the company. The vice-president of the company is A. C. Marshall, a man of wide experience in the bus field and a former bus operator in Florida who still retains some of his interests there although most of them were sold by him to Stone & Webster, public utility operators. The secretary of the company is A. L. Shipman, well-known attorney of Hartford. The general manager is Joseph T. Hambleton, former manager of the railway, under whose guidance and influence the bus policy of the railway was developed. Control of the coach company passed recently to Mr. Linn and his associates.

L. E. Fischer Made Vice-President North American Light & Power Company

L. E. Fischer has been appointed vice-president in charge of operation of the North American Light & Power Company, Chicago.

The new operating executive of this large public utility group was the first general manager of the Illinois Traction System, which railway with its supplemental group of public utility properties was under his management from 1903 until 1909. The experience which fitted him for executive official of the Illinois Traction System at the age of 27 years included preliminary training

L. E. Fischer

in the St. Louis Manual Training School, a B.S. and C.E. degree at the University of Illinois, a term as assistant city engineer at Kewanee, Ill., also as city engineer at Paris, Ill., and later as superintendent and manager of the Danville electric, gas and railway properties of the Illinois Traction System at Danville, Ill.

After his resignation as vice-president and general manager of the Illinois Traction System in 1909, Mr. Fischer established a consulting engineering organization in St. Louis where he has had an important part in the planning, construction and operation of many public utility, civic and industrial engineering projects.

The North American Light & Power Company has recently been reorganized, but its properties will continue as heretofore to be operated as a separate entity, under Clement Studebaker, Jr. president. It serves 700 communities in Illinois, Iowa, Missouri, Kansas and Nebraska with electric light and power, gas and other utility services, and owns the Illinois Traction System, a 500-mile trunk line electric railway in the state of Illinois, with terminus at St. Louis.

Alexander Pratt Retires at Honolulu

Alexander Pratt, for more than 25 years superintendent of transportation of the Honolulu Rapid Transit Company, Ltd., Honolulu, Hawaii has retired from active service. He is one of the real old timers, having been in the electric railway business more than 35 years.

Mr. Pratt was born in Aberdeenshire, Scotland, in 1860, but came to the United States as a young man. After a varied career he started with the old Metropolitan Railway, San Francisco, in 1891 as motorman and gripman. He was promoted to inspector and dispatcher, and on May 18, 1901, he resigned to become superintendent of transportation of the Honolulu Rapid Transit Company, then with its road under construction. His service in Honolulu has been continuous since then until his retirement on Sept. 1, 1926—25 years after the first car was run.

John Luther Advanced with Wisconsin Properties

John Luther, who has been connected with electric railways in Wisconsin since 1901, when he started work with the old Manitowoc & Northern Traction Company, has been appointed superintendent of the railway and motor bus lines of the Wisconsin Public Service Corporation. His headquarters will be at Manitowoc.

For some time past Mr. Luther has held the post of master mechanic with the Wisconsin Public Service Corporation. From trackman he was promoted to motorman and later succeeded James Phair as superintendent of the Manitowoc & Northern Traction Company. When the Wisconsin Public Service Corporation took over the lines he was made master mechanic.

Mr. Luther succeeds Edward Holub, who has been transferred to another division of the corporation. In turn Mr. Luther has been succeeded as master mechanic by Oscar Fricke, who has been with the company since 1920.

J. Frank O'Meara has been appointed assistant secretary to the Public Service Commission of New York to succeed Harold W. Palmer, resigned. Mr. O'Meara has served in the office of the State Comptroller and the fiscal supervisor of state charities and last year was a part of the Senate desk force in which work he had the title of assistant deputy clerk.

G. Gordon Gale, vice-president and general manager of the Hull Electric Company, Hull, Que., has also been appointed general manager of the Gatineau Power Company, another Canadian International Paper Company subsidiary.

Capt. Victor Topping, who as a Strachcona Memorial Fellow at Yale, has just completed with S. James Dempsey a survey of current methods of study and research in transportation for Yale University, is planning to enter consulting practice in Toronto, Canada. He will be associated in partnership with Henry K. Wicksteed, a noted railway

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engineer. The firm will specialize in transportation of various kinds, both on the engineering and economic sides, such as city planning, valuation, rate questions, etc. Captain Topping was at one time engineer of traffic analysis for the Toronto Transportation Commission, which operates electric railways in Toronto.

Obituary

R. A. Willson

Russell A. Willson, assistant general manager of the Spokane United Railways, Spokane, Wash., died on Aug. 19 after being confined to his home since April with Brights Disease. He has been an executive of the Washington Water Power Company and the reorganized United Railways since 1907 and was one of the oldest men in point of service in the electrical industry.

Mr. Willson went to Spokane in November, 1905, as assistant to D. L. Huntington, then general manager of the Washington Water Power Company. As the commercial department expanded and the railway department grew to require special attention, Mr. Willson became general superintendent of the railway department. This was in 1908. He held this position until 1922, when the Spokane Traction and the W. W. P. railways were consolidated. At that time he was made assistant general manager of the Spokane United Railways.

Mr. Willson was born in 1866 in Ishpeming, Mich. He began his life work at Florence, Wis., as an operator of a stationary steam engine, for a mining company. A season with the Chicago & Northwestern Railroad in surveying work was followed by several years in Milwaukee in various lines of business.

In the early '80's he returned to Ishpeming and took charge of the first electric light and power plant, operated by a mining company there. After two and a half years in Ishpeming he went to Marquette where he had full charge of the city's light and power plant and system for nine years. He constructed this plant.

The Westinghouse Company then sent him west, to Helena, Mont., where he was put in charge of the gas, electric and street railway properties which position he held until 1906, building a new light and power plant while there.

Always interested in things mechanical and the development of new devices and methods in the properties of the electrical and electric railway industry, Mr. Willson advanced a multitude of practical ideas to the local companies at Spokane and patented a number of devices now in general use in the railway and electrical fields.

Augustus Lowry Verner, sales manager of the New York office of the Lorain Steel Company, is dead. He had been in charge of the New York office for the last six or eight years, and in the employ of the company for 25 years. Mr. Verner came to New York from Cleveland. He was 47 years of age.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Four Bids Received for 150 Cars for Philadelphia

Bids were opened on the morning of Aug. 27 at the office of Henry E. Ehlers, the Director of City Transit, for furnishing and delivering 150 steel passenger cars for the Broad Street subway, Philadelphia. There were four bidders: J. G. Brill Company, $4,039,434; Bethlehem Shipbuilding Company, $4,092,340; American Car & Foundry, $4,099,750, and Magor Car Corporation, $4,150,350. Specifications call for delivery to begin not later than May 1, 1927, these to continue at the rate of not less than 25 a month, so that all deliveries will be completed not later than Oct. 31, 1927. Other details were supplied in an article in the ELECTRIC RAILWAY JOURNAL for July 24, page 167.

Detroit Will Combat Jitneys with 50 More Coaches

Fifty additional Graham Brothers 21-passenger motor coaches, bringing the total number in use by the system up to 198, have recently been ordered by the Department of Street Railways of Detroit, Mich. The new units will be run on Woodward and East Jefferson Avenues, in a high-speed express service, to combat the privately owned 7-passenger touring cars, which are at present doing a large jitney business, in spite of the best efforts of the City of Detroit to drive them off the streets.

The bus service will be co-ordinated with that of the street car lines already on these avenues. According to the contract, eighteen coaches are to be delivered within twelve days of receipt of order, and the remainder at the rate of fifteen a week.

Westinghouse Company Will Experiment with Bus

New experimental bus of the Westinghouse Air Brake Company, with special body equipped with delicate recording apparatus, for testing the effect of various brake combinations on heating, service life, etc., under heavy duty on steep grades has been acquired for experimental work.

Rolled Manganese Parts Specified in Philadelphia

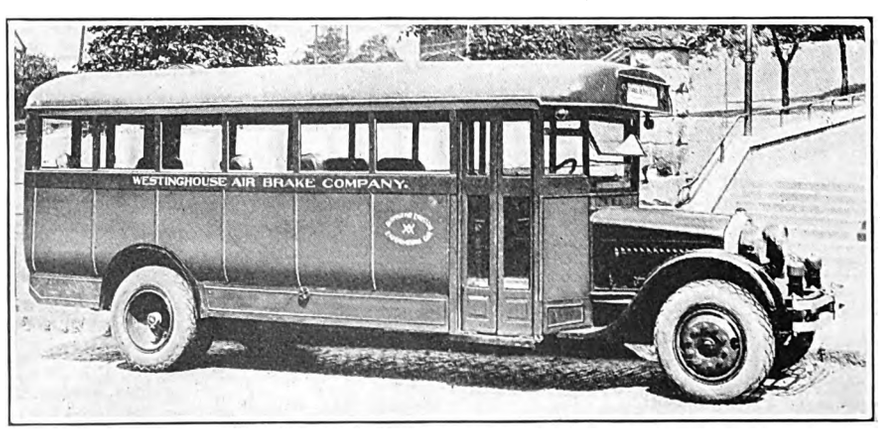
As a recognition of the greatly increased longevity which marks the use of chafing or wear plates formed of rolled or forged manganese steel, the city of Philadelphia has included this item in its list of specifications on 150 new cars for the Broad Street subway, bids for which were opened on Aug. 27, as reported in another item on this page. The use of rolled and forged manganese steel parts in electric railway practice is of comparatively recent origin, but very successful results have been obtained upon the properties which have given them a trial. It is possible with this type of steel to materially reduce the dimensions of the wearing parts, since the hardness of the metal and its peculiar resisting power make surface wear almost unheard of.

The chafing wear plates specified for the subway cars in Philadelphia will embody the following parts: Bolster chafing plates, transom chafing plates, motor-nose chafing plates for motor and transom, journal box gibs, pedestal gibs, brake lever chafing plates, brake lever guide wear plates, edge of slots in frame for brake lever guides, edge of horizontal radial brake lever and truck and body side bearing chafing plates.

Prices of Mazda Lamps Reduced

A further reduction in the prices of Mazda lamps, effective on Sept. 1, 1926, is announced by the General Electric Company. It amounts to about 7 per cent on the sizes generally used of the new standard line of lamps and approximately 5 per cent on all types.

This is the eighth reduction of Mazda lamp prices since 1920. It means a



Special Experimental Bus Designed for Westinghouse Company

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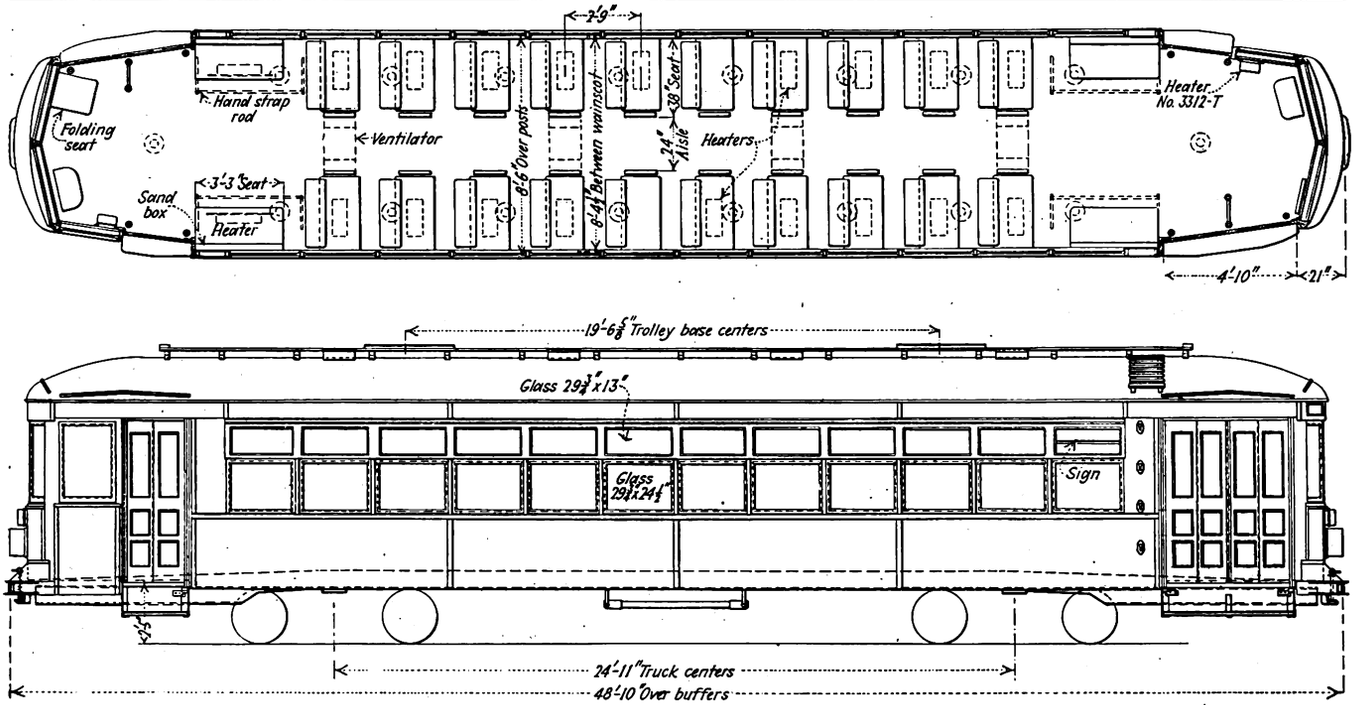


New Cars for Berkshire Street Railway Follow Recommendations of Special Car Committee

saving to the public of approximately $4,000,000 a year.

The prices of Mazda lamps are now 44 per cent below the 1914 prices as compared with a 65 per cent increase in the average cost of commodities since that year.

The reductions in Mazda lamps prices have been made possible primarily by better manufacturing methods and by standardization and simplification of lamp types.

Berkshire Cars Will Follow A.E.R.A. Specifications for Interurban Units

Some of the first cars to be built according to the standard design adopted by the American Electric Railway Association special committee on the essential features of modern cars are twelve interurban units for the Berkshire Street Railway of Pittsfield, Mass. The cars are being constructed by the Osgood-Bradley Car Company, Worcester, Mass. They will be used in interurban service in the territory served by the Berkshire Company. Seats for 50 passengers are provided in the design. Specifications follow:

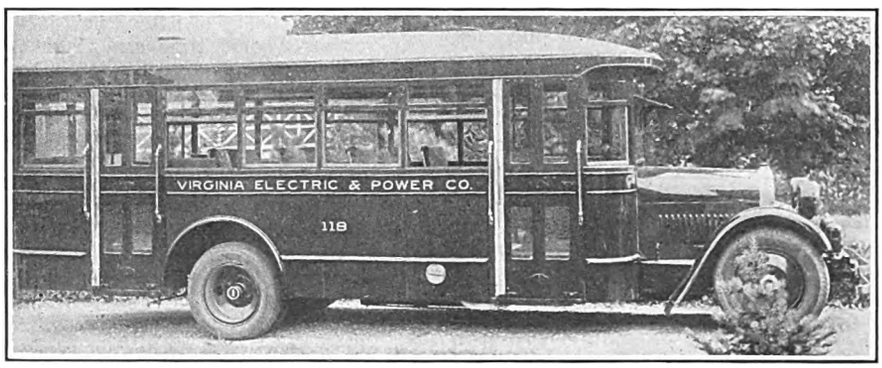
Weight	37,000 lb.
Bolster centers, length	24 ft. 11 in.
Length over all	48 ft. 10 in.
Truck Wheelbase	5 ft. 6 in.
Width over all	8 ft. 8 in.
Height, rail to trolley base	11 ft. 3 in.
Body	Semi-steel
Interior trim	Mahogany
Headlining	Nevasplit
Roof	Arch
Air Brakes	General Electric
Armature bearings	Plain
Axles	Carnegie Steel Co.
Bumpers	Osgood-Bradley
Car signal system	Consolidated Car Heating Co.
Car trimmings	J. L. Howard & Co.
Center and side bearings	Osgood Bradley Car Co.
Compressors	General Electric CP-27B
Conduits and junction boxes	Osgood-Bradley
Control	General Electric K-35-KK
Couplers	Osgood Bradley
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote
Destination signs	Electric Service Supplies Co.
Door operating mechanism	National Pneumatic Co.
Fenders or wheelguards	Osgood-Bradley
Finish	Sherwin-Williams enamel
Gears and pinions	General Electric
Hand brakes	National Brake Co.
Heater equipment	Consolidated Car Heating Co.
Headlights	General Electric
Journal bearings	Osgood-Bradley, plain
Journal boxes	Symington
Lightning arresters	General Electric
Motors	Four G.E. 265-A, inside hung
Registers	Ohmer
Safety Devices	Safety Car Devices Co.
Sanders	Osgood-Bradley
Sash fixtures	Curtain Supply Co.
Seats	Heywood-Wakefield Co.
Seating material	Real Spanish leather
Springs	Osgood-Bradley
Step treads	Mason
Trolley retrievers	Earll
Trolley base	US-20-A
Trolley wheels	General Electric
Trucks	OBC-45-66
Ventilators	Garland
Wheels	Wrought Steel A.E.R.E.A.-A-3

New Type Bus Body Designed for Virginia Company

A new type of 21-passenger pay-enter bus body has been designed recently by the Hoover Body Company, York, Pa., for the Virginia Electric & Power Company, Norfolk, Va. The body is mounted on a White 53 bus chassis. Five units have been ordered for operation in the city of Norfolk.

The most unique of the special features of the new body is the full-length exit door located just back of the wheelhouse on the right side, as is shown in the accompanying illustration. This door facilitates handling passengers during peak-load periods and is mechanically operated from the driver's seat. The frame-work of the body is of oak, while aluminum completely covers all exterior surfaces. A heavy aluminum guard rail encircles the body.

Genuine leather seats are used on the interior, which is made especially attractive by the fact that the metal sections are grained, and that the roof is finished in white ivory.



Full-Length Rear Exit Door Speeds Up Service During Rush Hours

Business Code Is Widely Adopted

Eight hundred and thirteen chambers of commerce and trade associations have adopted the fundamental code of business ethics formulated by the Chamber of Commerce of the United States. The principles of business conduct were formulated as a general guide for all lines of trade, and were not intended to govern specific customs of any one particular business. The purpose of the code is to establish

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the principle of self-government in business, and to educate American business men to a sense of the binding force of such principles. Several schools of business administration intend to make this code a part of their curriculum.

Smaller Profits Being Made in Manufacturing

Although the volume of business done by manufacturing corporations is increasing, the profits are decreasing, according to figures given out by the National Industrial Conference Board, New York City. After reducing all data to terms of dollars of 1913 purchasing power so as to take into account the price decline, it appears that whereas the gross income of manufacturing corporations increased 43 per cent during 1919-1923, the net income increased only 9.9 per cent, indicating the declining rate of profit at which these corporations were operating.

Also, whereas the total number of all manufacturing corporations increased 25.5 per cent in those years, those reporting a net income increased only 3.6 per cent, and those reporting no net income nearly doubled in number. However, since the total gross income of those corporations reporting no net income increased approximately only $1,000,000,000, it would appear that business loss in general has been sustained by those concerns operating on a smaller scale.

While the latest available statistics for the above analysis are for the year 1923, much the same conditions prevailed in 1925 and the first half of 1926 as to the movement of prices, the board declares, making the significance of the 1923 figures applicable to present-day conditions.

Reo Creates Another Sedan Bus

A new sedan type has been added to the line of bus models manufactured by the Reo Motor Car Company, Lansing, Mich. An unusual feature of this model is that it provides a choice by the purchaser of either of two different seating arrangements.

The standard arrangement provides for a 17-passenger bus. There are four cross-seats in wicker, trimmed in Colonial gray leather, with a passenger chair next to the driver's seat. The other seating arrangement converts the bus into a parlor car type of 15-passenger capacity. There is a row of double chairs on one side of the aisle, and a row of single chairs on the other side. The price of the bus is $5,100, irrespective of the seating arrangement desired.

Patent and Trademark Chart Issued

A chart of patents and trademarks has recently been issued by the National Industrial Conference Board, which shows the number of patents issued in the United States each year since 1850, and the number of trademarks registered annually since 1870, compares their relative growth since the beginning of the present century, and indicates the status in number of accumulated patents in the United States and the rest of the world. This chart, known as No. 139, illustrates two of the outstanding aspects of the economic development in the past century; the growth of invention incidental to industrial progress, and the increase of trademarking following in the path of organized distribution.

Metal, Coal and Material Prices

Metals—New York	Aug. 24, 1926
Copper, electrolytic, cents per lb	14.325
Copper wire, cents per lb	16.25
Lead, cents per lb	8.90
Zinc, cents per lb	7.75
Tin, Straits, cents per lb	65.125
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.425
Somerset mine run, Boston, net tons	1.975
Pittsburgh mine run, Pittsburgh, net tons	1.75
Franklin, Ill., screenings, Chicago, net tons	1.625
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.25
Weatherproof wire base, N. Y., cents per lb	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	12.1
White lead in oil (100-lb. keg), N. Y., cents per lb	15.25
Turpentine (bbl. lots), N. Y., per gal	$0 95

Rolling Stock

Shore Line Motor Coach Company, Gary, Ind., has accepted delivery of ten Fageol six-cylinder parlor car coaches, equipped with Westinghouse air brakes.

Montreal Harbor Commission, Montreal, Que., recently received two of five electric locomotives ordered from England. Each of these engines weighs 100 tons, has four drivers of 250 hp. each and under normal conditions will draw a 3,500-ton train continuously, accelerating to a speed of 16 m.p.h. Each locomotive is capable of taking care of 100 per cent overload for half an hour, and of 200 per cent overload for twenty minutes.

Sacandaga Valley Transportation Company, a subsidiary of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., has purchased a 25-passenger, semi de-luxe bus for operation between the railway terminal at Northville, N. Y., and Lake Pleasant, a 44-mile feeder route through a summer resort section. In winter this bus will be used in city service. The bus was purchased from the International Motor Company, New York, N. Y.

Wheeling Public Service Company, Wheeling, W. Va., is expecting delivery within three weeks of fifteen new street cars ordered some time ago from the St. Louis Car Company, St. Louis, Mo. The cars are to be modern in every respect and will embody many features insuring a special degree of comfort to the passengers. They will replace older type cars which have been operated heretofore in Wheeling.

Chicago & Joliet Electric Railway, Joliet, Ill., is preparing a fleet of ten new interurban cars for service, beginning Sept. 7, between Joliet and Chicago in the Willow Springs district. The first four cars will run between Joliet and Chicago and the others will be extras between Willow Springs and Chicago. The cars, each of which has a smoking compartment, were manufactured in the Paris, Ill., shops. They weigh only 39,000 lb. as against the 30-ton cars now in service, with the same speed and greater acceleration power. A double end construction type has given four of the cars a capacity of 48, while the others have a 52-passenger capacity.

Trade Notes

Harold M. Graham has been appointed chief engineer of the Ross Heater & Manufacturing Company, Inc., Buffalo, N. Y. In addition to his experience in power plant engineering, Mr. Graham has done considerable research work on the subject of heat transmission and vacuum, which has rendered him an expert in that field.

Elwell-Parker Electric Company, Cleveland, Ohio, manufacturer of electric tractors and trucks, has added to its line a new 5-ton lift tructor, with 27½x60x11-in. platform. This tructor, which is type EP-10, is of very solid construction throughout and is designed for heavy duty in handling loads larger than those usually sustained by electric trucks.

H. F. Darby, Jr., of 1700 Walnut St., Philadelphia, Pa., has been appointed direct factory representative in the Philadelphia district of the Kuhlman Electric Company, Bay City, Mich. Mr. Darby was formerly sales manager of the Cutter Electrical & Manufacturing Company.

J. N. Joyce has joined the Cleveland office of the Bridgeport Brass Company, located at 2017 Superior Viaduct, for the purpose of soliciting sales on Bridgeport-Keating flush valves and Plumrite brass pipe. Mr. Joyce was formerly associated with the Johns-Manville Company.

New Advertising Literature

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued illustrated catalog No. 284 on Rectigon battery chargers. The pamphlet describes the application, operation and construction of radio and private garage Rectigon outfits, home outfits, radio "B" battery charging attachments, telephone Rectigon outfits, 6-amp. 75-volt Rectigon outfits and the 12-amp. 75-volt Rectigon outfits.

Pyle-National Company, Chicago, Ill., has issued the third edition of its general catalog (No. 101) of railway electric equipment. The pamphlet contains information on lighting of railroad yards and locomotives. Oliver wiring appliances for locomotive car and shop wiring are described.

Hauck Manufacturing Company, Brooklyn, N. Y., has issued a booklet describing the new Hauck Venturi suction torch. The distinctive feature of the new torch is that no pressure is maintained on the oil supply tank, thereby elminating danger of injury to life resulting from a bursting tank.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, September 4, 1926 *Number* 10

Invite Your Public Officials to Attend the Cleveland Convention

OVER the signature of President Frank R. Coates, letters of invitation to attend the Cleveland convention are being sent out by the American Electric Railway Association to the Mayors of all cities in the country having a population of 25,000 or over. The letter calls attention to the fact that there is no diminution in the need for public transportation service, notwithstanding the increased use of the private automobile. It describes the character of exhibits that will be displayed and explains that there will be examples of typical forms of modern transportation equipment used in public service from all parts of the country, which will be of greatest possible educational value to city officials interested in the safeguarding of their public transportation service. The letter also makes specific reference to the program of meetings. Among the various subjects attention is called particularly to that of traffic congestion and the efforts which electric railways are making in various parts of the country to solve it. The invitation is extended not only to the Mayor but to any representative from the city's council or governing body.

Electric railway men throughout the country should supplement this letter by personal invitation. Get your Mayor, members of your city council or regulatory body to attend the convention as your guests. Urge your local improvement club, representative business men and other civic leaders to attend. Make it a personally conducted trip. Take them through the exhibits and to the meetings in which they will be interested. There will be an unusual exhibit of the latest developments in street cars and buses. They will quickly realize that street cars are a long way from the scrap heap. Show them the kind of equipment your town ought to have and then explain how it can easily be obtained by providing adequate fares and modern franchises. Here is a complete transportation education in itself. Make every effort to see that *your* public officials get it.

Sell More Rides by Making Them Easier to Buy

ONE of the fundamentals of successful selling is that of making the product easy to buy. This applies in the selling of rides in these days of much competition in transportation and of high standards as to speed and comfort just as it does in the case of merchandise. More and more are the principles of merchandising becoming necessary in transportation management. In the discharge of this selling function publicity is indispensable.

The sign on a car, like the label on a can, constitutes publicity of the basic variety. But it isn't enough simply to mark cars with the usual destination signs if more can be done to direct the traveling public in its fullest use of them; that is, to make a car ride more easily purchased. Signs on the street also can be utilized to advantage at good strategic locations. There are heavy loading points where only regular patrons can be expected to be familiar with car movements. There are important centers where the various cars leave from sufficiently different points to cause confusion. There are main streets where information as to the destination and the time of cars passing would be a boon to many. In other words, the usual "Car Stop" and "Transfer Point" signs may well be expanded so as to be of real service, not only to solicit the stranger's patronage but to serve shoppers and other infrequent local riders as well.

The need for having schedule information more widely posted is manifest by questions frequently heard: "Do I get a Bellevue car here?" or "When will there be a car to the south side? It is seen in the little disappointments occasioned by changes in the routing of cars, which were announced to the public, but forgotten. It is felt by taxi customers who would prefer the trolley, if the way were pointed out. And every such sign on a board or a pole, helping to sell more rides, by making them easy to buy, carries with it the thought that the railway company has the interest of its patrons at heart; that it is anxious to render the largest possible measure of service.

In Chicago and Detroit Special Assessment Is Recommended

RECOMMENDATIONS just made by the Subway Advisory Commission in Chicago and the Rapid Transit Commission in Detroit both provide for the financing of a relatively large part of rapid transit construction by special assessment against benefited property. In St. Louis, also, those in charge of rapid transit investigations for the city favor this method of financing.

The Chicago recommendations are particularly significant in that those who make the report propose to assess themselves. The Advisory Commission is made up of large property owners and merchants in the Loop district, whose property would be directly affected by the recommendations. It is indeed a long step forward in providing adequate transportation on a self-supporting basis when property owners recognize the equity of financing construction out of the increased property value which comes from the improvement.

It is high time that the owners of centrally located business property recognize not only the equity but the business wisdom of subscribing to this method of financing transit construction. Although such construction is usually considered expensive, when analyzed in comparison with street widening projects in terms of the number of people served for transportation it becomes relatively low in cost.

Provision of rapid transit in central business dis-

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tricts, where congestion makes grade separation most imperative, is usually not favored by outlying districts. The common contention is that such facilities benefit the central district at the expense of outlying sections. When construction is financed by general corporate securities this contention is in a sense justified. But when the benefited property is made to carry a large part of the cost this position on the part of outlying property becomes no longer tenable.

Thus do the downtown property owners on the Chicago Commission demonstrate wisdom in their recommendations. Obviously, expensive subways should be constructed only in that area in which traffic density justifies the expense. But when general corporate funds are used there is always an intense pressure to build many miles of subways where they are economically not justified.

A rapid transit system built by special assessment is soon paid for by the benefited property and becomes a heritage to posterity. When financed from general corporate funds an enormous floating debt is passed on to future generations, and needed future additions to facilities are consequently curtailed. This has happened in New York. Although many times the subway cost is represented in the increased property values created, failure to utilize part of this created value for the subways themselves has brought about a most serious situation. If transportation construction creates property value over and above its cost, why should not a portion of the increase be diverted to provide transportation facilities? The electric railway industry may well afford to give increased attention to this important question.

Much Sound Thinking Contained in Chicago Report

COMING as it does from a group of Chicago merchants and owners of real estate in the busy Loop district, the Subway Advisory Commission's report published in this issue contains much sound thinking that may well be quoted by electric railway men throughout the country. Among other things, it carries a remarkable testimonial to the street car. One paragraph alone expresses the views of these men with such force that it bears repetition:

"The trolley or surface car is and probably always will be, so far as economics alone are concerned, the logical type of transportation. However much a district may increase in population, that population can be most cheaply transported by trolley cars. Motor buses are eliminated by economic considerations, as population increases. Trolley cars are never eliminated by economic considerations—that is, by consideration of the rate of fare."

To electric railway men this is most significant. Here, for once, is a group of representative citizens who seem to have succeeded in getting to the bottom of transportation economics. Not only in its clear-cut analysis of the advantages and limitations of street cars but also in its treatment of the other factors in local transportation, such as elevated lines and subways, this committee refuses to be swayed by popular fetish for one agency or another. It insists on approaching the use of each available form of transit on a basis of providing maximum service and convenience at minimum cost. To accomplish this it strongly advocates the policy of consolidation and co-ordination.

It augurs well for Chicago's future that some of its active leading business men are approaching its transportation problem on a basis so broad and sound. The committee studied the situation in Boston, New York and Philadelphia. It reviewed the many reports and plans that have been proposed for Chicago. Out of all this it prepared a set of underlying principles which would form a sound basis for transportation development in any city. Since these are the expressions of laymen—real estate owners and merchants—who have actually taken the trouble to study the situation broadly, their recommendations offer transportation men elsewhere a means of enlisting similar constructive interest in their own cities.

Promiscuous Competition Destructive to Both Car and Bus

IN THE development days of any industry there grow up inconsequential operations, uneconomically constructed or planned. The electric railway industry is not an exception. Even before the days of private automobiles or motor coaches, there were in existence many lines barely able to live. It is a surprising thing that many of these electric railways have survived so long. It is likewise a surprising thing that many of the bus operations started in the last two or three years have been able to continue existence in territory which indicates more enthusiasm than judgment on the part of their promoters. Progressive transportation men today do not divide themselves as electric car advocates or as bus advocates. They recognize in each type of vehicle certain advantages and limitations. The success with which each is utilized to render transportation service in any given community depends on the extent to which underlying economic factors are considered.

A recent news report in Dallas, Tex., carried a brief account of the sale of $80,000 worth of buses for $5,000 after two unsuccessful years of operation between Dallas and Fort Worth. Setting aside for the moment the question of whether a bus line between these two cities was justified in the face of the excellent service provided by the "Crimson Limiteds" of the Northern Texas Traction Company, the fact remains that neither the Northern Texas Traction Company nor the Dallas-Fort Worth Safety Coach Company could give an economically sound service in the face of the unregulated and promiscuous transportation that grew up between these two cities by the operation of innumerable touring cars and pleasure vehicles at a 50-cent fare.

The motor bus has performed a service in many parts of the United States too valuable to suffer such calamities as this. Likewise, electric railways, rendering as they do a transportation service vital to the development of modern communities, should be protected from unwarranted assault by individuals with no conception of the responsibilities of public service. Texas has no regulation to protect its local transportation lines. Under this condition there is a constant temptation for promiscuous transportation competition to spring up in the hope of reaping a quick profit at the expense of established carriers. The public must be made to realize that such competition either raises the cost of transportation or retards the improvement of the service that would be possible were only a single agent in the field. In this objective both car and bus have a common interest.

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Because Habit Is Stronger than Common Sense

WHEN the first auto owner conceived the idea of "rolling his own" to business the highways were fairly clear of fast-moving vehicles and parking space in front of his office or near by was ample. The pioneer autoist experienced a glorious exhilaration, vowing that never again would he willingly ride a public vehicle.

As fellow autoists grew more and more common the glory began to dim. No speedy uninterrupted runs 'twixt home and office were possible. Even uptown crossings were guarded by traffic policemen, while downtown his speed was almost that of walking. Unless Mr. Autoist arrived half an hour ahead of his office opening, the attempt to find a parking place within reasonable distance was a hopeless undertaking.

Despite these disappointments, Mr. Autoist could still flatter himself that he was not compelled to ride with his fellow men. 'Twas true that the time-saving was less, that his nerves were badly frayed before the day's work was started and that he hadn't even read the stock quotations and baseball scores—but still, wasn't he the master of his movements?

Eventually the inexorable energy and liberal credits of the automobile manufacturers made the gas buggy as unaristocratic as the trolley car itself. This, in turn, produced a congestion that led to restricted parking in the business district.

So here we reach the *reductio ad absurdum* of automobile driving to business in large cities: Spend more money and time when the walk to and from the daily parking ground is considered, or, more delicious still, change at the parking ground to a public transportation vehicle to complete the trip. Several electric railways have themselves gone into the parking business and others no doubt will follow. Then we will have the spectacle of the railway collecting a parking fee equivalent to several fares plus, possibly, a full fare each way for the short haul involved.

Great is the force of habit which makes so many citizens insist so strenuously on their daily gallon of gasoline, but more and more of them are waking up to the foolishness of this practice.

Memphis Goes In for Modernization

MEMPHIS has long had reason to be proud of its street railway. It now has more reason than ever before to be so, for twelve of the 32 new rail coaches recently ordered for service there have been placed in operation. The expenditure involved is $475,000. This is no inconsiderable sum, and Memphis is fully appreciative of it, if reflections of praise contained in the daily press mean anything. Some of this comment is reproduced elsewhere in this issue.

In its magnitude the installation at Memphis exceeds that at Grand Rapids. The cities are fairly comparable as to size, but that as a criterion means very little in this instance. It is always difficult to measure one city or its needs in terms of another. Still, if experience in Grand Rapids means anything, then Memphis may look forward to increased patronage on the new cars.

As stated previously, the Memphis papers have not been slow in the past to accord their street railway favorable treatment. Even now an editorial written by the editor of the Memphis *Commercial Appeal* on the essentiality of the electric railway is going the rounds of the country. It is one of the most forceful things of the kind ever written because it reduces the place of the street car to the understanding of the man in the street. Similarly the news article elsewhere in this issue on the new Memphis cars has behind it the threefold idea of showing the type of cars being used, the nature of the comment received and the way in which the announcement was made. In this there may be ideas for other companies.

All this, however, relates to Memphis and Memphis alone. So far as the electric railway field is concerned the installation is of very great interest. It shows that appreciation is growing of the value of modernization and that the willingness is there to spend liberally to attain the desired end. Compared with recent installations of modern cars in Brooklyn, Pittsburgh, Chicago and other big cities, the Memphis installation does not bulk large, but Memphis itself is not large. The important point is that in the cities of moderate size, the ones that in the past have been hardest hit, the gospel of modernization is spreading.

Why Florida Realtors Make Gift of Railway Extension

NOT so long ago these columns recorded the curious fact that a Florida land development out of Miami deliberately chose to build an interurban electric railway instead of using buses over smooth and snowless highways. Now comes an even stronger example of the same choice in connection with suburban development at St. Petersburg. The realtors have not only built a railway, but have made a gift of their $90,000 expenditure to the St. Petersburg Municipal Railway!

The Shore Acres organization, headed by a past-president (N. J. Upham) of the National Association of Real Estate Boards, evidently had good reasons for its broad-minded action. Developers of subdivisions know that about the first question the prospect asks is, "What kind of railway service have you got here?" Realtors who do business in a big way understand the prospect's point of view. They also understand that the day of railway-paid extensions into new territory has gone by. If $90,000 put into 3 miles of track construction can add hundreds of thousands of dollars value to their subdivision, such an investment is mighty good business if the extension does not have to be separately operated.

What is more logical, then, than the presentation of the extension to the existing city-wide railway system? The residents of the new area are not compelled to pay the higher fares that a separate bus route would entail and they enjoy the further advantage of free transfer to the remainder of a system whose reliability is beyond doubt. On the other hand, the railway is much more willing to take over such an extension than if it had to find new capital for track and line in addition to new cars.

Not the least interesting fact about St. Petersburg is that the municipality took over the railway on July 1, 1919, from the then owners who were on the point of junking the lines. One-man operation with light-weight cars soon followed the purchase. Careful management plus the continued healthy growth of St. Petersburg produced the confidence in the local railway so strikingly manifested by Mr. Upham and his associates.

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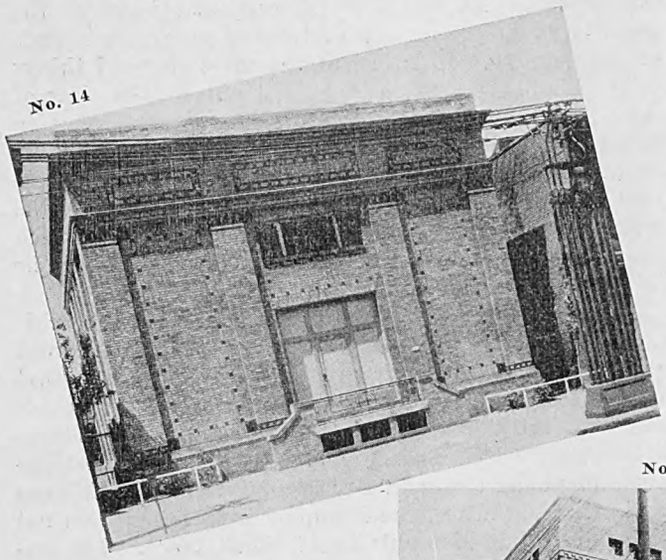

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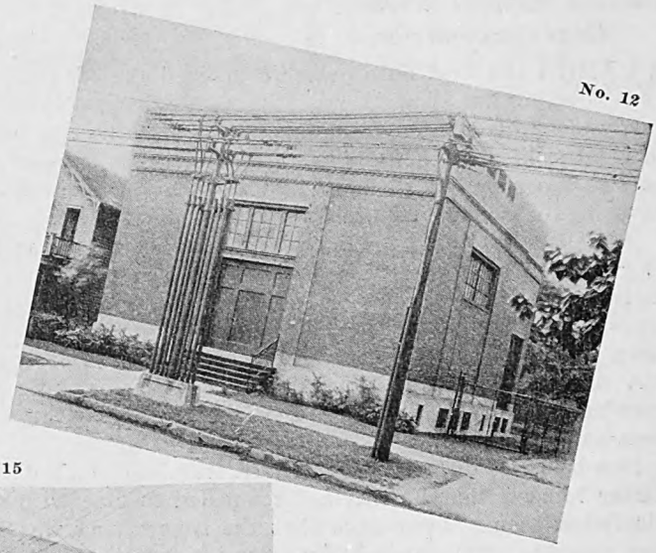

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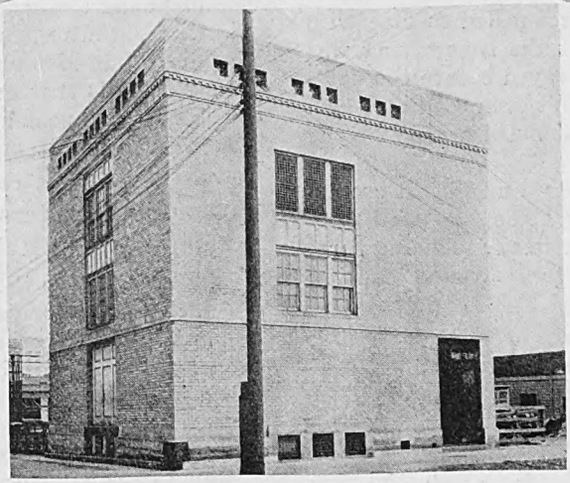
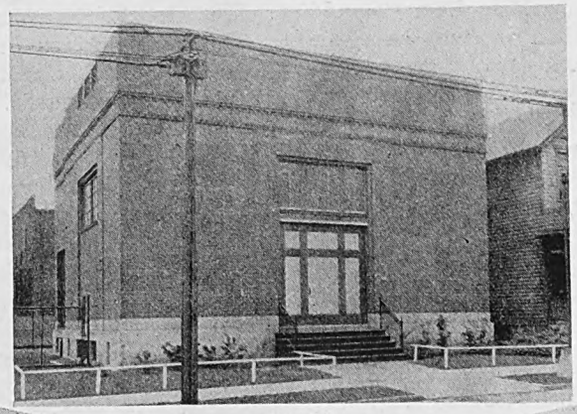


Latest Cleveland Automatic Substations

SUBSTATIONS Nos. 12, 14 and 15, located in the central district of Cleveland, replace the Viaduct power generating station. These stations are the last three of the ten automatic substations constructed. Considerable attention has been paid to the architecture, color and the texture of the brick, in order to make it harmonize with the surrounding neighborhood. Substation No. 15 will later be incorporated with the power service department building when this is constructed.



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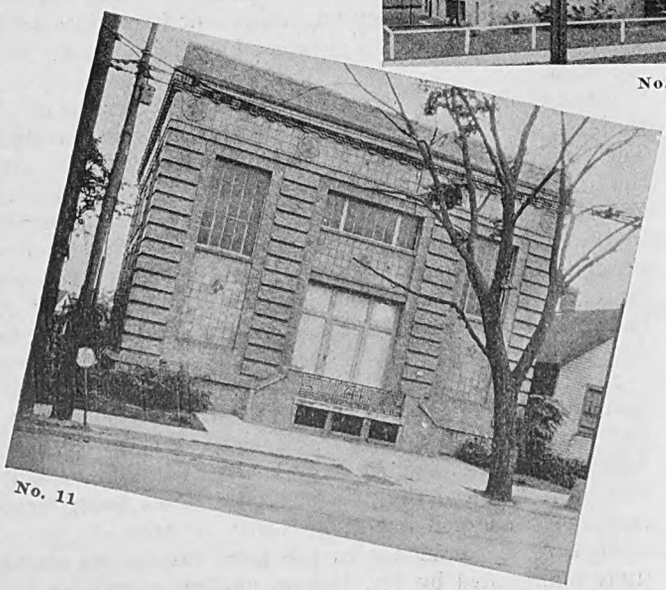
With Similar Dimensions, Varying Architectural Treatment Has Been Given

THESE three automatic substations, Nos. 11, 13 and 16, serve areas adjacent to the downtown congested district. While they carry a proportionate share of the normal load, they have been placed as a second line of defense in case the downtown substations should fail.



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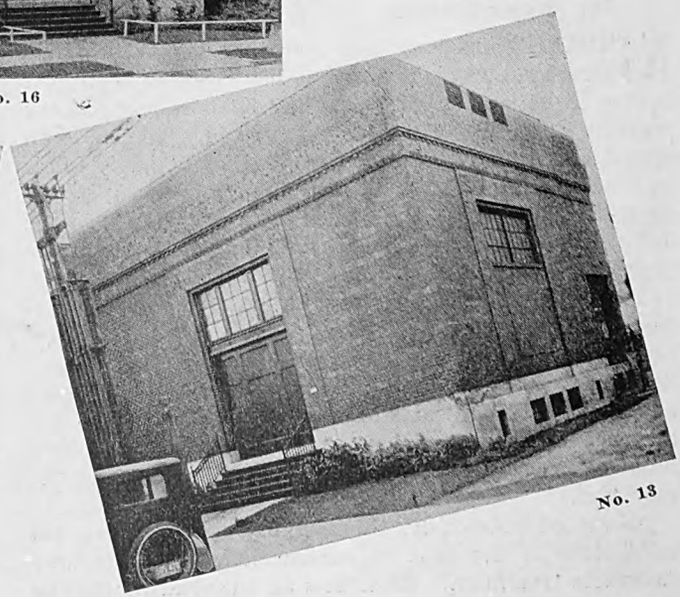

No. 13

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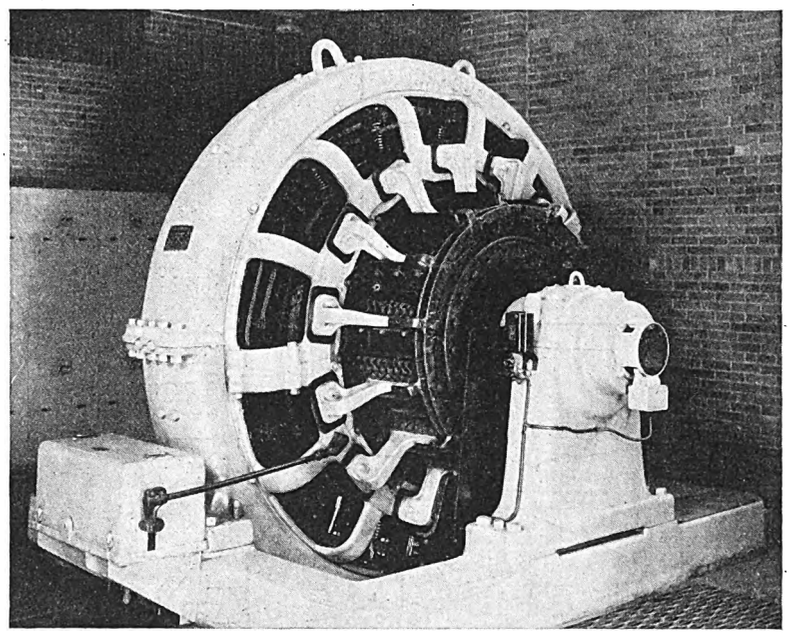
Cleveland Railway Extends the Use of Automatic Substations

All Power Is Now Purchased and Converted Through a System of Manual and Automatic Substations—Ten of the Fifteen Substations Are Automatic, but All Are Supervised by a Control System Centralized in the Dispatcher's Office—Standard 1,500-Kw. Units Used in All Substations

By L. D. Bale
Superintendent of Power the Cleveland Railway

WITH the assumption of its load by three automatic substations completed on Nov. 6, 1925, the remaining power generating plant owned and operated by the Cleveland Railway was discontinued from service on that date. It has since been dismantled and scrapped. This placed the railway system on an all-substation basis, operating from alternating-current purchased power.

This plant, designated as the Viaduct power plant, was located immediately adjacent to the downtown, congested area of Cleveland. Its abandonment marks the passing of an extremely interesting period of development and progress in the production of energy for electric railway transportation. In addition, it brings into prominence the automatic substation as a major source of power even for congested areas of metropolitan systems, thus making available the most modern means of economical conversion and distribution of railway energy. In this particular instance rearrangement of the power system by the addition of the new stations described in this article has made possible the retirement of approximately 200 tons of d.c. distribution copper with the accompanying elimination of energy loss and a saving of annual charges.



The Standard 1,500-Kw. Rotary Converter Installed in One of the New Automatic Substations of the Cleveland Railway

This is a six-phase, 60-cycle, 514-r.p.m. machine and is typical of the total of 37 such units installed on the system. The converters in all of the newest stations have only a slight modification, chiefly in the substitution of high-reluctance interpole fields for the straight series type.

The retired power plant, erected in 1892 for the Woodland Avenue & West Side Railway, was the subject of favorable comment throughout the engineering fraternity at various times during its existence. The total capacity of the plant was originally 1,500 kw., made up of three triple-expansion marine engines, each direct connected to two 250-kw., 500-volt, direct-current Westinghouse generators. Steam was supplied by Scotch marine type boilers. The switchboard consisted of a 12-in. green enameled brick wall surmounted by an ornate golden oak cornice upon which were carved the names of the directors and officers of the company.

Ensuing developments in electric railway transportation caused the plant to be increased from time to time by installation of additional equipment, in many instances replacing older equipment. This continued until at the time of its retirement the capacity had reached a total of 8,100 kw. of Corliss horizontal reciprocating steam engine-driven direct-current units.

The substations replacing the Viaduct power plant, Nos. 12, 14 and 15, are located in the area formerly served by that plant. These three stations were a part of the construction program which included seven automatic substations, involving a total capacity of 15,000 kw. Three of the four remaining new installations, Nos. 11, 13 and 16, are situated in areas adjacent to the territories served by the downtown stations. The latter three stations have practically a capacity load derived from the areas in which they are located. They are also intended to act as a safeguard to continuity of power supply in the event of failures occurring in adjacent stations and affecting the surrounding territories, particularly the downtown areas. The seventh station of the group, No. 10, is located beyond the distributing zone of an existing manual substation where low voltage conditions were experienced.

Stations Nos. 12, 14 and 15 have each an installed capacity of 3,000 kw., made up of two 1,500-kw. converters, while stations Nos. 10, 11, 13 and 16 contain but one 1,500-kw. converter each, there being room, however, for an additional unit.

It will be noted by referring to the accompanying

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map, which indicates the locations of all power facilities of the company, as well as the type and capacity of each, that the five manually operated substations have an aggregate capacity of 31,500 kw. and the ten automatic substations 24,000 kw. The original automatic substations, Nos. 6, 7 and 8, were described by the writer in three articles which appeared in ELECTRIC RAILWAY JOURNAL for March 3, 10 and 17, 1923. The remaining seven automatic substations are those included in the recent construction program.

There still remains the erection of an equalizer or switch house, near the Public Square, to complete this program. The switch house will provide facilities for interconnection of all direct-current feeders terminating at the center of the system. This will tend to equalize loading and provide means for rerouting of load under emergency conditions, thus serving as an added insurance to continuity of service.

The conditions as established in former studies and surveys preceding the rearrangement or installation of power conversion units on the system again dictated the practicability of continuing the use of the one standard size and capacity of converter, shown in one of the illustrations. However, the converters in the new stations have slight modifications which include the substitution of high-reluctance interpoles for straight series interpoles. Since the completion of these stations 37 converters are in operation on the system, each rated at 1,500 kw. and 514 r.p.m. on 60 cycles.

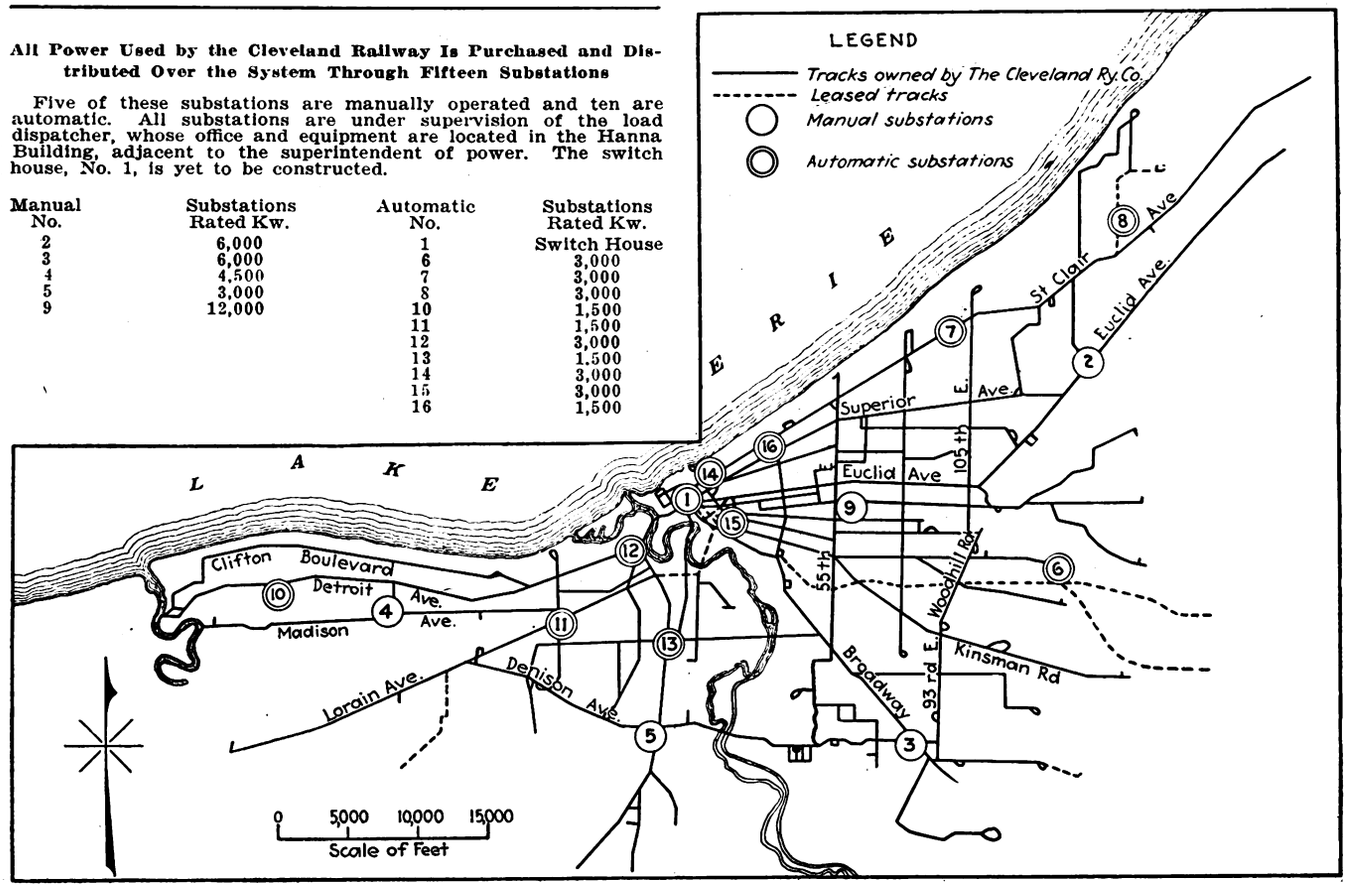
The remote control and supervisory system, developed immediately following the installation of the three original automatic substations, has been extended and is a part of the equipment of the seven new stations. The system load dispatcher, who controls operation of the automatic substations, also supervises the non-automatic stations through telephone communication with their attendants. This arrangement enables him to supervise and co-ordinate the operation of all power facilities of the company, thus making possible a degree of flexibility to the entire system heretofore not practicable.

Operating experience on this property has very definitely proved that the presence of a remote control and supervisory system no longer constitutes a refinement. This is particularly true where continuity of power supply is emphasized to the extent that protection to service takes precedence over protection to equipment. The necessity of a remote control and supervisory system can further be emphasized, under the above operating conditions, as the total capacity represented by the relatively small capacity automatic stations approaches or exceeds that of the manually operated equipment on the system.

All Power Used by the Cleveland Railway Is Purchased and Distributed Over the System Through Fifteen Substations

Five of these substations are manually operated and ten are automatic. All substations are under supervision of the load dispatcher, whose office and equipment are located in the Hanna Building, adjacent to the superintendent of power. The switch house, No. 1, is yet to be constructed.

Manual No.	Substations Rated Kw.	Automatic No.	Substations Rated Kw.
2	6,000	1	Switch House
3	6,000	6	3,000
4	4,500	7	3,000
5	3,000	8	3,000
9	12,000	10	1,500
		11	1,500
		12	3,000
		13	1,500
		14	3,000
		15	3,000
		16	1,500



Cleaner Station Campaign Elicits Fine Co-operation

THE personnel of the Chicago Rapid Transit Company is in the midst of a campaign to improve the general appearance of station platforms, yards and other Elevated Lines' properties as a phase of its public relations activities. Monthly cash prizes have now been awarded for several consecutive months to the porters who have kept their stations the cleanest and the man on each division with the best record for the month is awarded an attractive honor banner. The banner is hung in the station, telling the public about the porter's good work in improving the appearance of the company's property.

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Consolidated Transportation and Subways Recommended for Chicago

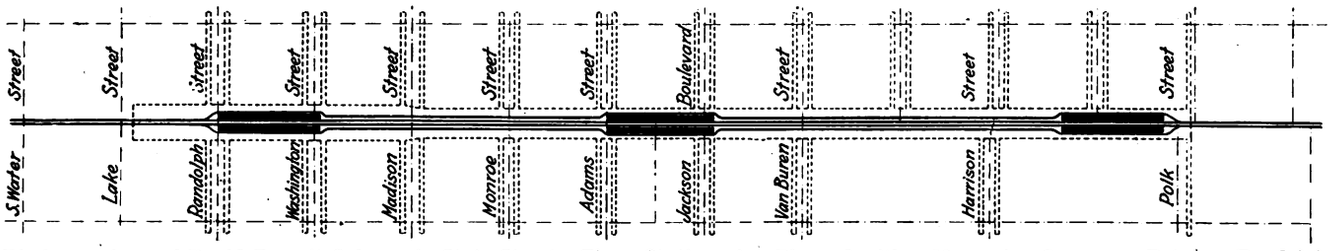
Subway Advisory Commission Proposes Extension of Rapid Transit Facilities by Special Assessment and Use of Traction Fund—Enabling Legislation Is Necessary for This Purpose and for Consolidation of Present Companies—Initial Program for a Subway Under State Street and One Under Washington, Michigan and Jackson Would Cost $36,400,000

BASED on at least seven major transportation studies during the past twenty years, Chicago's latest rapid transit report recommends an initial step costing $36,400,000, which would begin the co-ordination of all local transportation in the city.

The report is noteworthy in that, while written by a commission composed of downtown business men, it has recommended assessment of the benefited property as a means of raising funds for rapid transit construction. It further proposes that these property owners can assist by making voluntary contributions in case the assessments do not raise sufficient capital for the construction program. It is noteworthy that elevated construction is recommended in all cases as being more desirable than subways except in the central congested district.

The Subway Advisory Commission, which made the transportation systems for Chicago. Likewise the previous engineering reports for subways in Chicago are reviewed briefly. Comparable charts show the earlier plans recommended in seven major reports since 1902.

Primarily this is a citizens' report, although guided by excellent engineering and legal talent. The Subway Advisory Commission was appointed on March 23, 1926, by Alderman Arthur F. Albert, chairman of the subcommittee on subways of the City Council's transportation committee. Its members are Russell Tyson, member of the firm of Aldis & Company; Gordon Strong of Gordon Strong & Company; Earl Shultz, manager of the Edison & Chicago Trust Building; Ernest J. Stevens, vice-president and manager of the Hotel La Salle and the New Stevens; Harry J. Powers of the Illinois and Blackstone Theaters; Barney Balaban, president of Balaban & Katz, and Elmer T. Stevens of Charles A. Stevens &



Discharge Area of Rapid Transit Subway in State Street. Three Stations Are Planned with a Mezzanine Concourse Between Randolph and Polk Streets, with Branches on Lateral Streets Under the Sidewalks as Shown by Dotted Lines

report, states that no less than 55 per cent of the cost of building the two subways recommended should be paid by direct assessment of the benefited property, and for this purpose has designated areas of four different grades. Should the amount raised by assessment be insufficient, it is suggested that the deficit may be made up by voluntary contributions on the part of business men. The plan contemplates that the remaining part of the construction cost be taken from the traction fund, which at present amounts to $45,000,000, representing the city's share of the residue receipts of the Chicago Surface Lines in accordance with its contract.

Consolidation of the Chicago Rapid Transit Company, operating the present elevated system, and the surface line companies now jointly operated by the Chicago Surface Lines is considered of paramount importance. It is recommended that the city immediately take steps to obtain the enabling legislation required to effect this consolidation and also the legislation needed in all probability to allow the city to levy the special assessment.

Not only did the commission make a study of the subway, elevated and rapid transit facilities in New York, Boston and Philadelphia, but the report devoted considerable space to an analysis of these types of Brothers. George M. Tobey was secretary of the commission. R. F. Kelker, Jr., was selected as engineering counsel. Mr. Kelker prepared the report on subways submitted in 1923. Eugene H. Dupee and F. D. P. Snelling were legal advisers to the commission in the preparation of this report. The text was drafted by Messrs. Strong and Tobey.

Four general sections comprise the report. The first, on general principles, lays down a basis for the consideration of all forms of urban transportation; the second is devoted to the specific plan recommended; the third is devoted to finance, the cost of the subway units recommended, the discussion of the assessment plans, the use of the $45,000,000 traction fund and the legal obstacles that lie in the way of accomplishing what the commission feels to be of paramount importance—the consolidation of the companies and the levying of the special assessment. The fourth chapter contains some sixteen specific recommendations for putting in effect the proposed plan. The first and second sections are abstracted below at some length.

URBAN TRANSPORTATION A PRESSING PROBLEM

Grouping of workers for collective effort, which forms the economic basis of our cities, has but one limiting factor in the future—that of transportation. The

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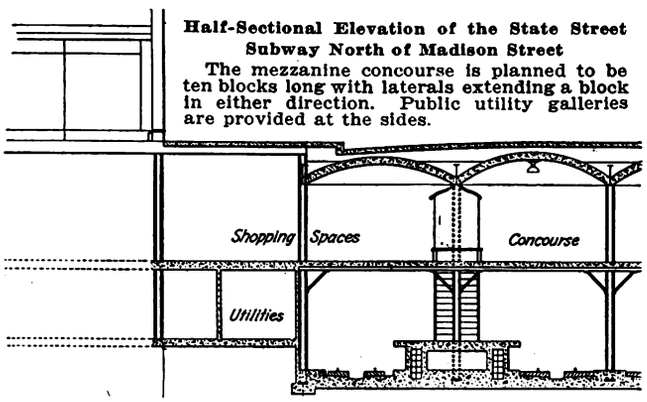
growth of our cities involves greater distances to be covered, and at any given rate of speed, greater time to cover them. It is the function of urban transportation to overcome these increasing distances and to give to the city of 1,000,000, 5,000,000 or 10,000,000 the same facilities of intercourse. The problem, great already, becomes greater each year and will become greater into an indefinite future.

Since a city depends in great part for its efficiency on the plan and the operation of its transportation, it is fair and right that its citizens should demand the maximum of speed consistent with the progress of engineering and with safety, the maximum of convenience and comfort and even of pleasure, and finally that they should demand this service at the lowest price commensurate with the labor, the management and the capital required.

In the development of urban transportation, up to date three different types have been established, the motor bus, the trolley car and the rapid transit train.

The motor bus requires a minimum of capital investment, so for a limited population served, even at a greater cost of operation per passenger carried, it will be cheaper. In such a district the bus will perform two functions: (1) Furnish transportation within the district itself; (2) serve as a feeder to transportation lines leading into the body of the city.



Half-Sectional Elevation of the State Street Subway North of Madison Street

The mezzanine concourse is planned to be ten blocks long with laterals extending a block in either direction. Public utility galleries are provided at the sides.

With growth of the district which it has been serving, the bus, with its greater per capita cost of operation, is forced outward and into districts of less population. In such a capacity it usually is the adjunct to the adjoining trolley car system. In the report, no further consideration is given to the bus, as it is not deemed suitable for the mass transportation under consideration.

However, a specialized type of bus, which may be called a pleasure bus, serves in quite a different capacity, somewhere between a transportation unit and a sightseeing means. It is principally important as showing the disposition of the citizen toward the "amenities" of transportation—a disposition which should be considered in planning any transportation system.

Trolley a Logical Type of Transportation

With the population of a district sufficient to warrant a more highly developed transportation, for the sake of cheaper per capita operation, the trolley car becomes appropriate. While it requires a permanent plant and greater capital, by virtue of the greater number of passengers carried per car, with no increase in employees, the per capita cost of operation becomes less than with the motor bus. However much such a district may increase in population, that population can be most cheaply transported by trolley cars. They are never eliminated by the economic consideration of the rate of fare. The limiting consideration which does apply is rather one of engineering, that of rate of speed.

If a passenger makes but an occasional trip, the time consumed is not vital. But if he has a daily trip to make, such as one to and from work, it becomes vital. It is the best opinion that the time each way should not exceed 45 minutes, including walking to and from the car at each end of the trip. Accordingly, if one is to spend a maximum of 30 minutes on a trip, with a speed of 8 m.p.h. the maximum distance that can be traveled is 4 miles. The trolley car, under average conditions, offers a little more than this radius to the daily passenger.

In a town of 10,000 the average distances between one citizen and another and the places where they work might be placed roughly at ½ mile, so that no transportation at all is really necessary. In a city of 100,000, this average distance may be placed at 2 to 3 miles, which can be covered by trolley in fifteen to twenty minutes. No other transportation is necessary. But in a city of 1,000,000 the average distance may be placed at 5 to 6 miles. The trolley car requires some 37 to 45 minutes, so that the citizen who has to make this daily trip is entitled to a type of transportation at greater speed. This introduces the rapid transit train.

Car speed is uniform only when cross traffic is uniform. With no cross traffic, the trolley could make the same speed as the rapid transit line, so cross traffic becomes the limiting factor in the speed of the trolley car. As the size of the city increases this cross traffic increases as the center of the city is approached. This gives a second engineering reason for the introduction of the rapid transit train.

The rapid transit train is not to be expected to supplant the trolley car, except for long hauls or through the more central districts, with cross traffic to be avoided. As one function of the bus is to be a feeder to the trolley car, so in a properly co-ordinated system one function of the trolley car is that of feeder to the rapid transit train.

Rapid Transit Needed for Largest Cities

When a city approaches a population of 1,000,000 its citizens are entitled to the rapid transit train. Its two characteristics are rapidity of movement, made possible by a tracking that avoids cross traffic, and grouping of several cars in a train, with several doors, requiring a minimum of time for loading and unloading.

To avoid cross traffic, the tracks may be laid to one side, or above or below it. The first location, to one side of the cross traffic, is special, the Illinois Central system in Chicago being an example. A rapid transit system may be laid above the cross traffic either with masonry walls and an earth fill, or with steel columns and girders, known as "elevated." The former construction is used mainly by steam railroads, and is also in contemplation for the "super-highways" planned for Detroit. The elevated does not interfere materially with the street and alley system of a settled city.

Three serious criticisms of the elevated construction of the past are location in the street in place of the alley, unpleasing appearance and unnecessary noise. Where possible, except perhaps in industrial districts, such a structure should be located in an alley or on a private right-of-way. The damage to abutting property when elevated structures are erected on streets is serious and must be given more attention in the future than in the

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past. When the value of abutting property and the damage to the owners are sufficiently great this damage becomes the limiting factor in the use of elevated structures.

Elevated structures of the past have apparently been given no attention as to appearance. The elevated structures that have been built in Chicago may have been excusable in the past, but should be considered obsolete. While an elevated cannot rise to standards of some bridges, it, however, can show a genuine effort to be pleasing in appearance and worthy of the city of the future.

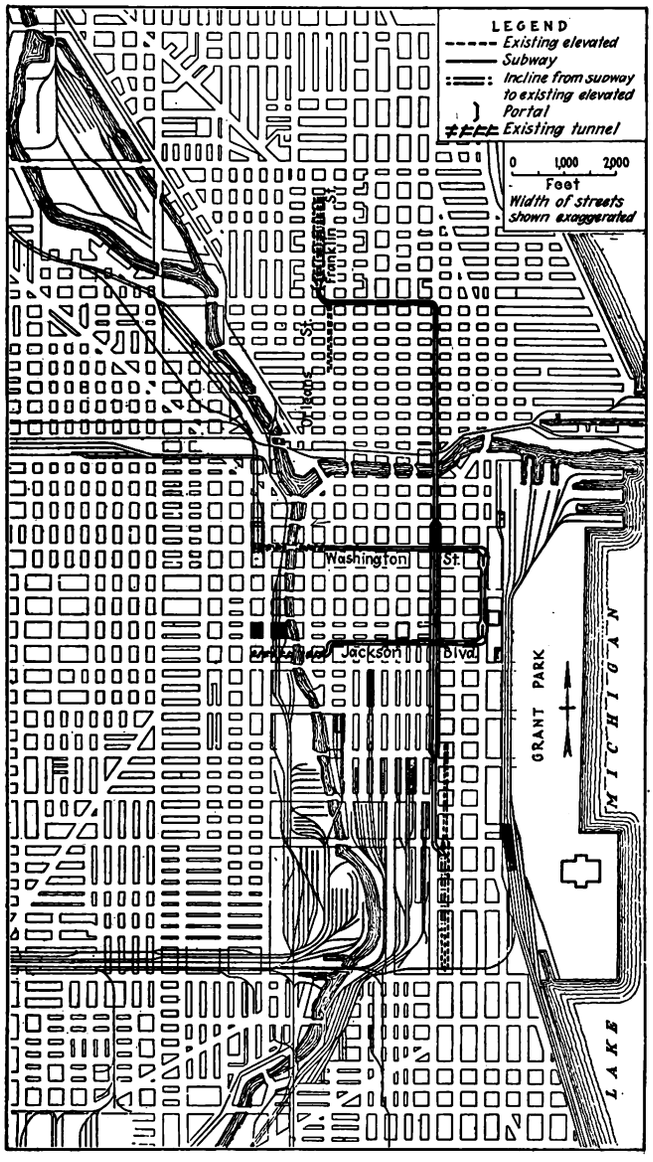
As to noise, it is understood that the track of an elevated structure can be bedded so as to develop but a fraction of the noise experienced at present. Until this improvement is insisted on engineers will continue to plan and erect the deafening structures of the past.

Aside from the limiting factor of damage to abutting property, the tracking of rapid transit trains on an elevated structure is the solution of rapid transit from the economic, the engineering and the passenger or human viewpoint.

The average cost of an elevated structure complying with the principles expressed, with two tracks and reasonable allowance for stations, can be considered to be, at present prices, $1,600,000 per mile. The cost of the only other possibility for rapid transit, a subway, may be considered to be $5,600,000 per mile.

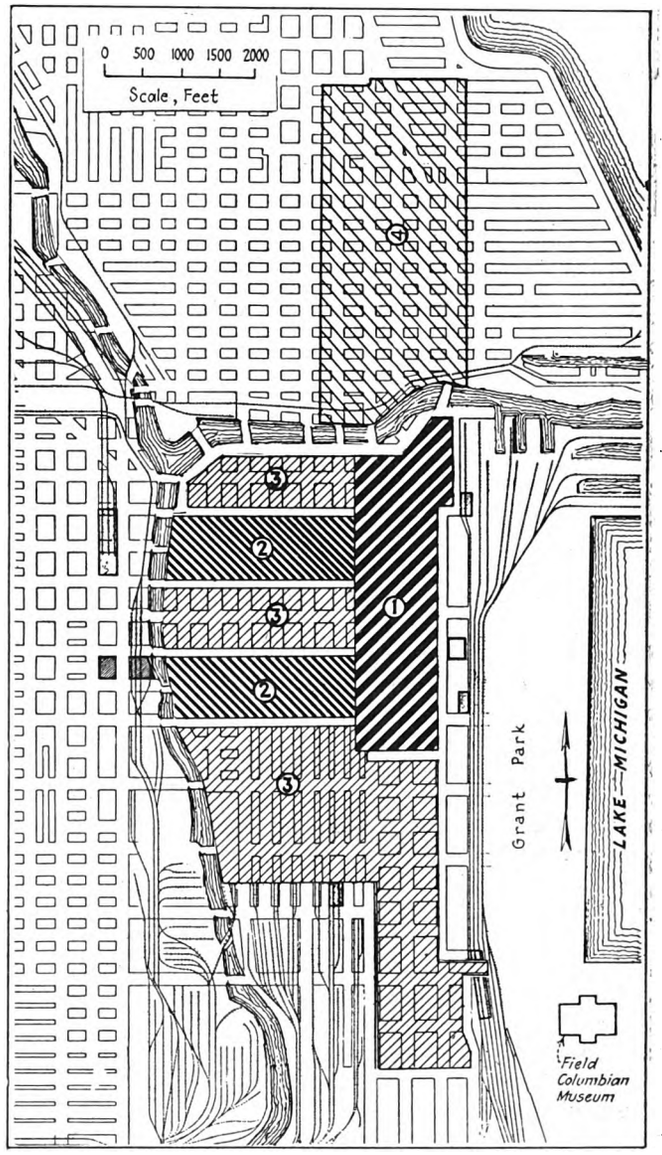
The foundation of rapid transit, speed, can be had on an elevated equally as well as in a subway. The safety of an elevated is believed equal to that of the subway, depending primarily on keeping the trains on the tracks, which can be done with equal facility above ground or below.

As to the passenger or human element involved, the passenger is entitled to, and if compelled will pay for, what may be called the amenities of transportation, for the pleasantness of the time spent in being transported. Another consideration is the health of the passenger. Ventilation, light and air are far superior in the case



Basic Subway Plan of Chicago Subway Advisory Commission

The construction contemplated consists of a north-and-south rapid transit subway under State Street with four tracks in the congested area between Randolph and Eighth Streets and a double-track subway loop for surface cars under Washington Street, Michigan Avenue and Jackson Boulevard.



Assessment Zones for Chicago Subway Construction

The plan given in the report contemplates raising a large part of the cost by special assessment. It is proposed to divide the amount so levied in proportion to the direct benefits. The assessment area is in four classes: (1) to bear 65 per cent of the assessment; (2) to bear 20 per cent; (3) to bear 12½ per cent; (4) to bear 2½ per cent.

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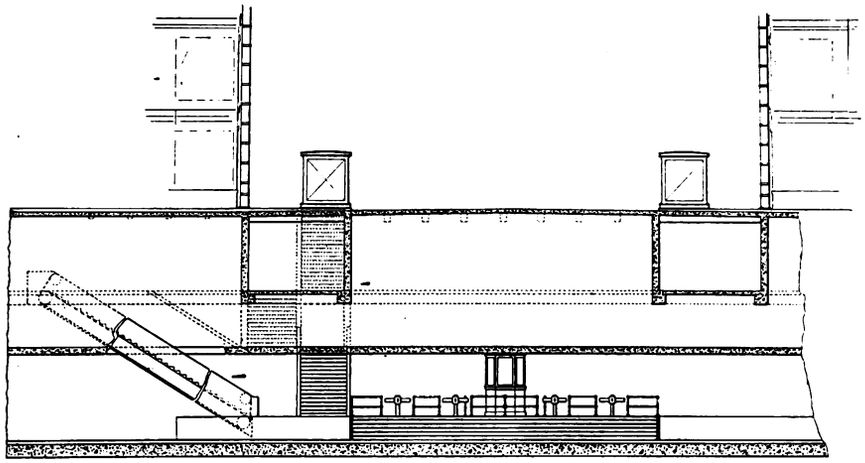


Cross-Section of the Washington-Michigan-Jackson Surface Car Subway
This is planned as a low-level line with rails 35 ft. below the street. Escalators are planned to carry passengers up and down at the stations.

of the elevated as compared with the subway, particularly in daytime. From this viewpoint, the citizen and voter has the right to demand that every possible mile of the tracking for rapid transit shall be on an elevated structure.

According to the report, for Chicago, except in such limited districts as may be proved absolutely to require subway tracking for rapid transit trains, the citizens have reason to condemn any proposal of subway construction.

Rapid Transit Below Ground Considered

The tracking for a rapid transit line may be laid below the cross traffic, either in an excavation open at the top, usually known as "open cut," or in an excavation covered on top, usually known as "subway." Use of the open cut is confined to private right-of-way, entirely separate from the street and alley system of the city. The subway constitutes no interference with the street and alley systems. So far as transportation is concerned, it differs from the elevated only in matters of engineering detail. So far as benefit to the city at large or to the neighboring property is concerned, it makes no difference whether rapid transit trains run on an elevated structure or on a subway structure. It is of utmost importance that the subway should be thought of, not as a new and entirely different type of transportation, but merely as a different location for the tracking of rapid transit trains.

To find a justification for the subway tracking, we must leave the field of transportation and consider the effect on abutting property. Since practically the whole case for subways rests upon the damage to adjoining property by elevated structures, the relative cost of construction must be considered. The average cost per mile of subway construction, $5,600,000, will be materially increased in the central business district by reason of the necessity of supporting high buildings without adequate foundations and by reason of the amount and complexity of sewerage, water, gas, electric, telephone and other similar equipment. It has been estimated that such cost in a central business district may run as high as $8,100,000 per mile. Accordingly, the excess cost of subway tracking over elevated tracking of rapid transit trains may run from $4,000,000 to $6,500,000 per mile.

Estimating 4,500 ft. of private property as abutting on each side for each mile of street, 9,000 ft. of private property will be affected per mile of elevated structure. All of this property will be damaged if the elevated structure occupies the street. Assume a damage amounting to $100 per front foot of abutting private property, the total damage will be $900,000 per mile. But it is obvious that this charge will not warrant the increased expenditure of from $4,000,000 to $6,500,000 for a subway.

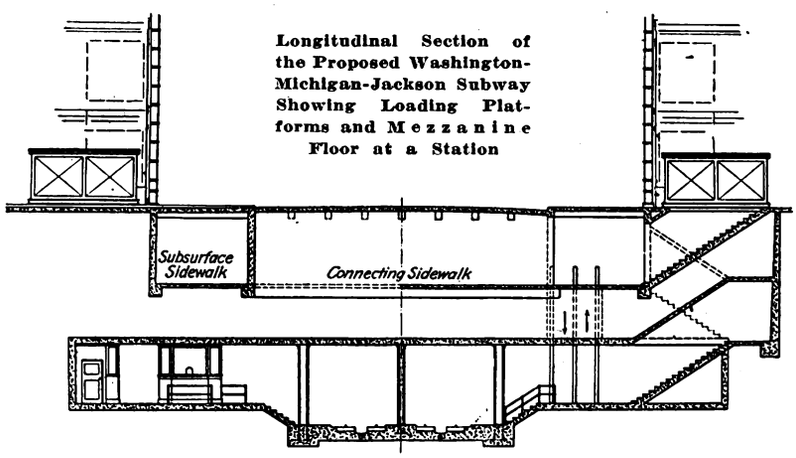
Assuming a damage resulting from an elevated structure of $1,000 per front foot, the total damage will be $9,000,000 per mile of elevated structure and it is obvious that it would be cheaper to pay the excess cost of a subway.

In general, the damage to abutting property depends principally on the value of the property, particularly if of one general class, such as commercial. Accordingly, if a damage of $100 a front foot resulted in the case of abutting property worth $1,000 a front foot a damage might in general be expected of $1,000 a front foot for property worth $10,000 a front foot. Since the higher-priced property is likely to be located in or near the business center of any city, the logical use of a subway for rapid transit will begin, at least, in and near the business center of the city. It will stop and will be replaced by elevated tracking at points where the lower abutting property values do not warrant the cost of subway construction.

Co-ordination of Transportation in a Regulated Monopoly Essential

While in the general field of business the public policy has been to encourage competition, in the field of public service we have inclined toward monopoly under government regulation. Coming to transportation, we have not been guided by any generally recognized principles and have not adopted any uniformity of policy. Since the defeat of the Chicago traction ordinance of 1925, municipal ownership does not seem to be a live issue there.

The question of a single or consolidated transportation company under governmental control, as compared with mutually independent and competing companies, should be considered. The engineers are convinced that a single and consolidated company under reasonable



Longitudinal Section of the Proposed Washington-Michigan-Jackson Subway Showing Loading Platforms and Mezzanine Floor at a Station

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TABLE I—ALLOCATION OF COSTS FOR THE PROPOSED CHICAGO SUBWAYS

Subway	Train Level (Including) Stations)	Pedestrain Level	Total Structure	Operating Equipment	Total
State Street	$16,900,000	$4,050,000	$20,950,000	$3,000,000	$23,950,000
Washington-Michigan-Jackson	9,900,000	1,450,000	11,350,000	1,100,000	12,450,000
	$26,800,000	$5,500,000	$32,300,000	$4,100,000	$36,400,000

TABLE II—DIVISION OF PROPOSED CHICAGO SUBWAY COSTS ON BASIS OF 35 PER CENT ASSESSMENT ON BENEFITED PROPERTY

	Total Structure	—Amount Payable by— Special Assessment 35 per Cent	Traction Fund 65 per Cent	Operating Equipment Payable by Transportation Company
State Street	$20,950,000	$7,332,500	$13,617,500	$3,000,000
Washington-Michigan-Jackson	11,350,000	3,970,500	7,377,500	1,100,000
	$32,300,000	$11,305,000	$20,995,000	$4,100,000

governmental control as to rates of fare and as to extensions is the one most important factor in the entire field of urban transportation. They also are convinced that such consolidation is a necessary preliminary to subway construction, and that the tracking of rapid transit trains in the very expensive subway form of construction can be justified only if those rapid transit trains operate under adequate load. This is to be had only by a consolidation and co-ordination of the entire transportation system.

The sole argument for competing transportation companies is that only by such competition can service be kept up and the price of such service be kept down. There appears to be no other argument than this, and this single argument is misleading and untrue. Under a single and consolidated company the citizen receives the maximum of transportation facilities at the minimum of cost.

A rather special argument for consolidation applies to this particular time and place. The city is in possession of a considerable "traction fund," subject to use for the extension of transportation facilities. Under consolidation the single company will support the best program of use of the traction fund, whether for trolley car or rapid transit construction. Without consolidation the competing companies can never agree on any program of use of the fund. This perhaps is not a legal, but is a very practical, difficulty in planning and conducting any program of new construction. For these reasons, states the report, it is recommended that the appropriate steps be taken toward effecting a consolidation of the Chicago Surface Lines and the Chicago Rapid Transit Company.

Reasons for Special Assessments

The argument for the special assessment is that while the subway is a public improvement, it is a local benefit and will tend to increase property values in the Loop district disproportionately to those in outlying territory. Some questions exist as to the constitutionality of a special assessment. The constitution of Illinois permits local improvements by special assessment or by special taxation of contiguous property or otherwise. Several court decisions have interpreted this to mean that if a common improvement is more than 50 per cent local such assessments can be made, but if the local benefit is 49 per cent or less the improvement does not come within the scope of the constitutional provision.

Two alternatives are apparent: First, attempt to get a court decision that 51 per cent or more of the proposed benefit arising out of the construction of the new subway units will constitute a local improvement. The subway advisory commission recommends 55 per cent. If such a decision is not forthcoming, or the local benefit appears to be less than 50 per cent, a special assessment would be unconstitutional. The only alternative would be to obtain an amendment to the State Constitution.

Physical Construction Recommended

The major recommendations of the commission are for two subway units. The one in State Street is to be used exclusively for rapid transit trains and will extend from Chicago Avenue and Franklin Street on the north to Roosevelt Road on the south, connecting with the present elevated structure of the Chicago Rapid Transit Company at either end. The second proposed subway is a loop on Washington Street, Michigan Boulevard and Jackson Boulevard, extending under the south branch of the Chicago River in two existing tunnels and coming to the surface on the west side of the river. The Washington-Michigan-Jackson subway loop is purely to facilitate the movement of the west side surface lines. This is contemplated as a low-level loop passing under the State Street rapid transit subway. As this subway would have two tracks an extensive overhead passenger concourse is not essential, although considered desirable by the commission. In the case of the four-track State Street line, necessitating steps or means of elevation from the two center platforms at each station, a passenger mezzanine is considered a necessity.

Existing Facilities Are Used to the Maximum

The north and south sides of Chicago will benefit by the rapid transit facilities afforded in the State Street subway. The west side will benefit directly and indirectly in that most of the existing Loop elevated facilities will be available for west side service, and in addition west side surface cars will have quick and unobstructed movement in and out of the business district.

In order that the traffic on the two legs of the surface car subway may be balanced, switching facilities are provided where each leg intersects Michigan Boulevard, so the service on one leg can be switched back if desired without negotiating the entire loop.

TABLE III—PERSONS ENTERING BUSINESS DISTRICT OF CHICAGO, WEEK-DAY AVERAGE, 1924

		Number	Per Cent
Trolley cars (Chicago Surface Lines)		390,000	33.00
Passenger vehicles		234,735	19.88
Rapid transit trains (Elevated)		204,000	17.25
Pedestrians			
From north side	38,203		
From west side*	65,871		
From south side	76,979	181,053	15.31
Motor buses		74,000	6.26
South side railroad stations			
La Salle Street	25,402		
Illinois Central	23,214	58,616	4.96
Motor trucks, etc		34,535	2.92
Chicago, Aurora & Elgin		5,000	0.42
Total		1,181,939	100.00

*Passengers coming from the west side railroad stations are included in "Pedestrians" from the west side.

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Because the surface car subway on Washington, Michigan and Jackson has its loading platforms 35 ft. below the street level, escalators are planned for each of the eight stations contemplated. Three of these stations will be on Washington Street, two on Michigan Avenue and three on Jackson Boulevard. The escalators will lift the passengers from the station platform level to a mezzanine. Passengers may use this mezzanine or sub-service sidewalk for some distance and emerge to the street level through any of several short flights of steps. The exact extent of the mezzanine over this subway is not as definitely determined or recommended as in State Street.

As transportation facilities are further developed, this surface car subway can be used for rapid transit trains if desired without change in structure.

State Street Mezzanine an Important Factor

The mezzanine level under State Street and above the subway cars is contemplated for the entire length of the four-track section. From this mezzanine, steps will connect with each of the three stations. The commission recommends that the mezzanine be extended between stations in order to make a complete lower concourse for pedestrians, and suggests that until the entire street width of such a mezzanine be required for pedestrian use, it can be "limited to one broad traffic-way or concourse down the center of the street. The remaining space on each side of the concourse and adjoining the basements of the abutting properties can be licensed to the owners of those properties for retailing or other similar use."

Under the east and west sidewalks at each cross street this mezzanine would extend in narrow passageways for a block either side of State Street. Thus the entire area from Dearborn Street to Wabash Avenue and extending from Randolph to Polk Street would have a complete pedestrian level free from all kinds of interfering traffic. Short flights of stairs would lead to the street level at any of the intersecting points. Stores and buildings would provide subway entrances, and in the words of the commission's report,

> it will act as a direct, convenient, and comfortable clearing house for the incoming and outgoing passengers of the north and south rapid transit system. But it will do much more. It will act as a direct, convenient and comfortable passageway from one end of the downtown district to the other. The pedestrian will walk along a brilliantly lighted corridor, lined with attractive show windows, unvexed by vehicular cross traffic, unaffected by weather. The entire street will be put under a single roof —not at the twentieth floor level, but at the basement level. The merchandise of the greatest merchandising district of the world will be concentrated on and made accessible to a single concourse—a world's fair, continuous and perpetual.

The commission elsewhere states: "The above described mezzanine pedestrian level or concourse is counted upon, in the minds of your advisory commission, materially to aid the financing (in part), by special assessment, of the proposed subway. The sum raised by special assessment from abutting property owners alone would doubtless pay for the entire cost of the mezzanine pedestrian level or concourse and constitute in addition some payment toward the cost of the train level."

Elevated Extensions

Two elevated extensions are cited in the report, one to connect up the present structures on Ashland Avenue, the second an extension of the present loop on Wells and Polk Streets. The purpose of this latter is to extend the present loop area and to avoid congestion. The cost of these two loop extensions the commission believes should be financed on the special assessment principle, but does not take it into account in its final consideration of costs, which are confined to the two subway units alone.

Table I gives the cost of the two subways summarized into three general headings of train level, pedestrian level and operating equipment. Table II shows the method of allocation, on the assumption that only 35 per cent ultimately would be raised by special assessment. The per cent is assumed for illustration only.

The commission recommends that the subway structures be built in their entirety from special assessments, contributions and the traction fund. For operation they should be turned over to a consolidated company, franchised to perform the work of transportation. The rolling stock would be purchased by the operating company. The rental for the use of these city-built facilities should be moderate, but need not be negligible. While considered beyond the scope of its assignment, the commission ventures the suggestion that "without the slightest authorization" perhaps a sum of $5,000,000 could be raised as advance rental payment, discounted for a number of years ahead.

Bus Operating Statistics Compiled by California Commission

NEARLY 30,000,000 passengers were carried during 1924 on the motor buses in California, according to the report of the Railroad Commission of California for the year ended July 30, 1925, just issued. In detail, 27,727,477 passengers were carried by Class A companies or those whose gross annual income was more than $20,000, while the smaller companies carried 1,935,431.

Gross operating revenue of all the companies in 1924 amounted to $19,042,161, as compared with $17,554,981 in 1923. Operating expenses in 1924 were $18,231,526, leaving a net revenue of $810,635. One of the principal items of expense reported by the motor bus lines, which included both passenger and truck operators, is for gasoline. In 1924 the Class A companies paid gasoline bills totaling $1,295,816, while the gasoline bills of the smaller companies totaled $365,053. Class A companies paid federal income taxes of $79,629. All other taxes amounted to $528,995, a grand total of $608,624. Class B companies paid taxes amounting to $76,980.

The equipment reports of the Class A companies showed a total of 1,188 passenger buses, 1,117 trucks and 520 other vehicles, the latter being principally trailers. The Class B companies in 1924 used 537 passenger buses, 544 trucks and 24 other vehicles. This makes a total of 2,930 pieces of equipment regularly devoted to the business of transporting persons and property over the highways, as public carriers. This figure does not include peak equipment. A large percentage of the auto, stage and truck operators, at time of peak demands, lease equipment to enable them to take care of the traffic. This practice is approved by the commission, which prescribes the form of lease. Including leased cars, approximately 4,000 cars, trucks and trailers are required to meet the demands of travelers and shippers who use the public highway transportation service in California.

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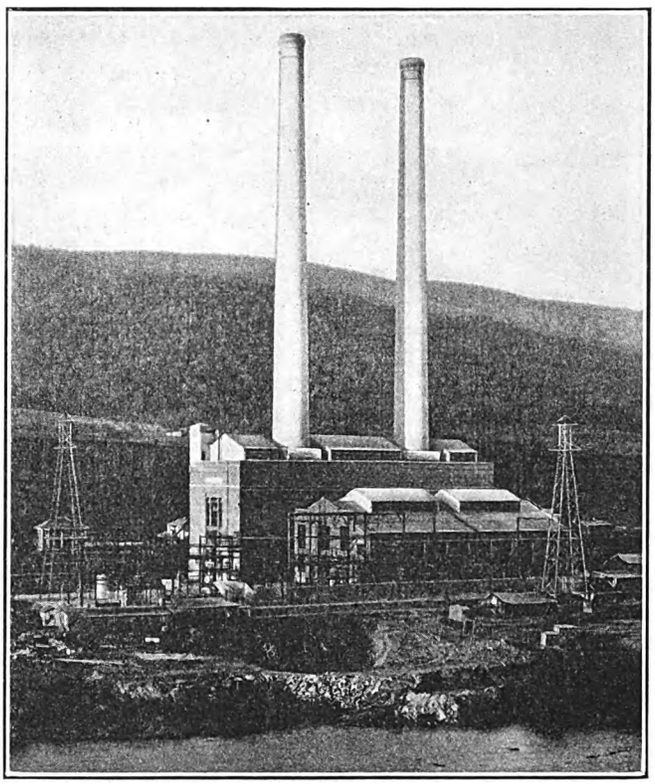
Virginian Railway Operates Power Plant

The 134-Mile Electrification from Mullens, W. Va., to Roanoke, Va., Is Supplied from a 40,000-Kw. Plant at Narrows, Va.—Pulverized Coal Used to Supply Steam for Four Turbo-Generators—Precautions Taken to Insure Continuity of Service

ELECTRIC haulage of coal trains, recently inaugurated by the Virginian Railway, requires the heaviest concentration of power on a moving train ever undertaken. The electrification will extend from Mullens, W. Va., to Roanoke, Va., a distance of 134 miles, and will include the heavy grade portion of the railway where it crosses the Appalachian Mountains.

The maximum yearly capacity for which apparatus is installed is 12,500,000 tons of coal, or 17,500,000 gross tons (cars and lading eastbound, with a small additional amount of manifest tonnage). The system is laid out to take care of a maximum day's traffic of 60 per cent above the average.

A steam power plant has been built for this operation on the New River at Narrows, Va. The selection of site was determined by considerations of an adequate supply of condensing water, nearness to center of gravity of load, suitability from the physical standpoint, and that of housing the operating forces. It contains four turbo-generator units, having a continuous rating of 10,000 kw. at 80 per cent power factor, with five 1,521-hp. cross-drum boilers, equipped to burn pulverized fuel. The power house is designed to permit of extension ultimately to include seven turbo-generator units and nine boilers.



The Narrows Power Plant of the Virginian Railway Has Excellent Facilities for Obtaining Fuel and Water, Being on the New River in the Heart of the Coal Region

The power plant building is constructed of brick and concrete. The boiler room is 217 ft. long, 62 ft. wide and 91 ft. high, giving room for six boilers, five of which are installed. The boiler ash pits, pulverizing mills and feed water heaters are located at ground level. A mezzanine gallery, 23 ft. above the lower floor, provides space for the pulverizer exhausters, the feeder blower fans and future coal-drying units. The main operating floor is located 36 ft. above the lower floor. A mezzanine gallery is located at the rear of the boilers, 12 ft. above the main operating floor, and provides access to the rear of the boilers for the removal and replacement of tubes. The electrical bay has two floors above the ground level and provides space for the high-tension bus and switch gallery, the switchboard control gallery, a machine shop, tool room, storage battery room, toilets, and administrative offices.

The relative areas required are shown in the table below. All allowances, including space for pulverizing units, are included.

A basement under the turbine room and electrical bay, 32 ft. below the ground floor, provides space for condensers, circulating pumps, condensate pumps, boiler feed pumps, house service pumps, filtration plant and storage space for plant supplies. A mezzanine gallery 18 ft. below the ground floor provides space for possible future reactance coils for the main turbo-generators and for a 440-volt switch gallery.

The two reinforced concrete stacks are 25 ft. 8 in. outside diameter at the bottom and 16 ft. inside diameter at the top, and rise 285 ft. above the concrete footings, making a total height of 376 ft. above the bottom of the ash pit.

The plant has been designed for the use of "bone" coal, with provision for burning high-grade bituminous coal from the mines served by the Virginian Railway, or a mixture of the two. The total annual net output of the plant should be approximately 120,000,000 kw.-hr., and the average daily fuel consumption will be approximately 390 tons of "bone" coal, 275 tons high-grade bituminous, or 320 tons of a 50 per cent mixture.

	Area, Sq.Ft.		
	Total	Per Boiler-Hp.	Per Rated Generator Kw.
Ground area of boiler house building	13,500	1.77	0.34
Floor area of boiler house	32,800	4.3	0.82
Floor area of turbine room	11,500	....	0.29

A coal siding is provided for storage of 25 to 30 cars leading to a track hopper, which will receive coal either directly from cars or from outside storage. The coal-handling equipment is designed for a capacity of 85 tons of coal per hour.

The coal is first crushed and then is carried to a flight conveyor leading to six bunkers or is discharged into a chute leading to outside storage. From the bunkers the coal goes to the pulverizing equipment on the lower boiler room floor. Screw conveyors deliver the pulverized coal to bunkers.

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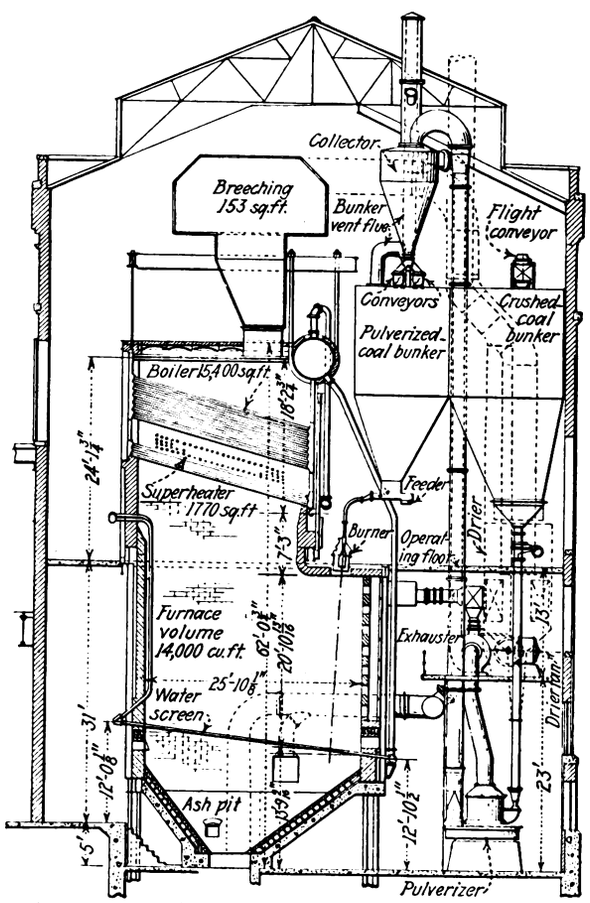
Boilers are of the cross-drum horizontal water-tube type, built for 325 lb. pressure. They are arranged in a single row, with independent settings extending from the lower boiler room floor upward 62 ft. to the top of the boilers. An operating gallery is located 36 ft. above this lower floor and is so arranged that the operating forces have complete control of the boiler operation from one level.

The superheaters are of the inter-deck design, built for pressure of 320 lb., each having 1,770 sq.ft. of heating surface. They give 150 deg. of superheat when the boilers are operating at 160 per cent of rating.

The pulverized fuel is introduced into the furnaces by a screw feeder to ten burners so mounted as to feed it vertically into the boiler at the top of the furnace. Air at a pressure of 15 in. of water is admitted at the feeder outlet, and serves as a vehicle for carrying the finely divided coal into the furnace and imparting sufficient velocity to project it to the bottom of the furnace. The greater portion of the total air for combustion is induced by natural drafts through the air inlets at the front of the furnace at right angles to the vertical stream of coal. The flame travels downward until the lower zone of the furnace is reached, at which point the downward velocity is lost, and the flame doubles back on itself and flows upward at the rear of the furnace to the boiler heating surface, thus giving it a travel of 50 ft. and allowing sufficient time for complete combustion in the furnace proper. The refuse resulting is a finely divided granular ash, which is carried away by a sluiceway into the river.



Compactness in the Boiler Room Is Obtained by Increasing Its Height. Arrangements for Firing Pulverized Coal Should Be Noted

The automatic control for regulating the supply of fuel and air is actuated by the steam pressure. A falling pressure operates a motor-driven contactor, increasing the flow of coal and air, while a rising pressure reduces it. The master contactor may be by-passed and hand push-button control substituted when desired.

Four Turbo-Generators Are Installed

Four main turbo-generator units have been installed, each of 10,000-kw. capacity, 25 cycles, three-phase, 11,000 volts, having direct-connected exciters. The turbines are of parallel flow type, operating at 1,500 r.p.m. at 275 lb. steam pressure and 150 deg. superheat. They are guaranteed for a maximum economy of 12.48 lb. of steam per hour, when delivering 10,000 kw. at 80 per cent power factor, and with a vacuum of 29 in. The turbines are connected through a pin-type flexible coupling to the generators, each of which is designed for a continuous full-load rating of 12,500 kva. at 80 per cent power factor, and will carry, following continuous full-load operation, a load of 15,000 kva. at 80 per cent power factor for one hour, and 18,750 kva. at 80 per cent power factor for five minutes following the operation at 15,000 kva., without exceeding a safe operating temperature. A 125-kw., 250-volt direct-connected exciter is mounted at the end of each generator.

The 300-kw. auxiliary turbine is of the impulse type and is direct connected through a reducing gear to a three-phase, 440-volt a.c. generator, a 100-kw., 250-volt d.c. generator and a small d.c. exciter. The 440-volt a.c. generator supplied power for the operation of the auxiliary equipment during the starting up of the power plant and is available for special service during regular operation. The 100-kw. d.c. generator can supply excitation to any one of the main units in the event of failure of the direct-connected exciters.

Each turbine has a surface condenser, with circulating water pump, a two-stage air ejector, and a condensate pump. The condensers are of the two-pass type. For the operation of the condensers, 20,000 gal. of water per minute is supplied through an intake tunnel taken from the upstream side of the power plant.

One phase of each generator is connected to the primary of a 10,000-kva., single-phase, 9,800/88,000-volt step-up water-cooled transformer. A three-phase, 11,000-volt bus is provided for synchronizing and for supplying power to the station auxiliary transformers. Each step-up transformer secondary is connected through an oil circuit breaker to the 88-kv. bus, which is divided into two sections with two step-up transformers connected to each.

The electrical operating gallery contains the necessary control devices. A small balcony projecting into the turbine room allows a view of the turbine room and provides space for the power director's desk in front of the control bench board. The main control and instruments are arranged on seven desk and vertical panels facing north, and the main relays and watt-hour meters on seven corresponding vertical panels facing south.

An independent rheostatic type voltage regulator is provided for each generator, the regulator receiving potential from a generator potential transformer being connected across the traction phase. The regulators are compensated to give a drooping characteristic with increase in generator wattless current, insuring parallel operation, and to give a rising characteristic with increase of watted component of generator current, compensating for drop due to step-up transformer impedance and for part of the transmission line drop.

The three auxiliary transformers are connected to the 11,000-volt bus and are each 1,200-kva., 11,000/440-volt three phase. The entire load can be carried by

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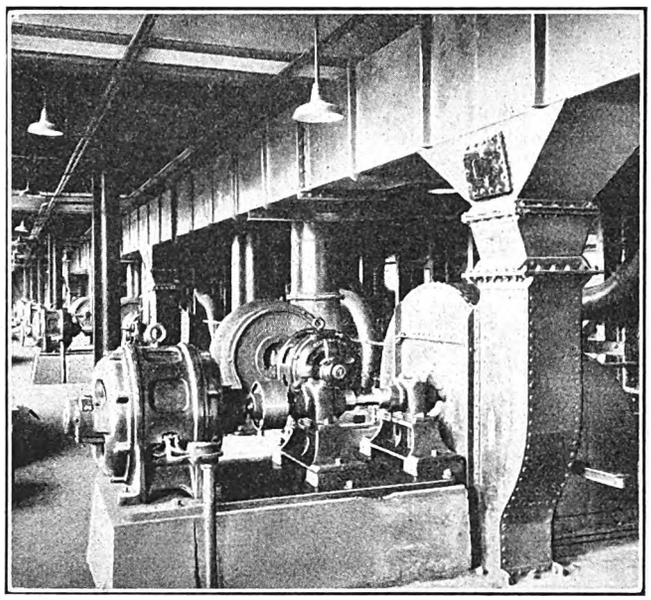
two transformers, leaving the third in reserve. A further source of auxiliary power is the 300-kw., 440-volt, three-phase turbine-driven generator previously described.

The 11-kv. oil circuit breakers and the 88-kv. transformer oil circuit breakers are not automatic on overload. Protection against internal fault in any generator or transformer of 1,200 kva. or larger is accomplished by differentially connected current transformers and over-current relays. In case of generator or step-up transformer internal fault, the connections are such as to open simultaneously the generator 11,000-volt oil circuit breaker, the generator field circuit breaker and the transformer 88-kv. oil circuit breaker. Internal fault on one of the 1,200-kva. transformers will open simultaneously the 440-volt and the 11,000-volt auxiliary transformer circuit breakers. Internal fault on one of the 3,750-kva. step-down transformers will simultaneously open the tie circuit breaker and the 88-kv. circuit breaker connected to that transformer.

A 220-ohm resistance connected between the step-up transformer neutral bus and ground limits to 200 amp. maximum the current in case of a grounded transmission line. Each 88-kv. transmission line oil circuit breaker is opened automatically in case of a ground on its line by a low-energy over-current relay so connected in the current transformer secondary circuits as to receive current only in case of ground. Over-current relays open the 88-kv. transmission line circuit breakers in case of transmission line short circuit.

The water rheostat circuit breakers and the 88-kv. circuit breakers feeding the step-down station have short circuit protection by over-current relays.



A Part of the Pulverized Fuel System, Showing Blower for Supplying Air to the Burners

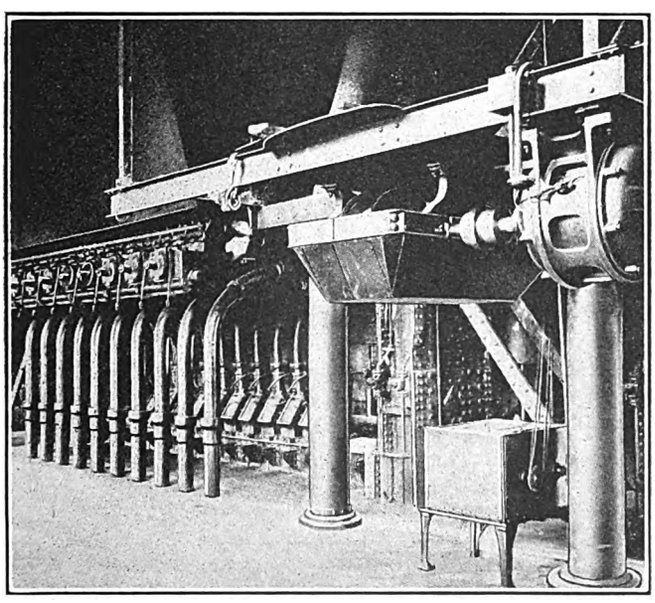
Excessive temperature, failure of water supply, or pressure relief diaphragm failure on any transformer will ring a bell on the electrical operating gallery and operate an annunciator drop, indicating which transformer is involved.

The outdoor transformer and switching station includes auxiliary and lighting transformers, main step-up transformers, and the 88-kv. transmission line lightning arresters. It also includes the step-down transformers for feeding the trolley at Narrows and the necessary switching equipment. There are duplicate 88-kv. electrolytic lightning arresters, one for each pair of transmission lines.

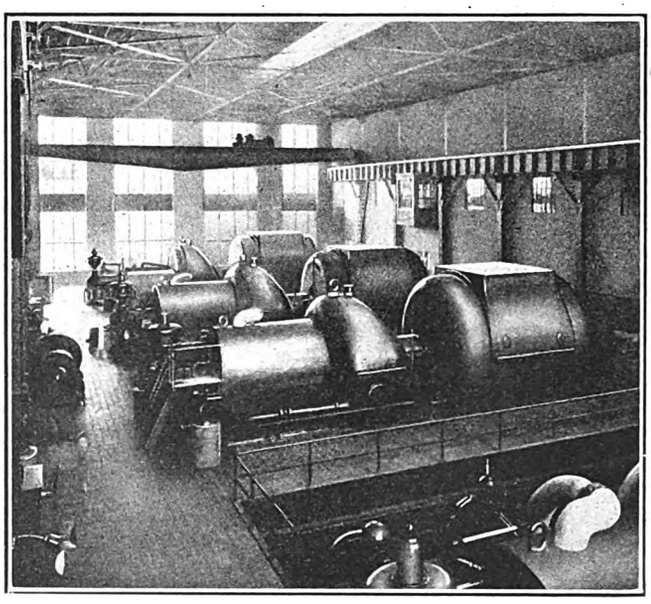
The four main step-up transformers are 10,000 kva., 9,800 to 88,000 volts, 25 cycles, single phase, oil insulated, water cooled. An additional full capacity tap gives a ratio of 9,310 to 88,000 volts. They are designed to carry 200 per cent load for five minutes following 150 per cent load for one hour without exceeding safe temperature, and will withstand without damage a short circuit on the secondary terminals with normal voltage maintained on the primary terminals, providing the duration of the short circuit is not sufficient to cause injurious heating. Each transformer has an inherent reactance of approximately 8 per cent at normal rating.

The station auxiliary transformers are each 1,200 kva., three phase, 25 cycle, 11,000/440-volts, oil insulated, water cooled. The primary winding is provided with eight additional full-capacity taps ranging in 2½ per cent steps above and below 11,000 volts. Each transformer has an inherent reactance of approximately 12.2 per cent at normal rating.

The electric locomotives used are of the split-phase type and provide automatic change from motoring to



Feed for the Pulverized Fuel. A Reeves Drive, with Bailey Control of Speed of Burners and Draft



Four 10,000-Kw. Turbo-Generators Are Installed in the Narrows Plant and Space Is Provided for a Fifth

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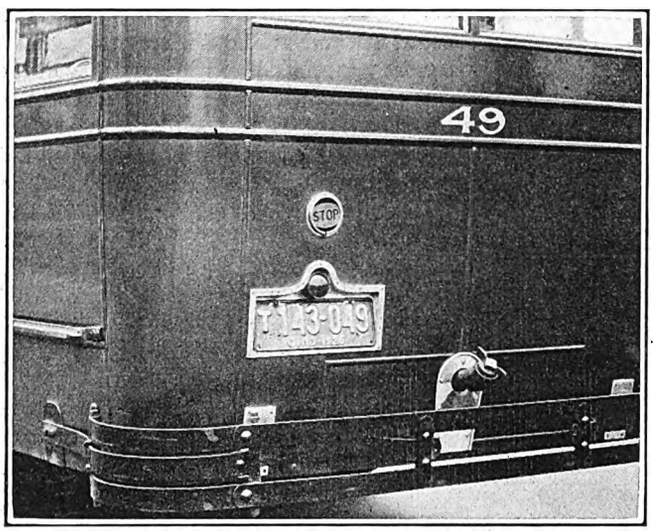
regeneration as the grade changes, without action of the engineman other than a movement of a lever operating the transformer balancing switch. The regenerated power is returned to the substations and finally to the Narrows power plant, where any excess is absorbed by a water rheostat consisting of electrodes immersed in the river.

The electrical apparatus was furnished by the Westinghouse Electric & Manufacturing Company as a part of its general contract for apparatus for electrification of the railway. The power plant was designed and constructed by Gibbs & Hill, consulting engineers of New York City, as a part of their work as engineers of the electrification, under the general supervision of H. Fernstrom, chief engineer of the Virginian Railway, and Hugh Pattison, engineer of electric traction.

Many New Features on Youngstown Municipal Coaches

RECESSED number plates, such as are now required in certain states, are used on the latest coaches to be put in operation by the Youngstown Municipal Railway. A cast aluminum frame is set in the body, as shown in the illustration, reproduced herewith, into which the standard license tag is fastened at a slight angle with the vertical. The tail light, just above, has



New Features Protect Against Rear-End Bumps

New Youngstown Municipal coaches have recessed number plates, combined with tail lamps. A guard rail at the side protects against damage due to sidewiping in traffic. Wire glass is also used in the two rear windows, so they will not shatter in case of a serious collision.

its lower part covered with a flexible transparent strip that allows the plate to be fully illuminated at night. In this way the tail light and plate are not exposed to damage from rear-end collisions. The rear bumper, constructed of spring steel, is adequate protection against minor rear-end collisions.

At the side is seen the end of a small steel rail designed to protect the aluminum panels from damage due to sidewiping. Before these rails were added it was almost impossible to avoid scratched or dented plates. While the last lot of ten coaches delivered this year were constructed in this manner, the old coaches are being rapidly equipped with these rails.

The two rear windows are also set with wire glass to avoid shattering in case of a serious rear-end collision.

Women Employees Can Be Helpmates in Utility Organizations

BY ALICE SCHUETZE
San Antonio Public Service Company, San Antonio, Tex.

SEATED behind a polished desk and answering to the name of "manager" or "superintendent," a well-dressed young woman is a bit out of the ordinary, isn't she? The fact that women liked business, were making a success of it and were there to stay has been hard to recognize. It seems as though a new discovery has been made. Women in public utility work can fill many positions other than those of typists and stenographers. Of course, they will always make the best typists, but why not utilize their natural abilities to bring more far-reaching results?

There is a plan in effect in some companies whereby all women in the utility companies are organized. They are taught the standards and policies of their company. They are made thoroughly familiar with their company and are able to tell the public about one and two man operated cars, the use of buses, costs of operation and many details regarding schedules. They are taught to speak distinctly and courageously and, after learning their lessons, to use their natural ability to talk and spread their knowledge of their company to public gatherings.

They are sent to schools and to make talks to the children on safety of riding to school on street cars and buses. They are sent to mothers' clubs and civic organizations, where they stress the points of economy and cleanliness as well as safety of our common carriers to the mothers. What mother will not listen to a talk about anything safe and reliable as well as economical, especially if it is in the interest of her children?

We hear a great deal about traffic congestion. Women are easily impressed, so what better plan could be devised than to reach them through their clubs, their schools and their civic organizations and impress upon them the value of leaving their autos at home, or at least on a side street where there are no street cars, when they do their shopping? Show them the reason for so many accidents, to say nothing of the loss of time and money, by parking in front of retail stores. Incidentally, who but a wife could persuade friend husband to do likewise?

Education costs money, and it will take time before the plan for placing the woman employee before the public can be successful. There is the chance of our women leaving the industry for marriage, which seems a loss of time and money to some of the officials. But it cannot be a total loss, for they will continue to carry the message on to their neighbors, their club members, their families and their friends. Women are realizing the responsibilities of their positions more every day and are no longer feeling as if they were working for their manager, but rather with him for their company. This makes each of them proud of her position, anxious to become a better employee, and consequently bring about better co-operation among the employees as a whole.

The organization of women is young and inexperienced. Some managers are skeptical and will not even try out the plan. The only suggestion that can be offered is to give it a fair chance, help it along and the company will be returned threefold for its patience and its expense.

On our property in San Antonio the women's work is

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being given more than a chance. It has the encouragement of all the officials as well as the full co-operation of all the girls. So far the most important accomplishment has been to educate them through lectures by various department heads. Many questions have been asked and essays written by the girls. At one of our meetings five young women prepared five-minute talks on "What I consider the best way of increasing street car riders," thereby getting a woman's view of what was needed to gain revenue. At this meeting the officers of the transportation department were present and later remarked that every idea was practical, as well as new.

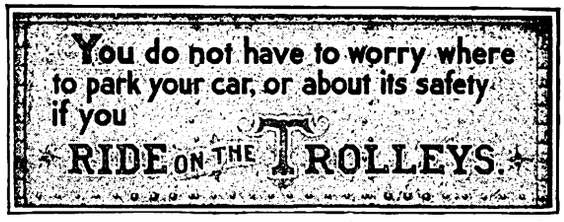
It has been only recently that the women of our company have been placed before the public as spokesmen for the company. We have a representative in the largest professional women's club in the city. A very successful pageant of "Fifty Years of Progress" was given to some 500 employees. A dialogue between a company clerk and an irate customer is being proposed and is nearly ready for presentation.

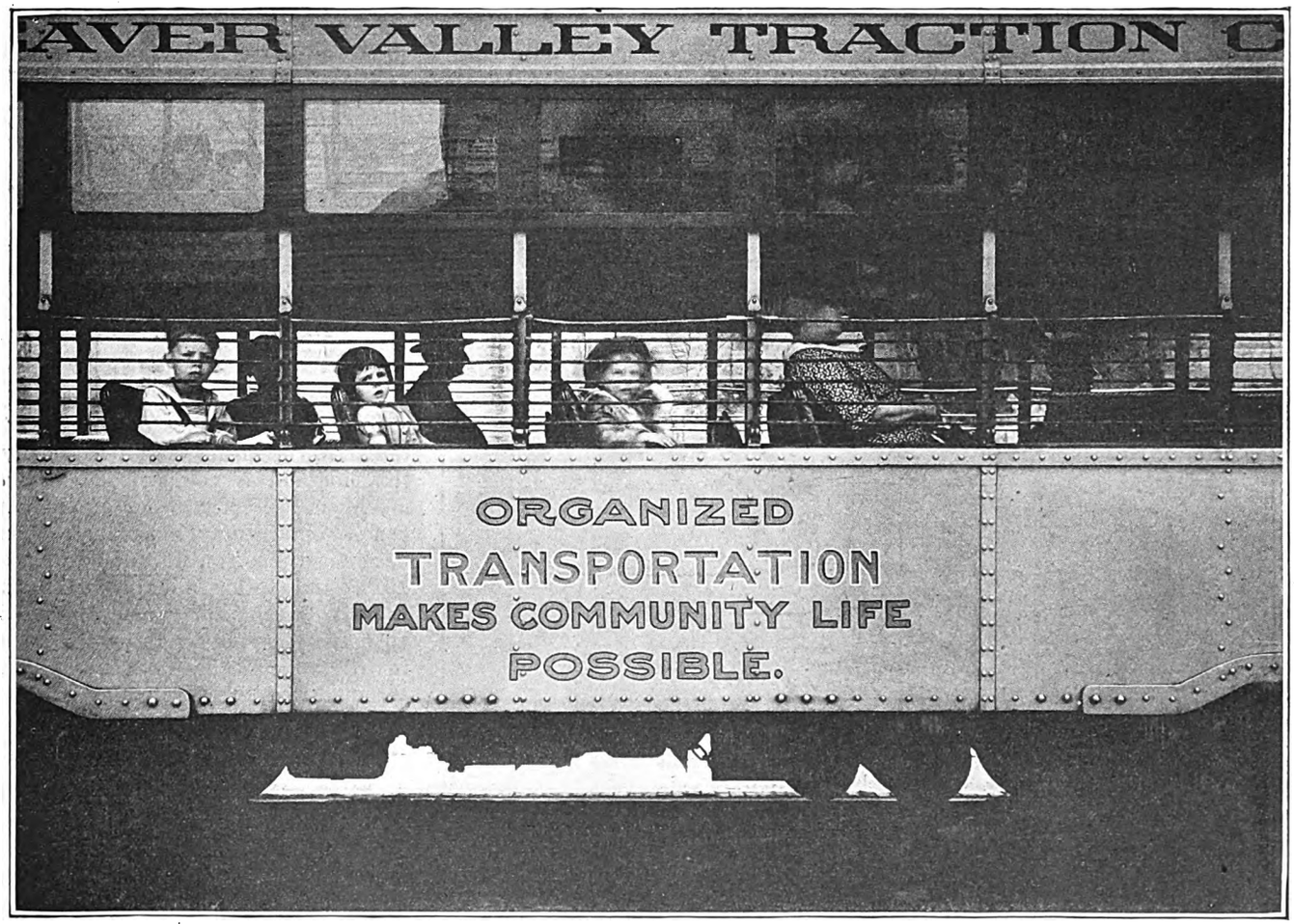
Within the next few months the company is planning to send more women to speak before clubs. A course in public speaking has just been completed which helped a great deal, and in the fall we plan to continue this work in preparation for a more extended contact with our patrons.

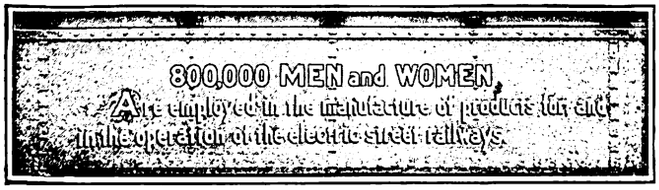
Some one has said that a chain is as strong as its weakest link. Strengthen the women employees and better relations with the public will certainly result, since women form one of the greatest group of our street car patrons. Satisfy your women patrons by letting a woman employee tell the company's story.

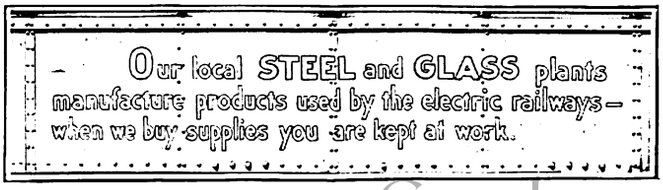
Beaver Valley Traction Again Employs Advertising Slogans

THE opportunity open to all traction companies to employ the most direct of all possible advertising mediums, namely, the trolley cars themselves, has again been recognized by the Beaver Valley Traction Company, New Brighton, Pa. The accompanying illustrations show the various slogans which the company has painted on its cars in order to educate the public to a realization of the indirect, as well as the direct, value of the company's service.









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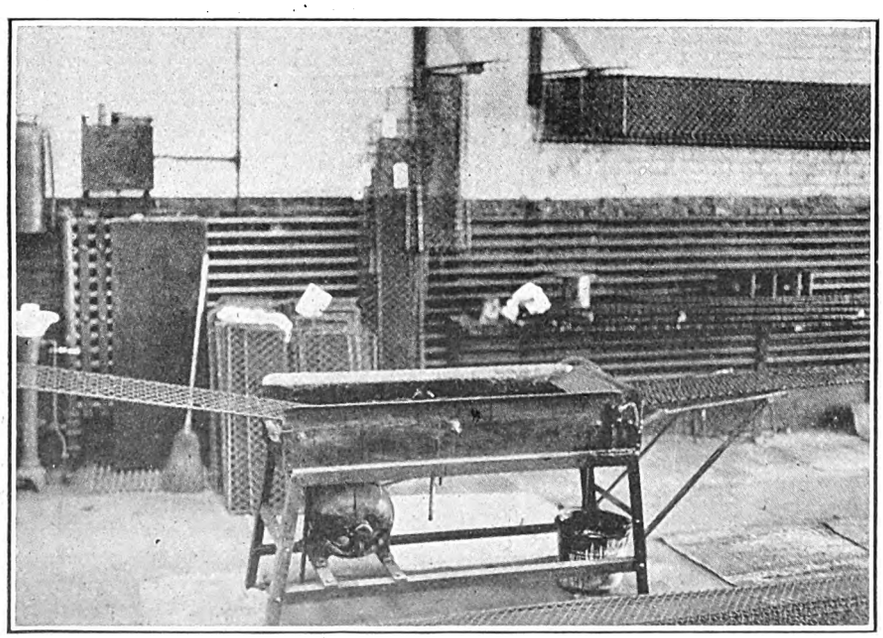
Maintenance Notes

Window Guards Painted by Machine in Cleveland

PAINTING heavy wire mesh window guards always was a messy job in the Cleveland Railway shops until Terence Scullen, master mechanic, developed a simple device to do this quickly and completely. As can be seen in the view, a trough is partially filled with black paint. The window guard to be painted is pushed by hand into the left end of the trough and under a roller, the support of which can be seen in the center of the trough. This bends the guard down slightly, dipping it into the paint. The guard is then pushed beyond this roller and it strikes the sloping bottom of the tank, bending it upward and between two brushes at the right-hand end of the tank. Theses brushes are revolved rapidly by means of a motor mounted underneath and connected to them by a belt. After the window guard is pushed partially through this device a workman grapples it on the painted side with an iron hook and pulls it through the rest of the way. The window guard is thus dipped into the paint, the surplus being brushed off as it emerges. After painting, the guards are hung up on racks for drying, as can be seen in the background.

Window guards extending the full length of the car can be painted in a few seconds by this machine.



Window Guards Are Painted in a Few Seconds in the Cleveland Shops by the Use of This Paint Tank. As the Guard Emerges the Motor-Driven Brushes at the Right-Hand Side Thoroughly Brush the Paint Into All Parts of the Guard and Remove the Surplus

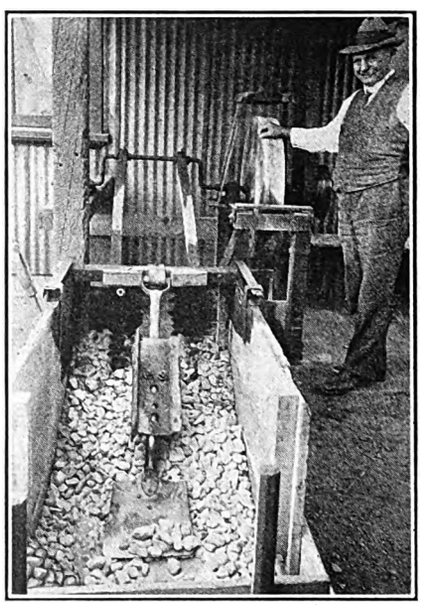
Testing Track Department Shovels

MANY shovels are purchased each year by the Los Angeles Railway, Los Angeles, Cal. Different types are offered by the various manufacturers, so in order to decide the best type for the railway company's use, a machine for testing shovels has been developed. Each shovel is tested in this machine before purchases are made.

The shovel-testing machine consists of a bin of heavy planking, with a slide or crosshead arranged at the top at one end. In operation this slide is given a reciprocating movement by two connecting rods attached to a crankshaft driven by belts from one of the shop line shafts. A large grindstone acts as a flywheel for this crankshaft.

To test a shovel its handle is fastened to the reciprocating crosshead of the testing machine and a heavy piece of rail is attached securely to the handle. A quantity of loose rock is placed in the bin. The reciprocating movement of the crosshead forces the shovel into the loose rock and withdraws it in a manner similar to actual service conditions. After a shovel has been connected the machinery is set in motion and is allowed to run until the shovel breaks down in some way.

The wear on the blade is measured, and the number of hours that the shovel is on test is recorded. By this method a comparison of the merits of different types of shovels can be obtained. This machine has been used almost continuously since 1914, and tests in the field with shovels purchased when compared with the showing made by the tests in this machine have indicated that the method is very reliable.



Shovel Testing Machine Used by the Los Angeles Railway

"Enter Front-Rear" Signs

AS THE cars of the Springfield Street Railway, Springfield, Mass., are operated over various types of routes, embodying both heavy and light traffic and under one and two man operation, it was considered desirable to develop a simple sign which would inform the patrons whether entrance to the cars should be by front or rear doors. Accordingly, a metal sign has been mounted on supports placed on the right sides

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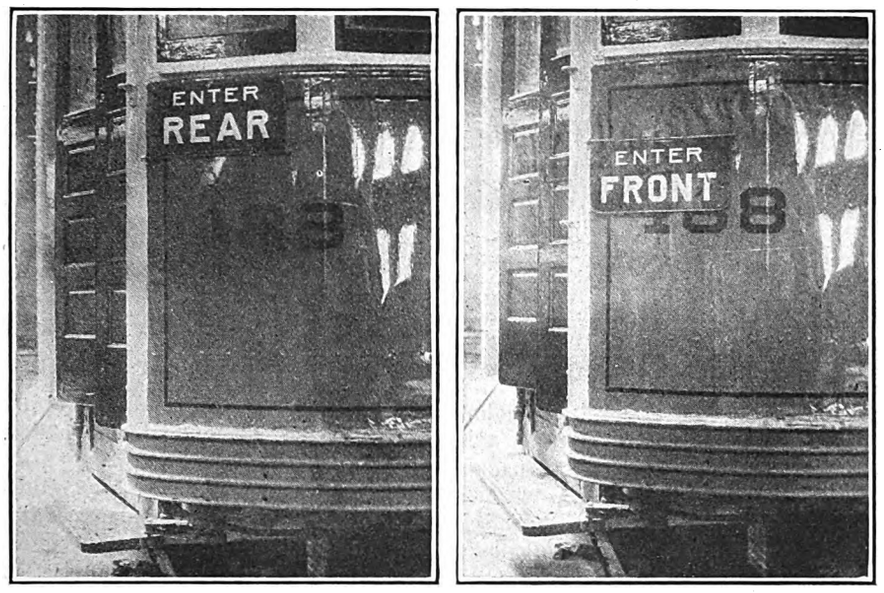


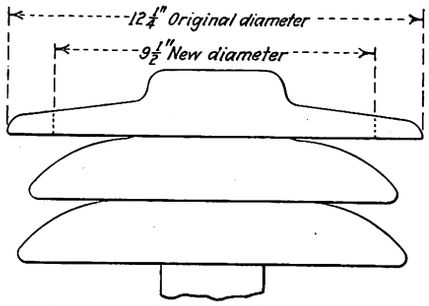
The Two Positions of the Signs Are Shown Here, Together with the Messages Which the Positions Convey

of the dashers. When the sign is in the down position it indicates that entrance shall be by the front door and when in the up position the opposite is true. A clip is provided to hold the sign in the up position when desired.

The signs are painted with yellow lettering upon a black background, thus being of a sufficiently arresting nature to attract the attention of patrons. Stencils are used for the painting, after which the signs are finished with a coat of protecting varnish. All of the cars on the Springfield system are equipped with holders for these signs, excepting, of course, the open cars, which are used only in the summer and to which the injunctions "Enter Front" or "Enter Rear" would be inapplicable.

Preventing Water Grounds on Insulators

FOR insulation at the operating potential used by the New York, Westchester & Boston Railway of 11,000 volts, the cable running from the pantograph trolley to the car transformer is supported on double petticoat insulators. The maximum diameter of these insulators is 11½ in. A metal cap at the top is 12¼ in. in diameter so that it extends over the edges of porcelain. Some trouble was experienced during heavy rains from grounding due to the water running in a continuous stream from the metal cap to the car roof, the distance from the edge of the cap to the supporting base on the roof being about 7 in. Troubles from this source have been overcome by turning off the edge of the metal cap so as to reduce its diameter to 9½ in. With the reduced diameter of the cap the water drips down onto the insulator and the stream is broken before it reaches the roof, so that grounding is prevented.



By Reducing the Diameter of the Metal Cap Used with Double Petticoat Insulators for Supporting High-Tension Cables on Its Cars, the New York, Westchester & Boston Railway Has Prevented Grounding

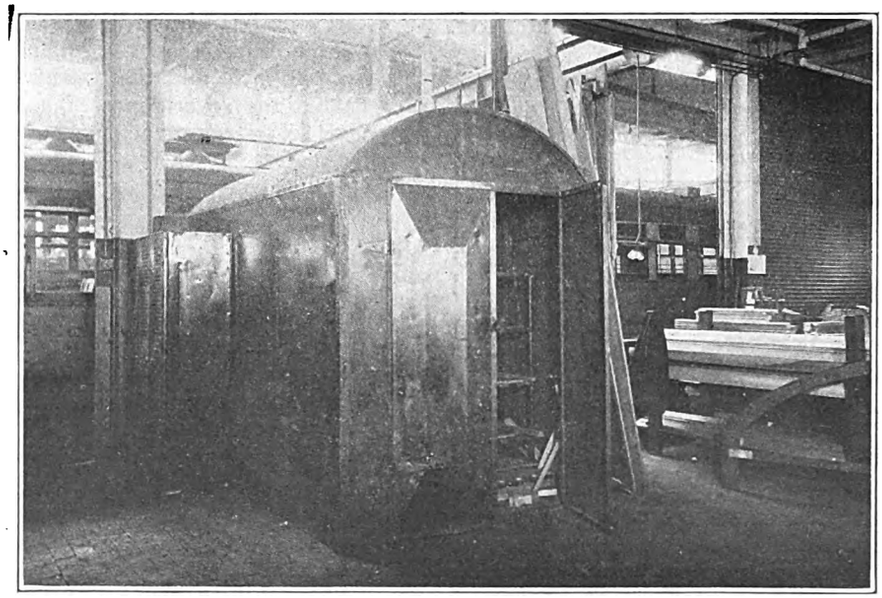
Moving 576 Iron Trolley Poles

WHEN the officials of the city of St. Louis, Mo., decided to embark upon an extensive street widening program the United Railways in that city was confronted with the task of moving 576 iron trolley poles back from the curb line. In some sections of the city where streets were narrow and traffic conditions very heavy the construction gangs worked under very trying conditions. These poles were moved without interrupting the trolley service and without any serious accidents.

Tower trucks of the line department were equipped with gibs to which block and tackle were attached for hoisting and shifting the poles to their new locations. In addition to these there was necessarily a large amount of detail work which included the transferring of pole attachments, installing new feed wires and the lengthening of guy lines. The pole shifting was done on five streets and the cost to the railway was approximately $12,865. About 50 men were used during the progress of the work.

Oven Keeps Wood Stock at Gluing Temperature

STEAM heat is used in a sheet steel oven installed in the cabinet section of the Department of Street Railways, Detroit, Mich., for keeping wood stock to be glued at a temperature suitable for the gluing process. This oven was built in the company's shops. It is 6 ft. high, 10 ft. long and 6 ft. wide. One end



Sheet Iron Oven Installed in the Wood-Working Section of the Department of Street Railways, Detroit, for Keeping Wood Stock at a Temperature Suitable for Gluing

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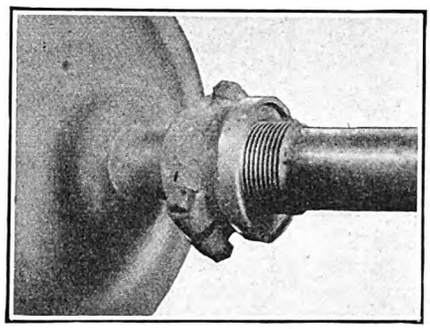
has hinged double doors. Inside a pipe rack is arranged to hold different classes and sizes of wood. Not only has this oven been found convenient but it is a great time saver in facilitating the gluing, as the oven is located in the cabinet section. Pieces can be placed inside as desired and much time is saved in the gluing operation. When the work is completed a much more satisfactory job is obtained.

Threaded Axle Collar

CONSIDERABLE difficulty was experienced by the Levis County Railway, Levis, Que., with the loosening of axle collars, resulting in excessive end play of the motors. To remedy the condition H. E. Weyman, manager, and D. Chenard, master mechanic, devised the collar illustrated. The seat on the axle and the split axle collar are threaded. The collar is screwed up as tightly as needed to place the motor in alignment. Tightening the holding bolts of the collar secures it so that no loosening can take place.

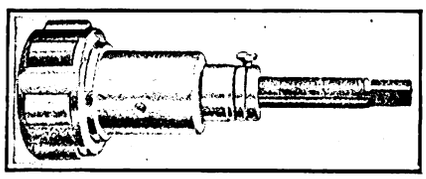


Loosening of Axle Collars Is Prevented on the Levis Tramways by Threading Them

New Equipment Available

Expanding Bushings to Provide Tight Fit

BRASS bushings and bearings in rods or housings can be inserted by a new method called the Faessler-Maupin process, which is claimed to offer an improved means over that of inserting an oversized bushing and forcing it into place. The old method is said to leave bushings soft and spongy, while the pressing frequently forces the inside hole out of shape so that reboring is necessary. The new process uses a combined expander and roller for this work, which is manufactured by the J. Faessler Manufacturing Company, Moberly, Mo. When installing a bushing by this process it is first turned on the outside to an easy driving fit or loose enough to enter the hole by hand.



Roller Type Expander Used for Applying Bushings

The hole in the bushing is bored a trifle smaller than the pin diameter on which it is to fit. Experience in the application of these bushings has shown that for a 5-in. diameter pin the hole should be bored 4⅞ in.

After the bushing is inserted in the rod the expander and roller is entered at one end to about one-half the depth of the rollers. The mandrel is turned and its construction causes it to feed lengthwise as the turning progresses. This forces the rollers outward until they bear against the inside surface of the bushing, when the mandrel will begin to turn hard. An adjusting stop on the mandrel is set against a thrust ball bearing on the cage end, which locks the mandrel so that the rollers will maintain the desired diameter. By continuing to turn the mandrel to the right the tool travels lengthwise through the entire bore of the bushing, gradually expanding its entire length. After withdrawing the tool the diameter of the roller is increased slightly and the operation is repeated for several passes until the bearing has been rolled to the desired size.

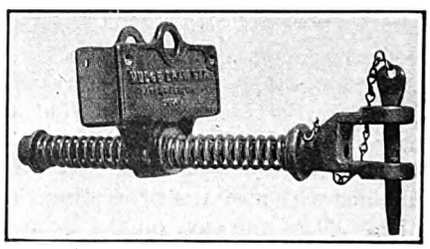
The tools provide for adjustment of size in graduated measurements of 0.0001 in. and the finished hole is said to be absolutely true both circumferentially and longitudinally and is finished with a smoothness of surface that cannot be obtained by boring. Another advantage claimed for the process is that a portion of the lubricant used in the rolling is forced into the pores of the metal. This assists in improving the operation of the bushing.

It is claimed that the gradual rolling and expanding during the process insures an absolutely tight fit along the entire outside surface of the bushing and eliminates all danger of its coming loose while in service. Tests on bushings installed by this process showed that it required pressure of 20 tons to start a brass from a 5-in. bushing.

The pressure expanding and rolling tools used in this process are made in sizes of ¾ in. up by steps of ¼ in.

Spring Drawbar for Railway Section Cars

JERKS from starting and stopping of a motor car coupled to a trailer, such as are used in section-work on electric interurban lines, are eliminated by a new type of spring drawbar just placed on the market by Mudge & Company, Chicago, Ill. This drawbar was designed particularly for use with small electric motor cars and trailers. It consists of a steel bar attached to a hanger which is bolted to the underframe of the car. Surrounding the bar on each side of the hanger, back and front, is a special coil spring. When starting under load the spring compresses, giving the motor car several inches start and consequent momentum.



Spring Drawbar Designed to Eliminate Jerks and Slams

With this drawbar in use the motor car is not forced to start a heavy load from standstill, but it is moving when the load is taken hold of. The frame of the drawbar transfers the load gradually as the car gains momentum instead of with a jerk as is sometimes the case with rigid drawbars. In stopping, the spring on the other end of the drawbar is compressed, which prevents the trailer from crashing suddenly against the motor car frame.

The new spring drawbar eliminates the jerk at the start and the slam at the end of the run and so makes starting and stopping easier. It also eliminates wear and tear on the equipment. The drawbar is designed so that it can be applied to motor cars and trailers of different height, the difference in height being taken care of by changing the position of the U clamp.

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American Association News

Many Cars to Be Shown

SPACE for the Cleveland exhibit is being contracted for rapidly. Yesterday Director of Exhibits Fred C. J. Dell stated that contracts have been received from 228 exhibitors for a total of 116,415 sq.ft. of space. This is far in excess of any previous exhibit held in connection with a convention of the American Electric Railway Association.

Fourteen exhibitors are arranging to show electric railway cars. Of these six are railway companies. It is anticipated that the Cleveland Railway will have an exceptionally fine exhibit.

"All car exhibitors should bear in mind the delays incident to freight shipments," said Mr. Dell. "It will be possible to place the cars in position on the exhibit tracks any time after Sept. 20, when the construction will be finished.

"In case any exhibitor desires to ship a car to arrive in Cleveland earlier than Sept. 20, I understand the Cleveland Railway will store it on the company's tracks without additional charge, and will move it into the exhibit space when that is ready. This will insure having the car in Cleveland and give plenty of time to do any necessary work to set it up and inspect it, particularly if it has required partial dismantling for shipment.

"It would not be a bad idea to have an attendant ride with the car on its railroad journey. This would insure correct routing and prevent careless handling with possibility of damage."

Mr. Dell expects to leave New York for Cleveland about the middle of September, and from that time on will be in personal charge of the exhibit. It is expected that the progress of the annex will be such that it can be turned over to the exhibit committee today, or at latest early next week.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Sept. 9—Central Electric Railway Master Mechanics' Association, annual convention, Hotel Rieger, Sandusky, Ohio.

Sept. 10-11—Central Electric Traffic Association, annual meeting, Yellow Banks Hotel, Webster Lake, Ind.

Sept. 17-18—Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.

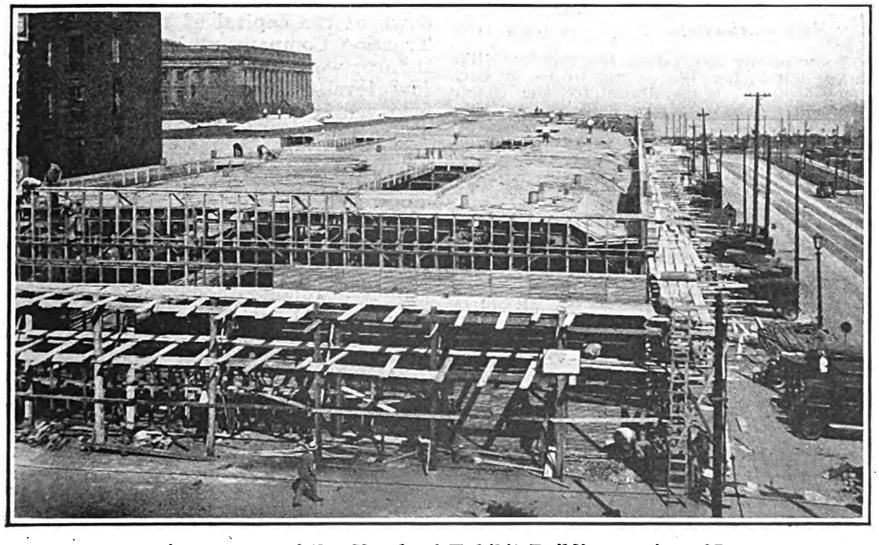
Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

November 16-19—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.

Much Progress in Cleveland Last Week

SINCE the picture reproduced in last week's JOURNAL was taken, the scene of the new exhibit building for the A.E.R.A. convention has been transformed. All the steel has been erected and the studding is all up. The roof is complete, the skylights and stucco work are 50 per cent done and 80 per cent of the floor is laid. The connection to the steam railroads is in and the Cleveland Railway tracks on the extreme right are completed and paved.

This view, taken Aug. 27, was from approximately the same point as the previous ones, but the building is now of such proportions that other exhibit facilities in the area cannot be seen.



Appearance of the Cleveland Exhibit Building on Aug. 27

Reach Cleveland Sunday

MONDAY, Oct. 4, the opening day of the A.E.R.A. convention, has a full program scheduled, covering all the associations. The first American session will begin at 10 a.m.

It is urged by the executive committee that all delegates who can should plan their itineraries so that they can reach Cleveland Sunday, Oct. 3. This will allow them to get comfortably settled and so avoid congestion at the registration booth and delay in reaching the meetings on Monday.

Bring Your Clubs to Cleveland

GOLF at the Cleveland convention will be somewhat unconventional. In days gone by it has been the custom to hold an official tournament on the Sunday preceding the convention. This, however, scarcely whets the appetite of an inveterate player, while it does crowd the local courses to the exclusion and discomfort of club members. The official tournament will, therefore, be dispensed with this year. Delegates and guests will be given opportunity to play in their own time and fashion without the usual congestion and delay.

There are many splendid private courses in and about Cleveland. The committee in charge will make arrangements for the delegates to play these various courses, thereby "distributing the load." There are also a number of public and semi-public courses, so that on Sunday or at other times outside the periods set aside for convention business and inspection of exhibits golf in all its forms and under "all operating conditions" may be thoroughly enjoyed.

Mayors Invited to Convention

MAYORS of all cities of 25,000 population or over are being sent individual invitations from President Frank R. Coates of the American Association to attend the Cleveland convention and exhibit. In his letter Mr. Coates points out the educational value of the exhibits to public officials, and the even greater interest to them in the questions to be discussed in the sessions, primarily the perplexing traffic problem.

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The News of the Industry

Modernization in Memphis

First of Thirty-two de Luxe Cars in Service—Public and Newspaper Reaction Favorable—Full Publicity to the Event in Company Advertising

THE new electric rail coaches, operated by one man, have been received with favor by the public of Memphis, Tenn. Thirty-two coaches of the low-level, double-truck, semi-noiseless type were recently purchased by the Memphis Street Railway and twelve of the new model cars have been placed in service on one line of the system. The remaining twenty have been received, but are now being conditioned for service at the company's shops.

The cars represent an investment of $475,000 in additional equipment for the company's rolling stock. Numerous automatic and safety features are embodied in these cars. The exit doors, both front and rear, are automatically operated by a treadle that goes into action when the passenger steps on it, but only when the car is at a complete stop. The step slowly folds up when the passenger alights.

The cars are equipped with deep de luxe seats, upholstered in taupe plush, with Nachmann spring units.

A 9-in. numeral displayed above the right window on the front of the car indicates the route or line on which it operates.

Mosaic rubberoid tiling, ¼ in. thick, laid on a ½-in. thickness of Celotex, which rests on a ⅞-in. wood floor, helps to deaden sounds emanating from the trucks, rendering them semi-noiseless.

Rex metal sash increase the size of the glass and render it easier to operate the windows.

Pneumatic rotary gongs and electric registers are governed by a pedal by the operator.

Five 100-watt lamps afford illumination.

Artistic painting, "streamline effect," both interior and and exterior, gives an unusually attractive appearance to the cars.

Shipment of the cars was made direct from the St. Louis Car Company, St. Louis, which built the bodies. The electrical and air brake equipment was furnished by the General Electric Company, Schenectady, N. Y. The trucks were furnished by the J. G. Brill Company, Philadelphia; the wheels by the Southern Wheel Company, Pittsburgh, Pa.; the automatic step and door equipment by the Safety Car Devices Company, Chicago. Other details of the car were published in the JOURNAL for Aug. 21, page 330.

NEWSPAPER COMMENT FAVORABLE

Each of the newspapers of the city, following installation of the cars in service, reported the first day's operation, showing favorable acceptance.

On the second day after the service started the *News-Scimitar*, an afternoon publication, had a long editorial regarding the cars. The comment opened with these remarks:

> Wednesday the Memphis Street Railway started its one-man cars on one line. They were an immediate success. The cars are new, the seats are plush and the paint is fresh. The cars are long and commodious. The aisles are wide. Plenty of standing room. There are no finer cars in any city. The cars are so equipped that the power cannot be turned on until the doors are closed The doors do not open until the car stops. The passenger standing on the exit platform causes the door to open when the car stops for passengers to alight.

The Memphis *Press*, another afternoon paper, in a semi-editorial column that appears on its front page, under the caption "Among Us Folks," had this personal sort of expression regarding the cars:

> I rode on one of the new one-man street cars yesterday. I was surprised at its beauty and its elaborate furnishings.
>
> The seats on this car were of clean, soft plush. They are comfortable, and I enjoyed sitting in one of them.
>
> The floor was covered with a rubberoid material. It was not dirty, and so far no one had spit on it.
>
> I gazed at the cream-colored ceiling as the car glided easily along and felt that I was getting my money's worth.

In the *Commercial Appeal*, the morning paper of the city, the following remarks constituted a part of the story regarding the cars:

> The coaches—for coaches they are—are big, airy and easy-riding.
>
> "As delightful and comfortable as a parlor car," remarked a woman to her escort. Plush upholstery in taupe, somebody said. Anyway, it was a nice, rich color.
>
> The windows are large, the window sills low, and it is just like riding in a club car.
>
> Five ceiling lights illuminate the coach so brightly that one can read as comfortably as at home under a bridge lamp.
>
> They are wonderful trolley cars in every detail. They are painted in attractive colors, and the interior arrangement illustrates the last word in modern car comfort:
>
> Now, here's a tip to the trolley-riding public, as a suggestion to facilitate travel: Have your 7 cents ready. Drop it into the box and pass on in.

THE COMPANY'S ANNOUNCEMENT

On the day before the cars were put in service and also on the day operations began the company used large advertisements in each of the newspapers announcing them and directions for passengers. These were crash advertisements in that each occupied space equal to about three-fourths of the whole page.

The first advertisement was devoted principally to a description of the new type of cars and the second mainly to a request for public co-operation in making their operation most beneficial to patrons. A part of the second advertisement stated:

> **For Better Street Car Service**—We are adding 32 modern electric rail coaches and want patrons to profit by the conveniences they afford. We ask you to observe these suggestions:
>
> Enter cars at front.
>
> Have exact fare, or metal token, ready to deposit in fare box.
>
> If transfer is desired, ask for it when paying fare.
>
> Pass into car promptly to allow other passengers to board.
>
> White passengers seat from front toward rear. Colored passengers seat from rear toward front.
>
> White passengers leave car by either front or rear exits.
>
> Colored passengers leave car by rear exit.
>
> When destination is reached, step onto treadle at exit door. This causes the door to open automatically when the car stops.
>
> Doors cannot open when car is in motion. Nor can the car start until doors are closed.
>
> Avoid standing on treadle unless preparing to leave car—to do so prevents the operator from starting car when at a stop.

Subsequent advertisements by the company, using smaller space than the opening announcements, have taken up the various thoughts suggested previously, and treated each separately and more fully, in explanation of how compliance with them facilitates service in the mutual interests of patrons and the company.

Company officials have expressed satisfaction at the favorable reception accorded the cars during initial days of operation.

Toledo Grant Under Discussion

In informal discussions of the new franchise proposals at Toledo, Ohio, the members of the board of control indicated it was their opinion that there would have to be some scaling down of the capital of the Community Traction Company under the new plan if fares were to be kept at a reasonably low level. Just how this could be achieved is not evident, particularly as under the terms of the former settlement capitalization and value are believed to have been brought to approximate each other.

A special election will probably be necessary for the submission to Toledo voters of the new amendments to the Milner ordinance to put into operation recommendations of Prof. H. E. Riggs and Attorney Newton D. Baker.

City officials declared that it was impossible to have the completed text of the proposal ready for Council on Aug. 30, the final date to put the measure through in time for the regular November election.

Meanwhile Law Director Frank M. Dotson has been working to bring various proposals together into the com-

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pleted document. Dewey C. Bailey, attorney, for Henry L. Doherty & Company, operators of the property, has been in Toledo at work upon the plan. One of the sticklers in the final draft was a clause involving the power rate.

It is now thought that the special railway election may be held a few weeks after the November election. In that event the voting booths and machinery would be preserved intact in the meantime.

T. E. Mitten Discusses Industrial Peace

Head of Philadelphia Rapid Transit Company Outlines Present and Future Work at Annual Outing

Speaking with enthusiasm on the subject of industrial peace and the means by which it might be generally effected, Thomas E. Mitten, chairman of the board of the Philadelphia Rapid Transit Company, Philadelphia, Pa., made a deep impression upon his hearers on the occasion of his annual banquet to the employer and employee committeemen of the company. This event is held simultaneously with the annual outing at Willow Grove Park, near Philadelphia, which the employees of the company attend en masse with their families. Aug. 31 and Sept. 1 were the dates for the picnic this year, half of the employees attending on each of the days with the committeemen's banquet taking place on the evening of the second day.

Mr. Mitten discussed the manner in which the co-operative plan, upon which the present structure of the Philadelphia Rapid Transit Company is founded, has gradually evolved, from the hopeless confusion of 1911 to the "Market Basket" wage and participation in profits which the men have today. His hope, he declared, is to have labor everywhere continue this metamorphosis into the rôle of capital along the lines which have been proved as practicable by the Philadelphia company. Only in this way may strikes and their resulting hardships be eliminated for once and all, since a man who owns a share in the company for which he works will not strike and imperil that which is his own.

Reaffirming the remarks which he made earlier in the day before the mass meeting of employees and their families, he decried the widespread adoption of installment buying, with its consequent urge to live beyond one's income and the feeling that it is necessary to keep up with "Mrs. Jones" next door. At the mass meeting he had appealed particularly to the women to curb these fallacious practices; at the evening banquet he urged his committeemen to throw their every effort into the campaign to build up the saving habit.

Mr. Mitten went into some detail in discussing the co-ordinated transportation service which exists in Philadelphia and complimented the various branches of the service on the diligence with which they have applied themselves to their respective jobs and the enthusiasm which they have for those jobs. Mr. Mitten mentioned again the figures which had been quoted in the afternoon meeting by President W. K. Meyers to the effect that $20,000,000 a year has been saved out of a gross income of $50,000,000 by the economies carried out by the company's employees. Of this startling amount $2,000,000 is shared equally between Mitten men and management, while the public receives the balance in improved service, reduced fares and similar items.

The speaker went into some detail on the results obtained with the P.R.T. air service and discussed generally the future of aerial transportation in this country. He closed with a pledge to devote his every effort in future years to furthering industrial peace and transforming labor into capital throughout the country.

Dr. A. A. Mitten was the toastmaster at the banquet, at which, in addition to Mr. Mitten, a number of the committee chairmen and of visiting guests from the International Railway, Buffalo, discussed the work of the co-operative associations. More than 60,000 people attended the outing during the two-day period.

Romance in Milwaukee Street Car Movie

HAVING told the people of Milwaukee about its transportation and electrical services through the medium of the spoken word, together with publicity and advertising in the newspapers, the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has entered the field of motion pictures. Camera men are already "on location" shooting scenes for the new film which will consist of three reels. As yet no title has been selected but the film will be shown in Milwaukee theaters next autumn and winter. The scenes, all of which will be taken in Milwaukee, will be developed around the romance of Jimmie, a motorman, and his sweetheart. Kelsey Cook and Gladys Moore (Miss New Orleans, 1925), of Rothacker Industrial Films, Inc., take the leading parts. George Bainbridge of the Rothacker firm is directing the film.

Another Step Toward Enactment of Louisville Ordinance

After being passed about two weeks ago by the Board of Councilmen, the new franchise ordinance of the Louisville Railway, Louisville, Ky., went to the upper board, or Board of Aldermen, on Aug. 24, and with certain amendments was unanimously passed. On account of these amendments the bill will now have to go back to the Board of Councilmen. It is reported that the lower board will pass the amended bill, it having been approved by the president of the Board of Councilmen, in amended form, prior to final action by the Board of Aldermen. The Mayor has indicated that he will sign it. As it stands the ordinance provides among other things:

Continuation of present 7-cent fare for two years, with general transfer privileges.

Half-fare for school children, with free rides for police, firemen and park guards when in uniform.

Combine ride by street car and buses for the same fare charged on buses not to exceed 10 cents.

Appraisal of the street railway property by a competent appraiser to be appointed by the Mayor.

Change in rates may be made by the General Council after the expiration of two years.

The railway is required to make monthly operating reports to the Board of Works.

Board of Works is required to supervise the management of the railway, although nothing in the ordinance is to be construed as relieving the company of the private management.

Adequate service is required of the company at all times.

The company is required as an expense of operation to accrue adequate sums for depreciation and amortization and to set up these sums in the form of reserves under the accounting system then in force.

To obtain new money for improvements, extensions or betterment of the service, the company may, from time to time, issue and sell new securities in such amounts as may be necessary to meet the demands.

The company is required to construct and maintain the supporting substructures of the streets, and make repairs to any streets damaged in the laying or repairing of the company's tracks.

In the event the company knowingly fails or refuses to abide by the terms of the ordinance it shall be subject to a fine of not less than $50 nor more than $100 for each offense, and each day's failure or refusal constitutes a separate offense.

Chicago Aldermen to Hear New York Traction Offer Sept. 9

The New York bankers who propose to finance the Chicago Surface Lines under a new twenty-year franchise will be heard by the local transportation committee of the Chicago City Council on Sept. 9, it was announced after a conference between Judge John M. Harlan, who tendered the offer to Mayor Dever on Aug. 26, and Alderman Joseph McDonough, chairman of the committee.

According to the proposal as outlined by Judge Harlan, their go-between, the Eastern financiers are willing to put up in the neighborhood of $40,000,000 in new capital on a 20-year agreement, refund the outstanding securities and pledge themselves to accept a new ordinance providing for unification of elevated, surface and bus lines at a single fare, and subways if the needed legislation is secured.

Several prominent Chicago bankers who refuse to take the proposal seriously say that a 20-year franchise is inadequate, that the $40,000,000 for extensions and improvements is insufficient and that the present bondholders would enter no such agreement. The refunding bonds, as proposed by Judge Harlan, would constitute only a secondary lien against the property after a prior lien sinking fund issue to raise money for the suggested betterments.

Sunday Passes on Three Adjoining Ohio Interurbans

Owing to the successful revenue and riding results obtained with the Sunday unlimited-ride pass since its installation on July 4, the Stark Electric

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Railroad, Alliance, Ohio, has extended its use to include holidays as well. The first of these holidays will be Labor Day, when the pass will be especially welcome because of an unusually important Labor Day celebration at Alliance. The pass sells at 50 cents to adults and at 25 cents to children who are between six and thirteen years of age.

As of Sunday, Sept. 5, the Northern Ohio Power & Light Company and the Youngstown & Ohio River Railroad will add Sunday passes for trial use on all September Sundays and also on Labor Day. The Northern Ohio will issue adult and children's passes at 50 cents and 25 cents respectively, while the Youngstown & Ohio River Railroad will issue just one price pass, viz., 50 cents.

The Northern Ohio pass will be good for unlimited rides by bearer on the interurban cars between Canton and Uhrichsville and also on the local or city cars in Canton and Massillon. The Youngstown & Ohio River Railroad's pass will be good between Salem and East Liverpool. As Canton and Salem are the terminals of the Stark Electric Railroad, the latter will afford a gateway for cheap and convenient travel between points on the adjoining systems. It will be possible for a person buying three 50-cent passes to ride from Uhrichsville to East Liverpool, the total cost of this and all other long rides being very much less than at existing rates of fare.

Arbitration Hearings End

Review of Summing Up of Counsel for Boston Company in Wage Case Which Now Goes Before Board for Its Decision—Many Telling Points Made

IMMEDIATELY after Labor Day the arbitration board which has heard the Eastern Massachusetts Street Railway wage dispute will meet for its first discussion of the evidence in the case. Then Judge John C. Leggat, the chairman and neutral member of the board, will write the decision.

In his argument in behalf of the railway, Arthur G. Wadleigh, who is a member of the board of trustees and its attorney in the arbitration proceedings, said at one point:

> If there is any merit in the demands for increased wages and changed working conditions, you may be sure you have the advantage of everything that can be said in favor of it. Nothing has been skipped in this case. I don't remember that Mr. Vahey (counsel for the men) has read anything here from Justice Higgins of Australia, but if he hasn't I venture to say he has put it in the record. He covers not only this country, but the Antipodes in his search for something that will enable you or induce you to believe that these men haven't had a decent wage for the last twenty years and won't have a living wage for the next year unless you increase their wages.

Mr. Wadleigh said that really the important question was whether the men should have more wages—a question contingent and predicated upon whether they are now receiving a decent living wage. He said he had always contended, now contended and should continue to contend that the financial condition of an employer under some circumstances should be considered a factor in determining what he shall pay to his employees, but that he had never taken the position, and did not now take the position, that these gentlemen were not entitled to a decent living wage irrespective of the financial condition of the company. He did not for a moment take the position or assert that the company could not pay what the board of arbitration decided to be a decent living wage. Mr. Wadleigh said:

> Our contention is that we are paying a decent living wage, and I believe that I would be justified in resting what I have to say with reference to that contention solely on the evidence that has been introduced here by Mr. Vahey himself. You do not suppose for a moment, Mr. Chairman, do you, that Mr. Vahey in culling the length and breadth of the Eastern Massachusetts Street Railway and bringing here his human exhibits to show why they should have more wages, has picked out the best examples of comfortable living? He has probably done as well as he could, in picking out personnel, and in every instance where a witness has appeared here in answer to questions on either direct or cross-examination he has been obliged to admit that he has had a comfortable living ever since he went to work on this street railway, and that he has brought up his family, if he had one, in respectable surroundings and in a creditable manner. Not one of them has answered "No" to a question of that kind. Here is Powers. He has worked for this company since his former employer went into obsolescence. He has been a valued employee, and is today. He has brought up a creditable family in a creditable way. I put the question to him as to whether he thought he had a good job, and he was an honest enough man to say "Yes." He went on to point out some factors that made it a good job that I hadn't thought of and didn't know. He said it was a stepping stone to other jobs, and he said that the greater part of the traffic policemen on the streets of Lowell were recruited from the ranks of the Eastern Massachusetts employees.
>
> Here is McGowan. He says it taxes his mental capacity to operate a one-man car. Yet he learned how to do it in two days, and he is the president of the general conference board. If his mental capacity was of such limited caliber that it taxes it to run a one-man car he wouldn't be president of that board; and so on, all through.
>
> It is significant that the average age of the men employed on our road is 46 years, and that the average length of service is nineteen years. Do you suppose that men of the caliber of the witnesses who have appeared here would stay for nineteen years, and that is the average length of their stay, in an employment or occupation that did not afford them a decent living wage and a chance to bring their families up under decent American conditions?
>
> Now let us see just for a moment what constitutes the yardstick of the cost of living as applied to them. The wages on this system between October, 1913, and June, 1926, have increased 117.9 per cent. During the same interval the cost of living has increased only 60.9 per cent.

Mr. Wadleigh then pointed to the fact that Judge Enright's award last year was based wholly on the cost of a decent living. Every other consideration, offered either by the men or by the company, was set aside and Judge Enright proceeded to give the men what he found to be a sufficient wage for a decent living. There has been no change in the cost of living since then. He then said:

> It is true the company has asked you to cut the wages of the men. That is one of the articles of submission here. We haven't receded in any way from that request, but I am going to be exceedingly frank and say I do not expect you will do it, but I see no reason whatever where your Honor can say Mr. Vahey has sustained his burden of proof on the question of whether these men shall have any more pay than they do now.

Mr. Wadleigh said that the proverbial last straw which breaks the camel's back might come into existence on the railway or on a part of it. Every increase in fare had a marked effect on the public, and the diminution in riding consequent upon an increase in fares was not to be measured wholly by what it costs the pocket book of the rider; it was to be measured somewhat by their outraged feelings. It was pretty easy for them to get a Ford.

According to Mr. Wadleigh the exhibits in this case showed that the Eastern Massachusetts Street Railway was paying its employees more than the average railway in this country. He also said that the average earnings on the Eastern Massachusetts Street Railway were in excess of the average weekly earnings of the employees in the textile and woolen mills and shoe factories and tanning industry, the main industries upon whose workers the railway must depend for its patronage. The Eastern Massachusetts is a one-man railway, 96 per cent of its mileage is one-man operation; 90 per cent of its personnel are one-man operatives. So Mr. Wadleigh said that when the arbitrators were fixing wages for one-man car operators they were fixing wages for the blue uniform men on the Eastern Massachusetts system. The basic rate to which he alluded was a rate in name only, as it applies to 10 per cent of the persons employed on the road.

The men on the Eastern Massachusetts system earned last year an average wage of $1.825. That, of course, took into consideration all classes of men, including one-man car operators. That was an average wage of $36.45 a week—remuneration much greater than the average wages of the working people in manufacturing and textile cities and towns served by the railway. The average weekly wage in June, 1926, of male boot and shoe workers was $25.03. The male workers in the woolen and worsted goods averaged $21.10; the workers in cotton mills $21.71 as against $36.45 a week average earnings on the Eastern Massachusetts. Mr. Wadleigh said frankly that in earning that average the men did probably work more than six days in the week on an average. They were entitled to consideration of that factor for what it was worth. In Fall River average payroll earnings in June were $18.39, in Brockton $23.09, Lawrence $22.50, in Lowell $19.37, in Taunton $22.57. Counsel for the company also said very frankly:

> Now an increase in wages, as far as anybody representing the Eastern Massachusetts is able to see, must inevitably result in an increase in fares. Whether an increase in fares will bring an increase in gross revenue is in the laps of the immortal gods; nobody knows. We don't know. In that connection your Honor has to consider whether it is fair play and decent usage to car riders, the majority of whom are receiving much less per week in wages than our men, to add to their cost of living by increasing the cost of a necessity in the life of these people riding on these cars, for it has been admitted here on all hands that the riding has all gone except the necessity riding.

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Resumption of Service Promised Argentine, Kan.

According to William G. Woolfolk, president of the Kansas City Public Service Corporation, Kansas City, Mo., the proposed successor to the Kansas City Railways, street cars will again be operating over the Twelfth Street bridge into Argentine, Kan., as soon as the corporation gets possession of the railway, probably about Oct. 1. Mr. Woolfolk made his statement after Powell C. Groner, attorney for the reorganization committee of the railway, had offered to furnish Argentine with street car service providing Kansas City, Kan., would forego a $12,000 annual rental on the viaduct. At the same time William Drennan, city attorney, had said he believed the viaduct rental could be abated legally.

New South Shore Service Started

Downtown Chicago and South Bend, Ind., were connected on Aug. 29 by high-speed electrically operated trains of the Chicago, South Shore & South Bend Railroad, operated under their own power to and from the Illinois Central Randolph Street suburban station.

Limited trains make the run from the Randolph Street station to Hammond in 37 minutes, to East Chicago in 42 minutes and to Gary in 57 minutes. Trains run from Chicago to Michigan City in one hour and 35 minutes and from Chicago to South Bend in two hours and 30 minutes.

Control of the South Shore Line was acquired a year ago by the Midland Utilities Company and since that time an extensive rehabilitation program has been carried on. The line has been completely re-electrified and now the electrification of the Illinois Central makes it possible for South Shore Line trains to run downtown under electric power from Kensington, from which point they have heretofore been towed in by Illinois Central steam engines.

The South Shore Line is the only railroad serving that part of the Indiana Dunes now owned by the state, and South Shore Line trains stop at Tremont, the main entrance to the Indiana Dunes State Park, which was formally opened on July 1.

More Praise for Grand Rapids Cars—More Patrons Carried

Emphasis is placed on the increased patronage on the lines running the new cars of the Grand Rapids Railway, Grand Rapids, Mich., in an article in the Detroit *News*. The account states that the cars have been operating for about a month, and in that time one line has increased its earnings 8.04 per cent over the similar period last year when the old cars were in service. Another line shows 7.95 per cent increase and a third 2.99 per cent. The new cars are concentrated on those three lines. The lines using the old cars, on the other hand, showed an increase in earnings of only 1.46 per cent over last year. The article in the *News* gives a brief account of the installation of the new cars and of the plans to arouse public interest and to improve the service. It is illustrated with pictures of the inside and outside of one of the cars and also with a portrait of Mr. DeLamarter, vice-president and general manager of the company, who is largely responsible for their design and unusual features.

Organized Accident Prevention Work Promotes Safety

Not a single fatal accident among the 6,000 employees of the United Railways, St. Louis, Mo., since Jan. 1, 1926, and not one street car involved in a fatal accident since May 1 is the record set by the St. Louis street car system, according to a report made public by Girard C. Varnum, secretary-manager of the St. Louis Safety Council.

Nine accidental deaths involving street cars have been recorded this year, compared with fifteen deaths during the same period in 1925, fifteen during 1924 and twelve during 1923. Varnum attributed the good showing to the United Railways' organized effort to prevent accident. The company holds safety first meetings every month for the carmen and other employees, while keen competition among the various sheds for the best accident prevention record is encouraged. Prizes are awarded the sheds making the best showing each month. New employees are given a rigid course of instruction and must undergo a thorough test and examination before being permitted to work on the cars.

Boulevard Plan for St. Louis Approved

United States District Judge Faris on Aug. 25 authorized Receiver Rolla Wells of the United Railways, St. Louis, Mo., to accept the proposal of the Board of Public Service providing for the removal of its present tracks in Olive Street between Twelfth Boulevard and Channing Avenue and placing them in a central parkway when Olive Street is widened from 60 ft. to 100 ft.

Opposition to the proposed plan has developed among property owners along Olive Street and some automobilists are also opposed to it. However, as more than 90 per cent of the users of Olive Street ride in the street cars, the Board of Public Service has decided that the parkway will speed up traffic along Olive Street and protect railway patrons from reckless automobile drivers.

The plan for the reconstruction and widening of Olive Street with a parkway in the center for the exclusive use of street cars has been approved by the Chamber of Commerce. The committee found that the neutral zone for street cars would speed up the cars, expedite all other traffic using the street and enhance the safety of pedestrians. The total cost of the widening and paving has been estimated at $2,783,507, of which property lying east of Twelfth Boulevard and west of Channing Avenue and the city generally will pay about 60 per cent. Property actually facing on the improvement is to pay less than 40 per cent of the expense.

Tunnels Come High in New York —$15,000,000 a Mile

Contractors have been invited to bid on construction of the municipal subway from Eighth Avenue, Manhattan, through 53d Street to and under the East River to Nott Avenue in Long Island City. The job will be let in three sections. On Oct. 1 bids will be opened on the two sections crossing Manhattan and on Oct. 15 bids are asked for the tube under the river.

The estimated cost of this branch to Nott Avenue is $30,000,000. The length is a little more than 2 miles. Costs of station finish, cars, equipment and power supply will be added to construction, and for land damages there will be a liability not yet computed. Within conservative calculation the sinking fund requirements for this 2 miles of subway will be $2,000,000 a year for 50 years.

The new tunnel will be eleven blocks north of the Interborough Rapid Transit Company's and seven blocks south of the Brooklyn-Manhattan Transit Company's. It will be a competitor of both lines. All three will connect in Long Island City with the terminal the Long Island Railroad is building to relieve the congestion at Pennsylvania Station.

Pay-as-You-Pass Plan in Milwaukee

To overcome objection in the Railroad Commission's recent city-wide report on railway service that the articulated trains were slow, delayed traffic and did not carry full loads, the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has introduced a new method of operating these cars. Hereafter the front car will be run as a pay-as-you-leave. Passengers enter this car at the front without paying fares to the motorman. If they remain in the front car they pay their fares to the conductor at the center entrance when they leave. They can also pass through to the rear car, paying the conductor when they pass him. The rear car will be loaded as heretofore at the center, passengers paying as they enter but taking seats in the rear car only. With two entrances in use instead of one under the old plan, loading is greatly expedited. The only exit is at the center. Cars operated in this fashion carry a sign at the front reading "Double Car, Enter Front or Rear."

Franchise Renewal Asked by Ohio Line

The Cincinnati, Hamilton & Dayton Traction Company, Cincinnati, Ohio, recently applied to the City Council for the renewal of its 25-year franchise. The matter was taken under advisement. Julius Lochsinger, chairman of the committee, said that changes in the transportation system of the city since the original franchise was granted have made it necessary to adapt the new privileges sought to the plans now existing. The company is already operating buses in conjunction with the service.

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News Notes

One-Cent Raise for Mansfield Employees.—Employees of the Mansfield Public Service Company, Mansfield, Ohio, have signed an agreement for 1926, accepting the company's offer of an increase of 1 cent an hour in wages. This makes a flat rate on all lines of 57 cents an hour. A clause was included in the agreement which gives the men the right of signing on either buses or cars in accordance with seniority and at the car rate of pay.

Free Trip for Portland G. A. R. Members.—The Portland Electric Power Company, Portland, Ore., on Aug. 24 transported free members of the G. A. R. who attended the Sells Floto Circus as guests of the circus management.

Compensation Claims Dismissed.—Compensation claims of A. L. Shapleigh and Henry S. Priest against the United Railways, St. Louis, Mo., aggregating $120,000 were dismissed in the federal court Aug. 11. Mr. Priest sought $69,750 for services as general counsel for the corporation. Mr. Shapleigh asked $30,737 as president over a four-year period and additional $19,687 as president for two years and seven months.

Paving Question Point in Franchise Discussion.—The City Commission of Middletown and the Cincinnati & Dayton Traction Company, Hamilton, Ohio, are at a temporary deadlock over the question of renewing for twenty years the franchise of the company, which desires to be relieved of any future paving between tracks and 18 in. each side. The City Commission insists upon the company's assuming paving burdens.

One-Man Cars to Speed Up Service.—Fred Cooper, manager of transportation for the Portland Electric Power Company, Portland, Ore., has announced that one-man cars are to be run on the Richmond line, except during the peak hours of traffic, thus cutting the schedule from 12½ to ten minutes. Later, if patronage justifies, it is planned to add another car. Mr. Cooper states that this is part of a general movement which the company intends to sponsor to encourage the public to ride street cars. In order to accomplish this purpose the shortest possible intervals between cars must be provided. One-man cars, however, will be introduced only on lines where it seems feasible.

Rental Agreements Continue Between Ohio Lines.—Agreements between the Community Traction Company, Toledo, Ohio, and interurban lines entering the city over the local company's tracks have been extended at the old rental rate for the balance of the calendar year. The rate imposed by the agreements, which expired on Aug. 1, involved both car mileage and ton mileage as its basis. It averaged about 20 cents for the 18-ton cars and 36 cents a car-mile for the 40-ton type of car. Officials of the company had intended to ask for a revision upward, but put the matter over for a few months in order to avoid any issues during the settlement of the amendments to the Milner service-at-cost ordinance.

More Arrests in East St. Louis Hold-Up.—I. Lochman and J. Giardano, St. Louis youths suspected of participation in the $8,100 robbery of an East St. Louis & Suburban money car in East St. Louis, Ill., on July 19, last, have been held for the St. Clair County Grand Jury under bonds of $30,000 and $35,000 respectively. At a preliminary hearing before Justice of the Peace Grossman both youths were identified by Joseph T. Van Dusen, an assistant cashier of the railway, and A. B. Shiek, motorman of the pay car, as two of the bandits who staged the robbery. As recorded in the ELECTRIC RAILWAY JOURNAL of Aug. 14, five other men and a woman are under arrest in connection with the robbery.

Increased Fare Asked by Ohio Company.—The Northern Ohio Power & Light Company, Akron, Ohio, is asking to increase its fare from Akron to Wadsworth from 20 cents to 25 cents. All that remains is for the Wadsworth Council to grant permission. The present franchise with Wadsworth has five years to run. The company asks the right to increase the fare between Wadsworth and Barberton from 10 cents to 12½ cents in tokens or 14 cents cash.

Foreign News

Ticket and Change Machine

Experiments are now being made with a new combination ticket-issuing and change-giving machine by the London underground railway companies. A passenger desiring a 2d. ticket inserts 6d. or a shilling in the slot and receives a ticket and 4d. or 10d. change instantaneously.

Statistics show that 65 per cent of the traveling public throughout the day ask for change and it is thought that the slot machine, which gives both ticket and change by the same operation, will prove very popular with the underground passengers.

Berlin Buses in 1925

The report of the Allgemeine Berliner-Omnibus A. G. (General Berlin Omnibus Company, Ltd.) for the year 1925 states that the suburban lines still failed to meet expenses. The increase in number of routes, which are now thirteen city and six suburban lines, was accompanied by an increase of passengers from 48,058,153 in 1924 to 77,163,551 in 1925 and a corresponding increase in bus-kilometers from 8,475,264 to 13,859,302 (5,254,664 car-miles to 8,592,767 car-miles). The passengers per bus-mile were respectively 9.2 and 8.9.

Revenue from transportation was 14,980,625 marks and operating expenses 11,505,121 marks. The latter sum approximates $2,795,715, which leads to an operating cost of 33 cents per bus-mile for the mixture of double-deck and single-deck vehicles used. The total earnings were 14,993,122 marks. From this amount depreciation and other allowances totaling 2,435,357 marks were made as follows: structures, 636,893 marks; vehicles, 1,451,017 marks; machinery, 273,437 marks; inventory or supplies, 74,010 marks.

Of the net earnings of 1,052,644 marks remaining, 119,883 marks were assigned to reserves, 6 per cent (72,000 marks) was paid to preferred stock holders and 10 per cent (720,000 marks) to common stock holders. License fees amounted to only 43,200 marks. The remainder, 97,560 marks, was carried over as surplus to 1926.

The latest bus service to the suburbs was started by this company April 10, 1926, between Unter den Linden in Berlin and the fashionable suburb of Grunewald-Hundekehle. This route is 11 km. (6.8 miles) long with an over-all fare of 1 mark (24.3 cents) and a short-haul fare of half this amount. The run, which includes twelve stops, is made in 30 minutes. The vehicles are single-deck, 30-seat buses, run on fifteen-minute headways.

Liverpool's Prosperous Municipal Tramways.—"During the past year the Liverpool tramways carried 246,000,000 passengers," which meant carrying nearly the whole population of the city, each day, F. C. Wilson, chairman of tramways and electricity committee, stated after an inspection on March 8. The department paid £90,000 a year in rates and taxes, ran at the lowest fares in the United Kingdom, showed a profit, and contributed £50,000 in relief of local rates. There were 675 cars in service.

High-Speed Cars for Glasgow.—Two experimental cars are now under construction in Glasgow, one a single decker and the other a double. Ordinary cars in this city are four wheelers, but these two will be of double bogie type, having two 50-hp. motors each, geared for a maximum speed of 50 m.p.h. The development is one of the methods adopted by the Glasgow tramways for meeting bus competition.

Light Signals on Southern Railway.—Four-aspect color light signals have recently been installed by the Southern Railway of England. Each signal has four powerful electric lamps mounted on masts and arranged vertically. The lights, used all day and night, indicate as follows: Green—All right; proceed. Two yellows—be prepared to find next signal at caution. One yellow—be prepared to find next signal at danger. Red—Stop. The track circuit system of automatic signaling is also employed.

Passimeters in London and Berlin.—Berlin has decided to adopt the passimeter system now used at the London Underground railway stations. Eight new stations have also been added to the existing 27 now using it in London.

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Recent Bus Developments

Final I. C. C. Bus Hearing Postponed

Announcement has been made by the Interstate Commerce Commission of an extension of time until the end of September for the railroads to answer questionnaires as to their bus operations, and of a postponement from Sept. 20 to Oct. 25 of the general hearing in Washington, which will conclude the investigation.

The time given the railroads to present full and complete data on their bus operations will permit a report from the B. & O. as to its new terminal coach system in New York.

A motor bus and truck bill will be brought up at the short session of Congress, but it is doubtful if any action can be had until the next long session, which does not meet until December, 1927. The Cummins-Parker bill, now pending before Congress, provides for divided regulation of buses and trucks by the federal commission and state railroad commissions. Hearings were held on this measure during the last session of Congress, but action was not taken. The I.C.C. hopes to have available for the coming session recommendations which will lead to drafting a measure that will have the approval of bus and truck operators as well as the railroads and shipping public.

Steam and Electric Roads Opposed Over Bus Rights

The Boston & Worcester Street Railway, Framingham, Mass., is seeking to obtain a license to operate a bus line between Framingham and Boston. Its plea is opposed by the Boston & Albany Railroad. The electric railway has a bus line now between Boston and Worcester and is operating trolleys over the proposed route between Boston and Framingham. The steam railroad objects on the ground that the buses would cut into the earnings on the train service between Boston and Worcester.

Equipment in Texas Sold for Scrap

Eight safety coaches once valued at $10,000 each were sold at Dallas, Tex., on Aug. 20 for $625 apiece under a court order. This equipment belonged to the Dallas-Fort Worth Safety Coach Company, organized two years ago to operate between Dallas and Fort Worth, a run of about 40 miles, in direct competition with lines of the Northern Texas Traction Company, winner of the Coffin prize two years ago and operator of the Crimson Limited trains.

Texas has no regulation and no public service commission. All the operator does is buy a bus and start to run. That is what the coach company did. It ran the eight coaches on varying schedules and at several different rates of fare. Innumerable jitneys, mostly nondescript touring cars, followed in the wake of the coach service. Since the jitneys made the 40-mile run for 50 cents both the railway and the coach company suffered, but particularly the coach company.

The Fageol Company secured a judgment on May 19, 1926, for $48,716 against the Safety Coach Company. The court ordered L. S. Gross, United States Marshal, to sell the coaches to satisfy the judgment. The Fageol Company alone bid for the coaches, and it bought them for a lump sum of $5,000.

$17,775,000 for Buses and Equipment in New Jersey

By the end of the current year the Public Service Corporation of New Jersey will have spent more than $17,775,000 for buses, garages, shops and other equipment necessary to provide the best bus service. Since it entered the business Public Service has bought more than 700 new buses. These are among facts being stressed in newspaper advertising run by the company.

Interstate Bus Rights Asked

The Scioto Valley Railway & Power Company has asked the Ohio Public Utilities Commission for permission to operate eight twelve-passenger parlor car buses for interstate traffic between Chillicothe, Ohio, and Huntington, W. Va. The buses will run on an hourly schedule if the permit is granted. They will travel over a route which will include stops at Portsmouth, Ironton, Ashland and Huntington.

Coach Service from Chicago to Grand Rapids

New motor coach service between downtown Chicago and Benton Harbor and Grand Rapids, Mich., was started on Aug. 29 by the Shore Line Motor Coach Company, owned in part by the Chicago, South Shore & South Bend Railroad.

Exclusive features of this new motor coach service are the reservation of seats and the option of riding between Chicago and Michigan City, in either direction, on the fast limited electrically operated trains of the South Shore Line, thus saving an hour in time. Motor coach tickets carry a coupon on which passengers are assigned specific seats, the same as in railroad parlor cars. Tickets and seat reservations may also be made in advance.

The Chicago terminal of the Shore Line Company's Michigan service is at the passenger station of the Chicago, North Shore & Milwaukee Railroad at Adams Street and Wabash Avenue. Stops will be made at the Auditorium Hotel, Chicago Beach and Windermere Hotels, and 63d Street and Stoney Island Avenue on the south side of Chicago.

Motor coaches are run from Chicago to Benton Harbor every two hours from 7 a.m. to 7 p.m., central standard time. One coach will run each way daily between Chicago and Grand Rapids. It will leave Chicago for Grand Rapids at 9 a.m., central standard time.

Bus Rights Sought at Lancaster

Application was filed at Harrisburg, Pa., on Aug. 27 with the Public Service Commission by the Conestoga Traction Company, Lancaster, Pa., operating in Lancaster and Chester Counties, for permission to extend its charter rights to include that of operating buses for freight and passengers on all its lines. Under a charter issued in 1922 the company now operates buses between Lancaster and Long's Park, Manheim Township, Lancaster County. The Cumberland Valley Transit Company, now operating between Chambersburg and Shippensburg, in an application filed with the commission, seeks permission to operate along certain streets in the two boroughs.

Bus Service Considered for Memphis Suburbs

A system of buses under the management of the Memphis Street Railway, Memphis, Tenn., operated through the principal suburbs of the city, is one of the possibilities of the city in the near future. Realization of the plan is said to be probable after the completion of the Poplar Avenue viaduct at Aulon.

The project hinges on extensions of Madison and Union Avenues to a point from East Parkway to Poplar Avenue, near Aulon.

The buses, if definitely decided upon, will operate through Highland Heights, east on Poplar, Southern Avenue, Lamar Avenue, and probably south of the city, it is said. Connections with cars on the Raleigh, Normal, Poplar Avenue and Lamar Avenue and Forest Hill lines may be made if the proposition is carried out. This will give suburbanites regular service at minimum cost. It will be dependable, and the buses will run on schedule time.

Plans for the Poplar Avenue viaduct are being whipped into shape. It probably will be completed late in 1927. The city will pay its portion of the cost, and the four railroads crossing Poplar at Aulon will pay their part. Officials of the railroads promise one of the best and most attractive viaducts of its kind in the South.

Latitude Asked in Twin City Operation

The Twin City Rapid Transit Company, Minneapolis, Minn., told the Minnesota Railroad and Warehouse Commission that in its supplementary bus operations it proposes to provide adequate and modern transportation service on the most economical basis and that if this new service does not command sufficient patronage the company does not propose to be bound rigidly to carry it on.

In two ways the company's attitude has been placed before the commission:

The Minneapolis City Council street car

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committee has been told that bus operation is experimental and that unless the buses are patronized to the extent of four cash passengers per mile or eight combination cash and transfer passengers the company would go before the state commissison with application for permission to discontinue the service and such an application would not be opposed by the City Council

The company has applied for more flexible schedules on its intercity and interurban bus lines, with a view to operating buses to meet the patronage and, while with minimum and maximum service clauses adequate service is to be provided at all times, the company would not be forced to operate uneconomically; the present requirements are more rigid.

The railway is now before the commission to obtain certificates of convenience and necessity under the state law for operation of five bus lines in Minneapolis.

Bus Service Extended in Kansas City

With the completion of the new paving on South Troost Avenue in Kansas City, Mo., the South Troost Bus Line of the Kansas City Railways has been extended from 61st Street south to the city limits at 79th Street. The northern terminus of the line is at 55th Street, at which it connects with the Troost Avenue car line.

The bus franchise originally provided that the buses should operate from 55th Street to 79th Street, but up until Aug. 22 the condition of the pavement south of 61st Street has been such as to prevent buses from operating over it.

Texas to Regulate the Bus

An amendment to the law placing bus and truck transportation under the jurisdiction of the Texas Railroad Commission will be required before regulation in the Lone Star State can be effectively enforced, according to C. V. Terrell, member of the Railroad Commission. For this reason rates and regulations will not be promulgated until after the next regular session of the Legislature in January, when it is expected the existing law will be amended so as to cure the defects that now prevent the Railroad Commission from exercising control.

More Independent Bus Lines Withdrawn in Cincinnati

Abandonment on Sept. 1 of the Elberon Avenue route of the Cincinnati Motor Bus Company is announced by Edwin Becker, secretary of the company, in a letter to E. D. Gilman, Director of Utilities. It was announced the company was losing money on the operation, and that the receipts for July were approximately $2,500 less than the cost of maintaining the service.

This is the second route to be discontinued within the last 30 days, the East End-Red Bank operation of the company being discontinued a few weeks ago.

Mr. Gilman said:

> Buses cannot operate successfully on their present rate of fare, and the people of Cincinnati who wish to ride in buses must come to a realization of the fact that they must pay a higher fare or expect discontinuance of service.

It is stated not a bus line in Cincinnati is able to hold its own, but that all are losing money at the existing rate of fare. In this connection attention has been directed to the report for July recently submitted by Walter A. Draper of the Cincinnati Street Railway, which indicates that railway operation for the month recorded a surplus of approximately $6,000, but that this was offset by a deficit of $15,000 incurred by the operation of its motor coach service.

Substitution of Buses Again Asked in Huntington

The Huntington Traction Company, Huntington, N. Y., is about to apply to the Town Board of Huntington for consent to substitute buses for trolleys over the entire 7½-mile route of the company's present railroad. The company would expect to have the buses in operation within 30 days after the order of the Public Service Commission authorizing the substitution was made, and also within 30 days after the commencement of operation of the buses would begin work on removing its tracks, poles and overhead equipment and of restoring the highway. The company made a similar application last May. Its president, E. T. Dempsey, states that with the co-operation of the Town Board and the Public Service Commission the operation of a motor system can be effected without delay.

A committee of the Huntington Chamber of Commerce, after considerable work, appeared before the Town Board several months ago with a request that the trolley line be abandoned and bus service substituted. Both the Huntington Traction Company and the Northport Transportation Company, which now maintains a bus service over a number of the town highways and between the village and Manhattan, applied for bus franchises. The Town Board awarded a permit to the Northport Transportation Company and refused the plea of Mr. Dempsey for a franchise.

Bus Service Discontinued.—The daily bus service of the Ottawa Electric Railway, Ottawa, Ont., to the Ottawa Hunt and Golf Club, via Mooney's Bay, has been discontinued because the revenue from passengers fell far below the cost of operation. In future this bus line will be operated only on Saturday afternoons, Sundays and public holidays.

Crosstown Line for Hartford.—Plans are being discussed by officials of the Connecticut Company with a view to establishing a crosstown bus line at Hartford, Conn. It is likely the line would be routed to accommodate the industrial area at Capital Avenue and would be extended thence to Farmington and Albany Avenues, probably via Sigourney Street.

Operation of Interstate Line Attached.—The Worcester Consolidated Street Railway, Worcester, Mass., has filed an equity suit against the Interstate Buses Corporation, Springfield, Mass., in the federal court at Boston. The railway asks an injunction to prevent the bus company from doing an interstate business between Worcester and Rhode Island. It also asks for damages. The bus company is alleged to be operating its buses without necessary licenses as demanded by the state laws.

Bus Service Extended in Tacoma.—The Tacoma Railway & Power Company, Tacoma, Wash., has started bus extension service on Pacific Avenue to the city limits, on Sixth Avenue and North Stevens Street to North Twenty-sixth and Proctor Streets and on Ruston Way from Old Tacoma to Ruston, on part schedule, which will be brought up to full operation early in September.

Nashville Railway Studies Efficiency of Buses.—J. P. W. Brown, vice-president and general manager of the Nashville Railway & Light Company, Nashville, Tenn., stated recently that bus experts and engineers have concluded a survey to determine the practicability of using buses as adjuncts of the railway system. The company's plans, however, are still indefinite.

Bus Service Increases Madison Street Car Earnings.—The operation of auxiliary motor bus service by the Madison Railways, Madison, Wis., continued to bring the earnings of the company in June above the revenues earned by the street cars alone in the past. Gross revenues from street car and bus patrons during June were $32,418, compared with $32,179 for June, 1925. In June of this year street car revenues were $29,863, a slight decrease from the income of $30,167 for June, 1925. Street car and bus passengers carried totaled 473,357 for June, 1926, compared with 459,097 for June, 1925. Passengers who used the street car last month totaled 439,554. This is a decided drop over a four-year average of 485,489 for that month.

Increased Rates Approved in Utica.—The Public Service Commission has approved an increase in the rates of the Utica Railway Co-ordinated Bus Line, Inc., Utica, N. Y., on the Parkway and Oneida Street lines within the city of Utica from 7 to 10 cents per capita. A strip of ten tickets will cost 75 cents.

New Transfers for Indianapolis Buses.—A new type of transfer slip has been adopted by the Indianapolis Street Railway, Indianapolis, Ind., for use on its buses. When the transfers are removed from the pads in which they are bound, they are so cut as to indicate the time of day they are issued. Lines to which the transfers are issued are indicated by directions instead of specific names. By using this transfer the company has reduced the number of punch marks from five to three and has made it possible for the conductor to issue transfers without making more than one punch mark at the time of issuance.

More Buses Used in Oregon.—T. L. Billingsley, superintendent of the railway lines of the Southern Pacific in Eugene, Ore., has announced that the company will substitute buses for the street car service between Eugene and Springfield. The Public Service Commission has authorized the railway to make the change.

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Financial and Corporate

Abandonment Principles Laid Down in Mount Vernon Case

The Public Service Commission has approved a declaration of abandonment by the Westchester Electric Railroad of two portions of its line in Mount Vernon, as follows:

1. South Fulton Avenue line between East Sixth Street and the Hutchinson River, a distance of 0.536 mile of double track.
2. East Sixth Street from South Fifth Avenue to South Fulton Avenue, a distance of 0.369 mile of double track.

The abandonment is approved by the commission on condition that the railroad remove all its rails and structures and level and fill the part of the streets now operated by the company, under the supervision and direction of the city engineer.

The city of Mount Vernon opposed the application. Commissioner Van Namee, in a memorandum approved by the commission, says the questions before the commission are: Is operation of the routes proposed to be abandoned necessary for successful operation of the road and is operation of the routes necessary for the convenience of the public?

Paving of the two streets is planned by the city. The railroad submitted evidence showing that its estimated share of the cost of repaving South Fulton Street and reconstruction of track was $74,250 and East Sixth Street $41,020. The city claimed these estimates were too high, but did not present any evidence thereon. No passenger service has been in operation in South Fulton Street. The track has not been used since 1908 except to bring cars to and from the company's carhouse between the Hutchinson River and South Columbus Avenue. A new carhouse is now being built in East Sixth Street. There was opposition to abandonment by residents.

The city of Mount Vernon objected to removal of the tracks from portion of the streets in question unless the company removed all of its tracks from all the streets in Mount Vernon upon which it operated and abandoned its franchise.

Commissioner Van Namee in his memorandum says:

> This is a condition which has never been imposed by the commission in allowing an abandonment of portions of a street railroad line. It is, at least, doubtful whether the commission could force a street railroad to abandon its franchise. The company however, could abandon all of its lines in the city and abandon its franchise without the permission of the commission. What is necessary for the commission to determine is whether the abandonment proposed seriously affects the successful operation of the balance of the route and the convenience of the public.

Evidence submitted by the company showed net losses from 1921 to 1925 inclusive.

Earnings Off $1,000,000 During Interborough Strike

The net result recorded by the Interborough Rapid Transit Company, New York, for July was a deficit of $1,663,538, compared with a surplus of $252,855 last year, a decrease of $1,916,394. Of this decrease $770,000 is due to the receipt of that amount in July of last year as a cash payment on account of the new advertising contract, there being no similar payment this year. The difference is largely attributable to the strike on the company's subway lines during July of this year.

The statement of earnings and expenses for July was presented to the board of directors on Aug. 31. It showed total revenue from all sources of $4,016,301, a decrease of $1,242,910 compared with the corresponding month of last year. Expenditures for operating and maintaining the property increased $622,436. Taxes payable to city, state and the United States increased $33,684. Rentals increased $3,298. Income deductions increased $14,065.

$980,609 Transferred to Profit and Loss in Baltimore

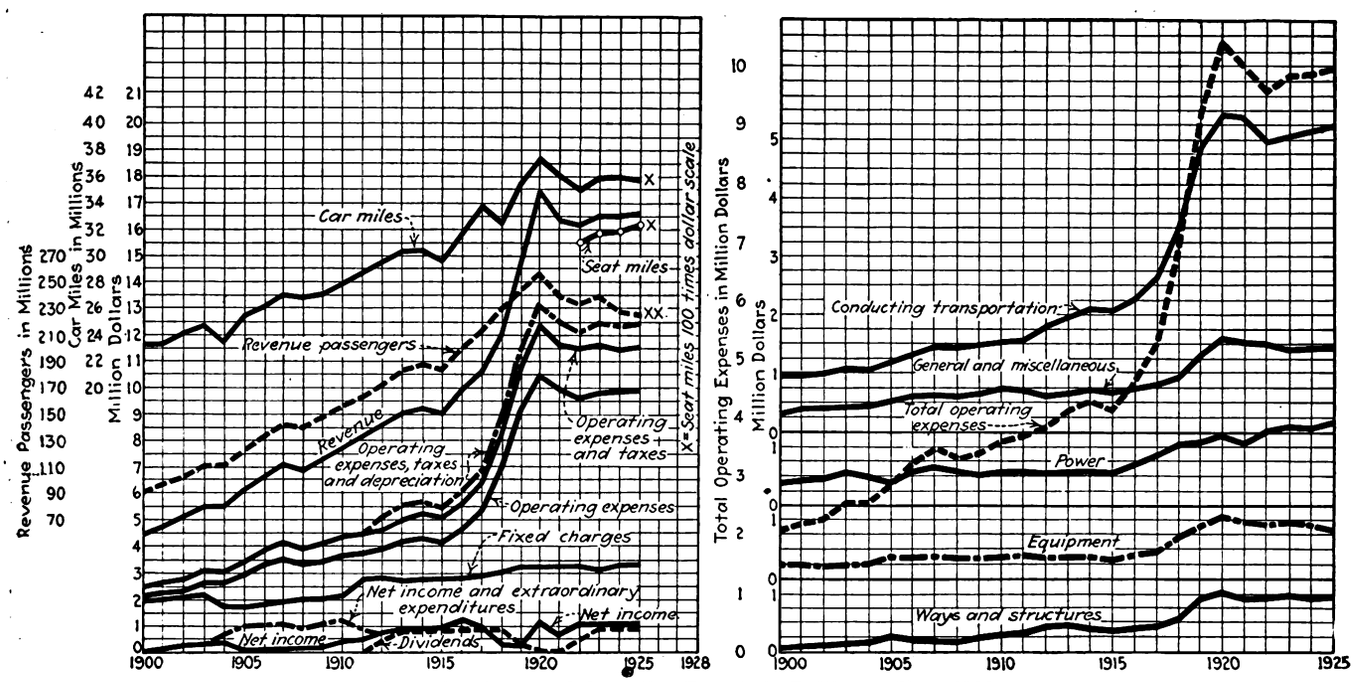
After paying all operating expenses and fixed charges, including interest on income bonds, the balance realized by the United Railways & Electric Company, Baltimore, Md., for the year ended Dec. 31, 1925, is $1,811,671. From this was deducted $818,448 for dividends and $831,061 for depreciation, the balance going to surplus. This statement was made in the twenty-seventh annual report to the stockholders of the company.

Since 1906 the company has set up depreciation reserves aggregating $14,315,000, out of which more than $13,000,000 has been put back into the property for reconstruction and improvements and for property retired, leaving a balance in the reserve account of $1,303,799. During the past five years the company spent for the items of maintenance and depreciation alone $13,686,551 and for capital improvements more than $5,300,000. During 1925 nearly $3,000,000 was put back into the property for upkeep and improvements.

The report goes into detail on the valuation proceedings and findings.

The total amount of taxes paid by the company during 1925 was $1,632,386. The total amount paid to the city of Baltimore in park taxes since the consolidation of street railway lines in 1899 now aggregates $17,229,980.

The report refers to the acquisition of all the buses, property, rights, privileges and franchises of the East Fay-



Operating Costs and Operating Results in Baltimore Since 1900

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COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES OF THE UNITED RAILWAYS & ELECTRIC COMPANY, BALTIMORE

Operating income:	1925	1924
Revenue from transportation	$16,481,077	$16,294,580
Revenue from other railway operations	140,142	158,674
Total operating income	$16,621,220	$16,453,254
Operating Expenses:		
Maintenance of way and structures	$966,995	$909,911
Maintenance of equipment	869,908	949,614
Maintenance of power	46,054	48,067
Total maintenance	$1,882,959	$1,907,593
Depreciation	831,061	822,662
	$2,714,020	$2,730,256
Power service	1,351,755	1,280,550
Conducting transportation	5,270,167	5,189,681
Traffic	*4,145	*12,558
General and miscellaneous	1,464,987	1,469,082
Transportation for investment—Credit	*19,973	*19,086
Total operating expenses	$10,776,811	$10,637,925
Taxes and licenses	1,632,386	1,656,073
Total operating expenses, taxes	$12,409,197	$12,293,999
Net operating income	$4,212,022	$4,159,255
Non-operating income	120,814	143,975
Gross income	$4,332,837	$4,303,230
Interest on funded debt	2,093,415	2,093,415
Remainder	$2,239,422	$2,209,815
Other deductions from gross income:		
Rents	$558,809	$546,343
Interest on unfunded debt	33,560	30,500
Interest on income bonds	559,080	559,080
Amortization of discount on funded debt	59,388	59,267
Miscellaneous	47,974	46,655
Total	$1,258,813	$1,241,847
Net income (transferred to profit and loss)	$980,609	$967,968
Seat-miles	1,627,061,900	1,601,907,976
Car-miles	35,717,666	35,973,691
Revenue passengers	224,235,527	228,423,774
Transfer passengers	92,893,828	91,879,977
Revenue passengers per car-mile	6.2852	6.3524
Maintenance cost per car-mile	.0527	.0530
Depreciation per car-mile	.0233	.0229
Ratio to total operating income:		
Maintenance and depreciation	16.33	16.59
Operating expenses and depreciation	64.84	64.66
Taxes	9.82	10.06
Operating expenses, depreciation and taxes	74.66	74.72

* Credit.

ette Street Bus Company by the Baltimore Transit Company, one of the United Railways & Electric Company subsidiaries. The Baltimore Transit Company operates bus service on various streets as well as trackless trolley service from Gwynn Oak Junction to Randallstown.

During the year the company reconstructed 15.3 miles of track and built nineteen additional articulated cars, similar to the sample car developed in 1924. In addition it increased its service during the year 25,153,924 seat-miles.

The company, in conjunction with the United Railways Association of Baltimore, an organization of employees, during the year expended for free medical and nursing attendance $88,281 and for pension and insurance payments $81,359.

Safety educational work among employees was continued during the year. The total car accidents in 1925 were 31 per cent lower than in 1919, when the safety department was organized and traffic conditions were much less acute. Personal injuries during 1925 showed a decrease of 34 per cent compared with 1919. The company transported 63,817 passengers for each one injured in 1919, and in 1925 106,210 passengers were transported for each one injured.

Part of Lebanon-Thorntown Equipment Sold

Disposition was made on Aug. 27 of part of the property of the Lebanon-Thorntown Traction Company, Lebanon, Ind. Retel-Hyman-Michaels bought the rails, trolley and feeder wire; the Big Four Railroad bought the right-of-way, and the Evans Electric Company bought the poles. The cars have not yet been sold. As recorded in the JOURNAL of Aug. 14, the railway had operated interurban service for 21 years between the center of the town of Lebanon and the center of the town of Thorntown, a distance of about 10 miles. The road has been operating at a loss for some time.

One Month's Accomplishment of Boston Elevated

On the 630,054 trips operated by the Boston Elevated Railway, Boston, Mass., during the month of July, 1926, 27,160,300 revenue passengers were carried and a total of 4,809,609 miles were operated. A statement from the office of the general manager of the company in which this year's accomplishments during July are compared with last year's is as follows:

JULY OPERATION AT BOSTON

General Financial Data	1926	1925
Cost of service exceeded revenue	$393,028.41	$249,477.93
Operating revenue per car-hour (A. E. R. A. std)	5.23	5.49
Operating revenue per car-mile operated, cents	54.24	56.77
Average fare per revenue passenger, cents	9.284	9.279
Ratio operating expense to operating revenue, per cent	83.95	79.23
Passengers Carried		
Revenue passengers	27,160,300	27,119,429
Per cent 5-cent and 6 cent passengers	17.39	17.25
Revenue passengers per car-mile operated	5.647	5.995
Operating Facts		
Trips operated	530,054	594,131
Car-miles operated:		
Rapid-transit lines	1,186,783	1,193,204
Surface, two-man	1,965,154	1,983,587
Surface, one-man	1,238,162	1,112,084
Express, newspaper and sprinkler cars	2,345	9,821
Motor bus	417,165	224,646
Total miles operated	4,809,609	4,523,342

$34,561 July Deficit of Toledo Company

Facing higher operating costs and less income from interurban track rentals the Community Traction Company, Toledo, Ohio, had a deficit in July of $34,561, according to the report of Commissioner E. L. Graumlich to the street railway board of control. The company carried 3,779,835 revenue passengers during the month, compared with 3,590,487 in the similar month last year. Accumulated deficits now amount to $747,092. Against this amount is the sinking fund, which has retired $1,261,000 of bonds and in which there is a cash balance of $79,451.

The commissioner reported that the first few days' operation of the new Front Street bus line had shown good income, but that higher fares might be necessary to keep from turning in a deficit from the bus operation.

Petition for Abandonment at Vancouver, Wash.

The Clark County Development Company, which holds the franchise and operates the railway in Vancouver, Wash., has petitioned the County Commissioners and the City Council for the cancellation of all franchises. A heavy loss, caused by the constantly decreasing number of passengers, is given as the reason for withdrawal. Earl S. Nelson, president, says the stockholders have had no return on their investment of $500,000 since the tracks were laid in 1917. During the years 1917-21 inclusive the revenue was such that operation could be continued, but for the last four years the loss has totaled $22,187. In 1925 the deficit was $10,129. It is stated that if the city and county refuse to release the company from its franchise it will have to go into receivership. The petition calls attention to the fact that the equipment is out of date. The company agrees to put the streets in condition. The system consists of 14 miles of track.

Service Discontinued on New Hampshire Line.—The Public Service Commission of New Hampshire has authorized the Manchester & Derry Street Railway, Manchester, N. H., to discontinue service on its lines. These orders are the result of an agreement between the State Highway Department, the town of Andover, N. H., and the Boston & Maine Railroad.

Change to No-Par Value Stock.—The Eighth Avenue Railroad, New York City, has filed a certificate in the office of the Secretary of State changing the par value and increasing the number of shares of its capital stock from 10,000 shares $100 par value to 50,000 shares no par value.

Branch Lines Abandoned in Ohio.—The Cleveland Southwestern Railway & Light Company, Cleveland, Ohio, has abandoned its branch lines from Elyria to Grafton, and from Penfield Junction to Amherst. Bus service between Elyria and Grafton has been started by the company and bus service connecting Amherst, South Amherst and Lorain has been increased.

Orders Traction Funds Invested in Municipal Bonds.—Investment of $5,374,000 from the funds of the Chicago City Railway, Chicago, Ill., in municipal bonds for current public improvements was approved July 22 in an ordinance adopted by the City Council. The plan was sponsored by Mayor Dever in the belief that it would bring larger returns than keeping the cash on deposit in banks. All but $9,000,000 of the total of $45,000,000 now held in the traction fund is already invested in corporation tax warrants, city bonds and Liberty bonds.

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Legal Notes

FEDERAL CIRCUIT COURT—*Injunction Stopping Alleged Confiscation of Railway Property after Bond Is Given Held Proper.*

A franchise specified certain rates of fare, but in one section indicated that its purpose was to grant the company the right to obtain a reasonable profit on its investment. The court held that it had a right to grant an injunction preventing the continuance of the unprofitable fares and so increasing the rates until a decision could be had on the merits of the case. [City of Council Bluffs vs. Omaha & C. B. Street Railway, Ninth Federal (Second) Rep., 246.]

KENTUCKY — *Injury to Pedestrian Hurled on Track by Automobile*

Where a pedestrian, struck by an automobile, was hurled onto an electric railway track, the railway company was liable for injuries to him by its car only if the motorman failed to use ordinary care to prevent injury after discovering the peril. He is not required to maintain a lookout for such occurrences. [Ohio Valley Elec. Ry. vs. Payne, 481 Southwest. Rep., 523.]

MAINE—*Passenger Hit by Automobile After Alighting*

A passenger, who has alighted from a street car, is not required to look and listen before walking to the sidewalk, though if he does not do so in a street with much automobile traffic it may be strong evidence of negligence. An automobilist approaching a street car on the side opposite the car gates, which has stopped to receive or discharge passengers, must anticipate that some passengers may pass behind the car to the other side of the street. Hence, he must use increased care in passing. [Day vs. Cunningham, 133 Atlantic Rep., 855.]

MASSACHUSETTS—*Fire Apparatus Returning from Fire.*

A state law provides that members and apparatus of the fire department have the right of way in a street when "going to a fire or responding to an alarm." This right does not apply when the fire apparatus is returning from a fire. [Hoye vs. Boston Elevated Ry., 152 Northeast Rep., 738.]

MICHIGAN—*Construction of Terms of Public Utilities Act.*

The State Public Utilities Act declares it "shall not apply to carriers operating exclusively within cities or villages." An auto bus company, whose route lay entirely within the limits of two contiguous cities, viz: Detroit and Springwells, claimed to come under this exception. It was not sustained by the Supreme Court, which held the exception applied only when the carrier operated exclusively in a single city or a single village. [Red Star Motor Drivers' Association, et al. vs. Michigan Public Utilities Commission, 209 Northwest. Rep., 146.]

MINNESOTA—*Statute Giving Commission Power Over Rates with Appeal to Court, Affirmed.*

A section of an act of the legislature authorizes the Railroad and Warehouse Commission, in certain circumstances, to fix the rate of fare on street railways, but gives right of appeal to the Court. The constitutionality of this act was attacked by the City of Duluth on the ground that the establishment of a public utility rate is a legislative function and this power is ultimately invested in the courts. The Minnesota Supreme Court held, however, that under the act the courts were authorized only to set a fair value on the property and determine a fair return on such value, and that the act was therefore constitutional. [City of Duluth vs. Railroad & Warehouse Commission, 209 Northwest. Rep., 11.]

MISSISSIPPI—*Property Owner Sues for Damages Because of Discontinuance of Railway*

A city authorized a street railway company temporarily to discontinue operation on a certain line because of work being done on the street, but after the completion of that work, the city did not order a resumption of service. An abutting property owner on the route declared the market value of his property was reduced to approximately one-half because of the discontinuance of the service and sued the company for damages. The court held that a careful study of the franchise, which was not in evidence, would be necessary to determine the rights of the respective parties, but as the discontinuance presumably was temporary, it was an error in the trial court to assume that the measure of damages, if justified, was the difference between the value of the property with car service and its value with the service permanently discontinued. [Mississippi P. & L. Co. v. Maulding, 108 Southern Rep., 901.]

MISSOURI—*Thought Car Would Stop for Passengers. Excess Speed of Car Not Evidence of Negligence in Certain Circumstances.*

A truck driver about to cross a railway track noticed several persons standing on a corner between him and an approaching car as if they were waiting to board it. If he did not rely upon the belief that the car would stop for them, he cannot avail himself of an ordinance which requires the car to do so, and if he did rely upon the ordinance, he should not do so to the extent of failing to make use of his own senses for his own protection. Evidence of possible excess speed of the trolley over that permitted by an ordinance was also immaterial where the plaintiff was not acquainted with the ordinance and did not know or estimate the speed of the trolley car. He was therefore held contributorily negligent when injured. [Epstein vs. Wells, 284 Southwest. Rep., 845.]

NEW JERSEY — *Club Bus Held to Be a "Jitney"*

The New Jersey law permits every municipality to license and regulate auto buses "commonly called jitneys," fix their fees, etc., whenever the routes are wholly or partly within the limits of such municipalities. The borough of Edgewater passed an ordinance specifying the conditions under which such motor buses could be used, and under it stopped the operation of two buses operated by the "Workers' Club" in West Fort Lee, an adjoining borough. Membership in this club could be obtained for 10 cents a month dues, plus a tax of 90 cents a week, for which twelve rides could be taken. The club claimed that the buses did not come under the law, but the Court of Errors and Appeals of New Jersey held that they did. [Fort Lee Transportation Co. vs. Edgewater, 133 Atlantic Rep., 424.]

NEW YORK—*Unlawful Bus a Public Nuisance.*

A motor bus, not authorized by the Public Service Commission, the Transportation Corporation Law, or the Greater New York Charter, is a "public nuisance" even if it is operating under a permit from the Department of Plant & Structures. As such, the owner cannot collect damages from a street railway company whose car collided with the bus, in the absence of wilful, wanton or reckless conduct on the part of the motorman causing the collision. [Klinkenstein vs. Third Avenue Railway. 214 N. Y. Supp., 725.]

OHIO—*Company Not Liable to Intending Passenger Struck by Broken Pane of Glass in Car.*

Where an intending passenger, while standing in a safety zone preparatory to boarding a car, was injured when the approaching car stopped suddenly, and glass falling from a broken window cut her face, the law will not assume negligence by the company. The glass might have been broken by the act of a third person or caused by some other event with which the company had nothing to do. [Cleveland Railway vs. Sutherland, 162 Northeast. Rep., 726.]

UTAH—*Power of State Over Highways*

An order of the Public Utilities Commission, acting for the state, in forbidding a motor bus carrier to increase his service is within the power of the commission, especially if it believes such increase will seriously affect the ability of another utility, serving partly the same territory, to render service. [Gilmer v. Public Utility Commission of Utah, et al., 247 Pacific Rep., 284.]

VIRGINIA—*Paving Obligation Construed*

Where a franchise said in paving or repaving the track area, the city should furnish the material for paving and the railway should pay for the labor, the company was held liable for the cost of both material and labor for the concrete base under the rails and ties, such base being not properly a part of the paving because it was necessary to give a proper support to the rails and ties. [Virginia R. & P. Co. v. City of Norfolk; 133 Southeast. Rep., 565.]

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Personal Items

Illinois Power & Light Personnel Changes

Changes are announced by the Illinois Power & Light Corporation, Chicago, in its executive staff.

W. A. Baehr, vice-president and general manager, has retired and is succeeded by L. E. Fischer, who has long been associated with the corporation and its predecessors, and more recently has become connected with the North American Light & Power Company, an affiliated company.

Scott Brown has retired as secretary and is succeeded by Dwight Holmes, and P. C. Dings has retired as treasurer and is suceeded by P. L. Smith.

Clement Studebaker, Jr., continues as president. No changes of personnel in the operating staff or management of local properties are contemplated by the Illinois Power & Light Corporation or by any of its numerous subsidiary and allied operating companies.

The changes in personnel are coincident with the reorganization of the North American Light & Power Company, of which the Illinois Power & Light Corporation is an important subsidiary. This reorganization was announced last June, but is just now completed and made effective.

In this reorganization the Middle West Utilities Company and the North American Company acquire a majority of the common stock of the North American Light & Power Company. Clement Studebaker, Jr., continues as president in active direction of the company and, with his associates, retains a substantial interest in the common stock.

J. J. McNally in Public Relations Post in Washington

James J. McNally, who has been engaged in advertising agency work in Washington for more than two years, has joined the Washington Railway & Electric Company, Washington, D. C., as assistant to C. Melvin Sharpe, who is in direct charge of public relations for the company as executive assistant to William F. Ham, the president.

The appointment of Mr. McNally in this division of the company's activities adds another advertising man to the rapidly increasing number of men in that profession who have in recent years chosen to specialize in public utilities work. His retention is not only in keeping with the tendency of nearly all public utilities to pay more and more attention to public relations, but is in line with work in which Mr. Ham takes an unusual interest, as is indicated by his own recent appointment to the committee on public relations of the National Electric Light Association.

Mr. McNally is a native of Chicago. At one time he was assistant advertising manager for the Hydro-United Tire Company, Chicago, Ill., and Pottstown, Pa. He is a graduate of the Technical High School, Techny, Ill., and an alumnus of Campion College, Prairie du Chien, Wis. For the past five years he has resided in the national capital—"by choice, not chance," he avers.

So it will be seen that he is schooled in mass pyschology and the problem of trying to strike a responsive chord in the public mind, one of the major problems of a street railway, namely, to please the public and, in pleasing them, profit. Aside from the technical knowledge of advertising practice and procedure which they bring to public utilities, men like Mr. McNally are qualified to apply principles of propounding advertising to arrive at ways and means of gaining the co-operation of car riders.

Messrs. Coen and Moore with Cleveland Electric Company

F. W. Coen, formerly general manager of the Lake Shore Electric Railway, Cleveland, Ohio, is now assistant to the president of the Cleveland Electric Illuminating Company.

George Moore, Fremont, also formerly associated with the Lake Shore Electric Railway, now is connected with the Cleveland Electric Illuminating Company.

Messrs. Phillips and Rossell Advanced

Well-Known Manager of Pittsburgh Railways Made Vice-President of Duquesne Light Company—Former General Superintendent of Railway Advanced to Managership

ANNOUNCEMENT was made on Sept. 2 of the election of Frank R. Phillips as vice-president of the Duquesne Light Company, Pittsburgh, Pa., and of the appointment of William T. Rossell to succeed Mr. Phillips as general manager of the Pittsburgh Railways. Mr. Phillips has been general manager of the Pittsburgh Railways since March, 1925, having served as mechanical and electrical engineer of the company prior to that time. He is one of the best posted as well as one of the best known figures in the electric railway industry. After completing his education in Cleveland in 1894 he became master mechanic of the Cleveland Railway, a position he held until he went to Pittsburgh in the fall of 1909 to assist in the development of the street cars in that city.

F. R. Phillips

W. T. Rossell

Prior to Mr. Phillips' advent at Pittsburgh, the cars of the Pittsburgh Railways were of wood. His problem was to develop a car which would be lighter in construction and yet maintain the same strength and speed of the heavier car. His first achievement was the low-floor steel car operated with pony trucks and so-called baby motors. This type went into service in 1910, but was followed a year later by another similar car. Both of these proved less costly in construction and more economical in operation than the types which had preceded them.

He also extended the shops of the company so that every type of repair could be made by the company's own employees with a minimum of time lost from operation by the car. In 1910 Mr. Phillips was made superintendent of equipment, a position he filled until July, 1923, when he was made acting general manager for the receivers following the death of P. N. Jones. Upon the lifting of the receivership on Feb. 1, 1924, Mr. Phillips was made mechanical and electrical engineer and was also appointed the representative of the company to the Traction Conference Board.

Mr. Phillips was active in the work of designing the first efficient double-deck electric car in the country, placed in service in Pittsburgh in 1917, and in 1917 he designed a low-floor, high-speed, all-steel interurban car of a type which has since been made standard on the Pittsburgh Railways' lines. He was also active in the construction of the new cars which have recently

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been placed in service in Pittsburgh, including the one-man cars and those used in multiple operation.

Mr. Phillips has become nationally known through his activities in the American Electric Railway Association, in which he served on many important committees. He has recently been re-elected president of the Pennsylvania Street Railway Association, and is past-president of the American Electric Railway Engineering Association.

WILLIAM T. ROSSELL

Mr. Rossell was born in Memphis, Tenn., and was educated at Staten Island Academy, Staten Island, N. Y., from which he was graduated in 1904. Later he entered the United States Military Academy at West Point. In August, 1908, he became assistant engineer of track and structures for the Cincinnati Traction Company and the following year was connected with the York Manufacturing Company, York, Pa.

In October, 1909, he returned to the Cincinnati Traction Company, where he remained until 1916, when he became superintendent of tracks and structures for the Cincinnati, Newport & Covington Railway, operating out of Covington, Ky.

Following his discharge from the army in June, 1919, as a captain of engineers, Mr. Rossell returned to the Cincinnati, Newport & Covington Railway as superintendent of way and structures, in which capacity he continued until his appointment as superintendent of way of the Pittsburgh Railways in July, 1924. In March, 1925, Mr. Rossell was made general superintendent in charge of maintenance for the Pittsburgh Railways and served in that position until the present time.

Mr. Rossell is a member of the Pittsburgh Chamber of Commerce, Veterans of Foreign Wars and the American Electric Railway Association.

J. W. Knecht Superintendent at Grand Rapids

John W. Knecht has been appointed by L. J. DeLamarter, vice-president and general manager of the Grand Rapids Railway, Grand Rapids, Mich., to succeed J. C. Madigan as superintendent. The appointment is effective beginning Sept. 1. Mr. Knecht has been chief engineer of the railway since his return from service as engineer in the Navy Department during the World War. He first entered the service of the company in 1911 as draftsman. Mr. Knecht is a graduate of the engineering department of Michigan State College and during his summers while at college he worked for the railway.

H. E. Ross, formerly auditor of the City Railway, Dayton, Ohio, has recently severed his connection with that company.

H. F. Farnham, superintendent of construction of the Vermont Hydro-Electric Corporation and electrical superintendent of the affiliated Rutland Railway, Light & Power Company, Rutland, Vt., has resigned to become superintendent of the Pennsylvania Edison Company with headquarters at Easton, Pa.

Harry E. Cawood has recently been appointed superintendent of the Edmondson Avenue and Ellicott City lines of the United Railways & Electric Company, Baltimore, Md. He entered the service of the company in 1909 as a carman. Four years later he was made a dispatcher and held that position for three years. After that he served as street man for the line until his present appointment.

Walter F. Helmreich, for many years chief mechanical and electrical engineer with the Missouri Public Service Commission, has resigned to become manager of the Capital City Water Company, Jefferson City. Mr. Helmreich was born in Cooper County, Missouri. He graduated from the Missouri State University with a master's degree in both mechanical and electrical engineering, taught in the David Rankin, Jr., School of Mechanical Trades, St. Louis, for six years and was assistant mechanical and electrical engineer to the Arkansas Public Service Commission for one year prior to his connection with the Missouri Public Service Commission.

Stewart W. Dubee, formerly assistant engineer of the Grand Rapids Railway, Grand Rapids, Mich., has been promoted to engineer of way and structures, effective Sept. 1.

Hurley M. Taylor, Decatur, Ill., has been appointed to succeed Charles H. Robinson, whose resignation as master mechanic in charge of railway equipment for the Bloomington & Normal Division of the Illinois Power & Light Corporation was noted in the ELECTRIC RAILWAY JOURNAL of July 17. Mr. Taylor has been connected with the Illinois Traction System for the past fifteen years and had been located at St. Louis, Granite City and Peoria for various periods before going to Decatur in 1923. For a number of years he was employed by the Pacific Electric Railway at Los Angeles, Cal.

W. E. Bann, purchasing agent and auditor of the Southwestern Gas & Electric Company, Texarkana, Ark., has been named general manager of the company's Texarkana Division, to succeed W. L. Wood, Jr. Mr. Bann's whole business life has been spent in the service of this company, of which he is now manager. He began his work there on Nov. 1, 1904, as a messenger and collector. Later he became a clerk and stenographer and gradually worked his way up through the various stages until he was appointed purchasing agent and auditor eight years ago. When Mr. Bann started with the company he was one of less than fifteen employees; now there are 165.

Edward A. Evans has been retained as consulting engineer of the Quebec Railway, Light, Heat & Power Company, Quebec, Que.

G. R. Davidson, for six years connected with the publicity department of the British Columbia Electric Railway Company, Ltd., Vancouver, recently resigned to enter the financial field. He has been succeeded by **Walter S. Hudson.**

Obituary

P. F. Sullivan

Patrick F. Sullivan, long identified with electric railway interests in Massachusetts, died suddenly, on Aug. 29, at Sunapee, N. H.

Mr. Sullivan was not only an exceptional street railway officer and developer; he was a financier, a generous citizen, kind and sympathetic, and a speaker of extraordinary ability. He knew the railway business from the carhouse to the president's chair, for he had been in all the positions along the line. A remarkable thing about him was his memory. Dealing with railway financing before the legislative bodies, or public authorities, or in the New England Street Railway Club, he could speak entertainingly for hours, if need be, and accurately handle an abundance of figures without ever referring to a written note. Few other men in New England enjoyed a popularity so widespread among operators of electric lines as did Mr. Sullivan, and certainly no one can claim a more intimate part in the organization and development of electric railways there.

Patrick Sullivan was not cast in the common mold. In some respects he was the personification of Old Man Graham, made famous by George Horace Lorimer in his "Letters of a Self-Made Merchant to His Son." He had the knack of turning a phrase that was trenchant but never vitriolic. He was also able to recognize similar ability in others. He adhered strictly to his own motto: "Do a little bit more than you are expected to do." Mr. Sullivan's personality made him a good public relations man without any external help, but it is well to recall that he was one of the first executives to go in for better public relations on business lines. To this end he retained Thomas Dreier, a man unusually well qualified to encourage friendships already made and to foster new ones. Dreier had the title of assistant to the president and did the work, but Sullivan was the driving force. It is only eight years since Dreier perpetrated his famous screed "The Asininity of Trying to Get Blood Out of a Turnip," likewise his "When the Mark Twains Become Buffalo Bills," but these and other things done on the Bay State under the régime of Mr. Sullivan now appear startling in their daring and originality.

It was while engaged in newspaper activities in the early days after his arrival in the United States that Mr. Sullivan became interested in city transportation questions. With several prominent Lowell citizens he organized a railway in Lowell in competition with the old company already installed there. This new company soon won the confidence of the people and later, in 1891, absorbed the older company, Mr. Sullivan becoming paymaster and an important member of the board of directors.

His relations with the force employed won him a strong place in their confidence and affection and soon obtained for him the post of general manager of the consolidated company. In 1899 the

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consolidation of the state lines into what is known as the Massachusetts Electric Companies took place and Mr. Sullivan became general manager in charge of 650 miles of tracks, carrying 70,000,000 passengers annually and employing 7,000 men. His activities increased measurably after that.

Born in Cork, Ireland, on March 16, 1856, he came to America with his parents in 1873. Soon thereafter he entered upon the career already partially reviewed, which included a wide and valuable experience in all the departments of railway operation from carhouse duties in the horse-car days to participation in electric railway mergers.

Mr. Sullivan was an ex-president of the old Bay State Railway, ex-president of the Newport & Fall River Street Railway, director of the Old Colony Trust Company, Boston; director of the Nashua Street Railway, Nashua, N. H.; ex-president of the Boston & Northern Street Railway, active in banking and insurance fields and interested in the advancing of civic and public welfare interests in his home city of Lowell.

Claude F. Chard, for several years district sales manager at Cleveland of the Austin Company, engineers and builders, that city, was killed in an automobile accident on Aug. 13. Before his connection with the Austin Company in 1918 Mr. Chard was with Westinghouse, Church, Kerr & Company, New York. He was graduated from Purdue University in 1910. He was a member of the Triangle Fraternity and of the Cincinnati Club of Cincinnati.

William H. Elliot, head of the Elliot Frog & Switch Works, East St. Louis, Ill., died in Green Bay, Wis., on Aug. 15, after several days illness. Mr. Elliot had been connected with the Elliot Frog & Switch Company since May, 1882, when he graduated from Kemper Military Academy at Boonville, Mo. Until two years ago he was president of the company, which in December, 1924, was taken over by the Ramapo Ajax Corporation. He was elected a director and vice-president of that corporation and placed in charge of the East St. Louis plant. Mr. Elliott was 62 years old.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Waugh Takes Over Rico

The Waugh Equipment Company, Chicago, announces that it has acquired all of the outstanding capital stock of the Railway Improvement Company, New York. It will amalgamate the two companies at once and operate the combined companies under the name of the Waugh Equipment Company, maintaining its offices in the Peoples Gas Building, Chicago, and Pershing Square Building, New York. With the acquisition of the Railway Improvement Company, the Waugh Equipment Company acquires all of the well-known Rico products, used extensively throughout the country on practically all electric street railways and steam railroad electrifications.

R. J. O'Brien, formerly general manager of the Waugh Equipment Company, has been elected vice-president. H. N. Ransom, W. M. Roche, O. L. Downs, Henry Wiegand and G. F. Ferguson of the Rico sales department have been added to the Waugh company sales forces and Col. L. M. Clark of the Railway Improvement Company has been attached to the Waugh company engineering department.

Electric Heat Applied to Thermit Welding

Electric heat has now been applied in connection with thermit welding. The Metal & Thermit Corporation, Jersey City, N. J., has introduced General Electric heating units on its track welding equipments for the purpose of assisting the vaporization of the kerosene oil, which is used for preheating the work.

The oil is passed through the heating unit and is then mixed with compressed air at a pressure of approximately 1 lb. Thence it passes through a rubber hose to the torch used in applying the heat to the rails.

The heating unit also acts as a resistor. The equipment is electrically operated from the standard 550/600-volt trolley circuit, and the group of two heating units is connected in series and placed in series with the 230-volt, direct-current motor which drives the compressor. With this arrangement a snap switch can be used to start the motor, for the heating units have sufficient reactance to hold back the inrush of current until the motor comes up to speed.

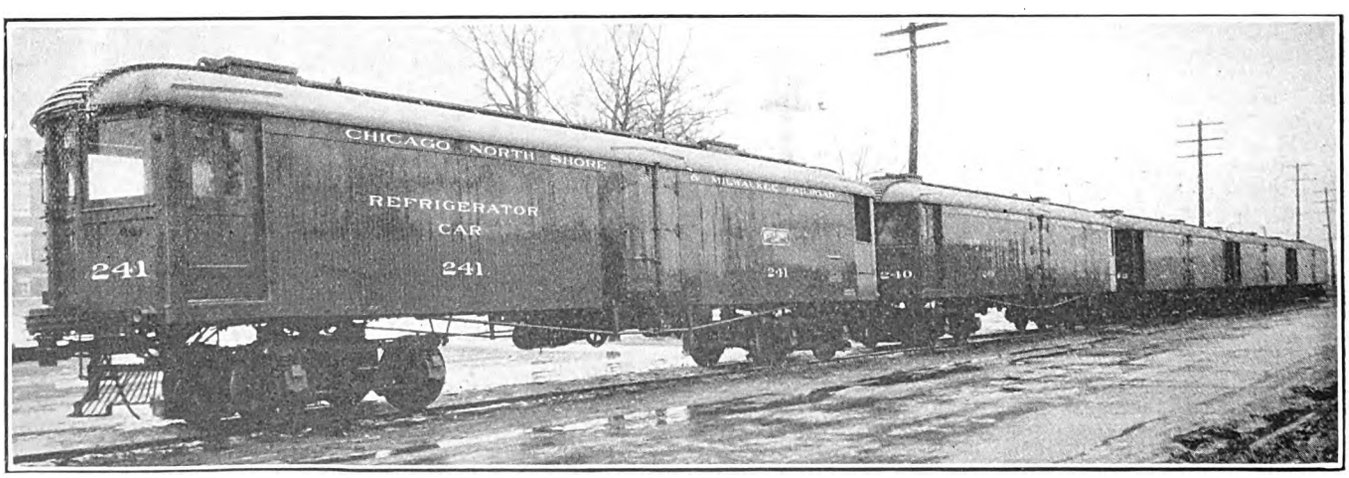
Refrigerator Service on the North Shore

Delivery of perishables and cold storage products by electric refrigerator cars was started on Aug. 23 by the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—connecting Chicago, Waukegan, Racine, Kenosha and Milwaukee.

The cars being used in this type of merchandise despatch service were especially built for the North Shore Line. They are equipped with ammonia compressor, ammonia condenser and water cooling apparatus, all of which is operated by electricity. Thermostatic control apparatus maintains an even temperature at all times, while the air-cooling method of refrigeration insures cleanliness and preservation of shipments in first-class condition during transit.

Each of the five cars in the initial service is equipped with control and air brake apparatus and control cabins at each end. They are finished in the style of the regulation North Shore Line passenger coaches, the absence of windows and passenger entrances being the only deviation in exterior appearance. The cars are being operated in conjunction with the regular merchandise despatch service of the North Shore Line.

That the cars would be placed in



These Units Will Make Possible a Highly Effective Express Refrigerator Service Between Chicago and Milwaukee

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service soon was noted in the ELECTRIC RAILWAY JOURNAL for Aug. 21, page 328. The equipment was built by the Phoenix Ice Machine Company, Cleveland, Ohio.

Welding Exposition to Be Held in November

An international welding exposition will be held in connection with the annual fall meeting of the American Welding Society in Buffalo, N. Y., Nov. 17-19. A feature of the exposition, the purpose of which is to display new developments in welding apparatus and supplies, will be an exhibit of a large variety of welded products.

Plans for the annual meeting include technical discussions and inspection trips, notably an excursion to Niagara Falls. The list of exhibitors includes, among others, the following companies: John A. Roebling's Sons Company, Metal & Thermit Corporation, General Electric Company, Una Welding & Bonding Company, American Brass Company, Westinghouse Electric & Manufacturing Company.

Westinghouse Electric Makes Unprecedented Sales

Indication that the current fiscal year may establish a record in the sales of the Westinghouse Electric & Manufacturing Company is found in the company's recent report of billings of $61,186,127 for the period from March 31 to July 31, 1926. This is an increase of $10,135,114 over billings in the corresponding period of 1925.

In these four months the company earned a net income of $5,567,022, which amounts to $2.34 per share of its outstanding stock. Since the trend of sales is usually upward during the fall and winter, it is predicted by competent observers that the yearly income will run around $7 a share, which is a substantial increase over the high figure of $5.96 a share which the company earned last year.

Kuhlman Company Builds Wheeling Cars

The fifteen new cars now being received by the Wheeling Public Service Company, Wheeling, W. Va., were supplied to that company by the G. C. Kuhlman Car Company, Collinswood, Ohio, so ELECTRIC RAILWAY JOURNAL is advised, and not by the St. Louis Car Company, as was inadvertently stated in the issue for Aug. 28. The incorrect statement was based on news sources which had hitherto proved reliable.

Details of Milwaukee Track Reconstruction

The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has started work extending its double track on First Avenue one mile from Oklahoma Avenue to Euclid Avenue, thence south to Morgan Avenue, at a cost of $40,000. The Holton-Mitchell line will be extended on Forest Home Avenue from 26th Avenue to 29th Avenue at a cost of $25,000. Double tracks will replace the single track line on 35th Street between Clybourn and State Streets. This reconstruction work will cost $59,000. Ready-made tracks in 60-ft. lengths with rails and ties securely spiked together will be used on the 35th Street track laying job. These rails are delivered on flat cars and placed in position by electric derricks. To carry the method a step further, a new track building machine is being constructed at the company's shops. Extension of the Center Street line from 51st Street to Lisbon Avenue has been completed at a cost of $45,000.

North Shore Line Has New Freight Handling System

An elaborate system for handling freight by means of electric trailers will be installed by the Chicago, North Shore & Milwaukee Railroad in both its Chicago and Milwaukee terminals. Twenty-two 8-ton capacity Interlocking semi-trailers, with 7-ft.x17-ft. metal container bodies, together with twenty-six 8-ton Interlocking chassis to convert a like number of the company's present trailers into the Interlocking type, have been purchased from the Trailmobile Company, Cincinnati, Ohio. The trailers will collect the freight at one terminal, will be run over special inclined runways onto flatcars equipped with holding-down apparatus especially designed for this purpose, and will then be transported to the other terminal of the railroad. The advantages of this trailer system are expected to be a greater convenience in handling less-than-carload shipments of freight, and a considerable saving in time and money by eliminating reloading at the terminals.

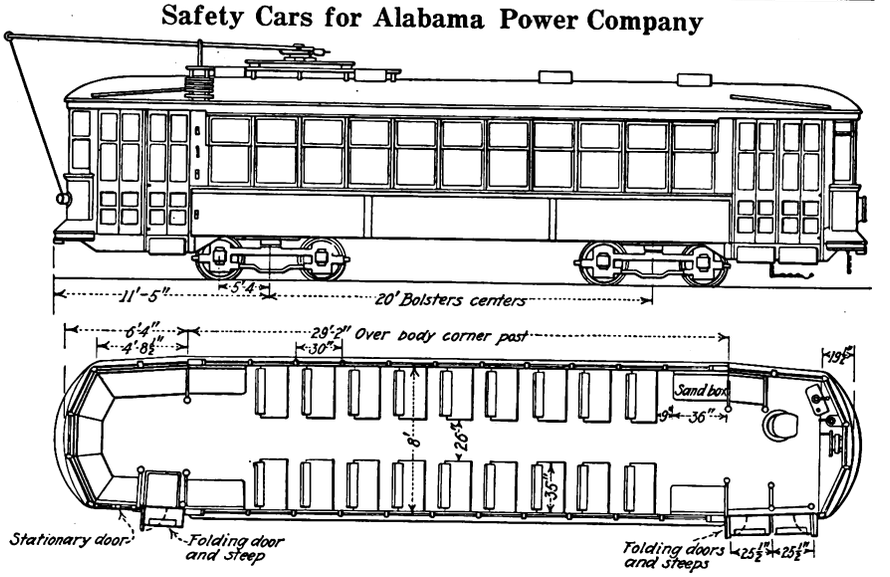
White Motors Opens Seventeen New Stations

The service department of the White Motor Company this year has seen the greatest expansion in its history, with seventeen completely equipped service stations newly established in various parts of the country. Several more are to be opened before the end of the year. There now are more than 80 company service stations in the United States and Canada, exclusive of those operated by about 500 dealers. Each station is equipped and its employees are trained to build a complete new White bus or truck if necessary.

Union Switch & Signal Gets Interborough Order

The Interborough Rapid Transit Company, New York, has ordered electric pneumatic interlocking devices with 75 levers, including 21 automatic train stops and 72 signals from the Union Switch & Signal Company.

Safety Cars for Alabama Power Company



On July 15 the Alabama Power Company of Birmingham, Ala., placed an order with the Perley A. Thomas Car Works, High Point, N. C., for three double-truck, single-end safety cars. These cars are to have a seating capacity of 53 and will weigh 32,000 lb. each. Delivery is expected in eleven weeks from the date when the order was placed. Principal specifications follow:

Length over bumpers	42 ft. 10 in.
Length of body	29 ft. 2 in.
Width over all	8 ft. 4½ in.
Height, rail to trolley base	11 ft. 3 in.
Body	All steel
Interior trim	Cherry
Roof	Arch
Air brakes	Westinghouse
Axles	Taylor steel, best quality
Bumpers	Steel channel
Buzzers	Electric Service Supplies
Car trimmings	Polished bronze and aluminum
Control	Westinghouse K-35-KK
Curtain fixtures	Curtin Supply No. 88 ring fixtures
Curtain material	Pantasote
Destination signs	Hunter
Door operating mechanism	National Pneumatic
Fenders	H-B life guards
Finish	Duco
Gears	Taylor Electric Truck, solid
Hand brakes	Peacock Staffless
Heaters	Consolidated Car Heating, cross-seat type
Headlights	Crouse-Hinds, type WDF
Headlining	Agasote
Journal boxes	MCB, 3¾ in. x 7 in.
Lightning arresters	Westinghouse type K
Motors	Four Westinghouse 510-E, 35 hp.
Registers	Ohmer
Safety devices	Safety Car Devices
Sanders	Ohio Brass
Sash fixtures	Curtain Supply (metal sash)
Seats	Hale & Kilburn, No. 108 stationary
Seating material	Genuine leather
Slack adjusters	American type E
Step treads	Kass
Trolley base	Ohio Brass
Trucks	Taylor Electric Truck
Ventilators	Railway Utility
Wheels	Rolled steel

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Metal, Coal and Material Prices

Metals—New York	Aug. 31, 1926
Copper, electrolytic, cents per lb.	14.40
Copper wire, cents per lb.	16.25
Lead, cents per lb.	8.90
Zinc, cents per lb.	7.75
Tin, Straits, cents per lb.	65.875
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	$5.425
Somerset mine run, Boston, net tons.	1.975
Pittsburgh mine run, Pittsburgh, net tons.	2.00
Franklin, Ill., screenings, Chicago, net tons	1.625
Central, Ill., screenings, Chicago, net tons.	1.50
Kansas screenings, Kansas City, net tons.	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.25
Weatherproof wire base, N.Y., cents per lb.	18.00
Cement, Chicago net prices, without bags.	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.90
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.25
Turpentine (bbl. lots), N. Y., per gal.	$0.94

Rolling Stock

British Columbia Electric Railway, Vancouver, B. C., received eight new street cars in July and was informed that its four new two-car trains would arrive shortly. The new cars, which will be placed on the Dunbar-Hastings East service, are of unusually large capacity, and have exceptionally powerful motors.

Los Angeles Railway, Los Angeles, Cal., has ordered three double-deck Fageol buses equipped with air brakes. These units will be used in city operation.

Eugene Street Railway, Eugene, Ore., has purchased three 29-passenger, city type Mack buses for operation between Eugene and Springfield, a distance of 3.6 miles, at a 15-cent fare, 25 cents a round trip. These are the first buses purchased by this company. Eighteen daily trips per bus will be made. Buses will replace street cars formerly operated between these two points.

Pittsburgh Railways, Pittsburgh, Pa., anticipates delivery of its 50 new cars beginning in October. The units are of the one-man, two-man type and will be used in city service in Pittsburgh. They are being built by the Standard Steel Car Company. Each car will seat 52 passengers. Some of the principal specifications follow:

Weight	38,000 lb.
Length over all	45 ft.
Width over all	8 ft. 1½ in.
Height, rail to trolley base	10 ft. 10½ in.
Body	All steel
Interior trim	Cherry
Headlining	Haskelite
Roof	Monitor
Air brakes	Westinghouse
Axles	4 in.
Bumpers	Hedley anti-climbers
Car signal system	Faraday
Car trimmings	Statuary bronze
Conduits and junction boxes	Crouse-Hinds
Control	K-43-G
Couplers	Van Dorn
Curtain fixtures	Curtain Supply Co.
Curtain material	Fabrikoid
Destination signs	Illuminated
Door operating mechanism	National Pneumatic
Fare boxes	Cleveland No. 5
Finish	Cellulose lacquer
Wheelguards	Root lifeguard
Gears and pinions	Helical
Hand brakes	Peacock
Heater equipment	Consolidated Car Heating
Headlights	U. S.
Journal boxes	Symington 3¾ in. x 7 in.
Lighting arresters	Westinghouse K-3
Motors	Four Westinghouse 514-P
Registers	International
Sanders	Nicholas-Linteln air
Sash fixtures	Dayton Mfg. Co.
Seats	Transverse and longitudinal
Seating material	Rattan
Slack adjuster	Pin type
Springs	Elliptical
Step treads	Feralun
Trolley catchers	Ideal
Trolley base	Nuttall
Trucks	Arch bar
Ventilators	Peerless and Perry
Wheels	26-in. forged steel
Special devices	Rico hand straps, porcelain enameled stanchions

Track and Line

Louisville Railway, Louisville, Ky., is adding some trackage to its old power house, connecting switches at Campbell and Finzer Streets, west to Shelby, which will enable Broadway cars to operate a little over ½ mile east of Second Street, to a loop running around four sides of a block, and back into Broadway. This arrangement should relieve congestion at Second Street materially.

Lincoln Traction Company, Lincoln, Neb., has ordered nine main line automatic box signals to expedite the single-track operation of its suburban lines. The equipment was obtained from the Nachod & United States Signal Company of Louisville, Ky., at a cost of $8,000. It is expected that the new signals will speed up traffic and also furnish a maximum of safety in time of storm and whenever visibility is poor.

San Diego Electric Railway, San Diego, Cal., began service on the new Woolman Avenue extension on July 20. The new line is about 1 mile long and cost more than $88,000. In addition to the major extensions and reconstructions, the company has undertaken a great amount of maintenance work all over the system and officials have indicated that their maintenance forces are to be augmented so that even more of this work can be done in the future.

Power Houses, Shops and Buildings

Eastern Massachusetts Street Railway, Boston, Mass., has awarded contract to Robert A. Doyle, 32 Cauldwell Crescent, Lynn, Mass., to remodel its brick building at 53 Mason Street, Salem.

Asbury Park, N. J.—The Eastern New Jersey Power Company and its subsidiaries, the Coast Cities Railway, operating a shore traction system, and the Atlantic Coast Transportation Company, running single and double-deck buses, will occupy the basement and first three floors, including the mezzanine, of an eleven-story office building on Bangs Avenue and Emory Street. The building will be fireproof in every respect and will cost about $850,000. It will be ready for occupancy April 1, 1927.

Pacific Northwest Traction Company, Seattle, Wash., subsidiary of the Puget Sound Power & Light Company, awaits only the passage of an ordinance by the City Council concerning trackage rights adjoining the site on the south side of Stewart Street, between Eighth and Ninth Avenues, to begin the construction of the proposed stage terminal depot. The building will be fireproof reinforced concrete, 63 x 260 ft., two stories high, adjoining a roofed concourse 260 ft. long equipped with tracks for interurban trains and loading platforms capable of handling twelve stages at one time.

Trade Notes

Bridgeport Brass Company, Bridgeport, Conn., announces the removal of its New York office from the Pershing Square Building to the Farmers Loan & Trust Company Building, Suite 407, 475 Fifth Avenue.

Commercial Truck Company, Philadelphia, Pa., has purchased all assets, including machinery, equipment, trucks completely or partly completed, parts, drawings, dies, etc., and all patents of the Electruck Corporation, manufacturer of electric street trucks. The Commercial company is now able to supply any services that may be required on the products of the Electruck Corporation.

O. M. Edwards Company, Syracuse, N. Y., furnished the brass sash for the 50 cars now being built by the Canadian Car & Foundry Company for the Montreal Tramways. An article on these cars appeared on page 293 of the issue of this paper for Aug. 21, 1926.

Ross H. Rathbun has been appointed sales manager of the Ross Heater & Manufacturing Company, Inc., Buffalo, N. Y. Mr. Rathbun has a wide experience in the electrical industry. He was formerly in charge of the central station department of the Westinghouse Electric & Manufacturing Company.

Morton Manufacturing Company, Chicago, Ill., manufacturer of the Acme line of railway appliances, has just announced the appointment of Robert P. Mosier as manager of foreign sales. Mr. Mosier has had considerable sales experience, following which and until recently he has been connected with the consular service of the United States. For these reasons his service will undoubtedly be valuable in strengthening the sales department of the Morton company. Production capacity of the company's Chicago plant has been greatly increased recently by the erection of a new addition, providing 50,000 sq.ft. more floor space into which machinery and other forms of equipment are now being moved.

New Advertising Literature

Ludlum Steel Company, Watervliet, N. Y., has just issued the second edition of the Tool Steel Handbook. It describes in detail carbon, alloy, rust and heat-resisting steel, their use and methods of treatment.

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-424, entitled "Distribution and Small Power Transformers." In addition to complete information on small power transformers for industrial purposes there is included information on large power transformers and outdoor substations suitable for railway purposes.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, September 11, 1926 *Number* 11

Automatic Control— A Triumph of Engineering

MANY engineers hold that there is no sequence of events in a mechanism so complicated that it cannot be controlled electrically, and in general from some remote point or by automatic devices.

The world marveled at the first automatic control of multiple-unit trains, by which one motorman could at will cause all the motors on each car to accelerate in unison. Today, that control seems absurdly simple when compared with the devices by which one man at a central point can not only start and stop the machines in an unlimited number of substations, but can get reports of every action taking place at each of these points when the equipment is operating automatically to take care of any set of conditions that may occur due to the load imposed on the stations—all without the intervention of human hands. The development of the mechanism by which these things are accomplished is one of the marvels of this engineering age.

The series of articles by L. D. Bale, superintendent of power the Cleveland Railway, shows how the engineers have conquered this most complicated problem so that, while the actions of the parts are extremely intricate, the one human being in charge need not bother with the detail but can concentrate his attention on the result sought. By so doing the reliability of the system has been increased manyfold. Furthermore, this has been accomplished with a gain in efficiency of the system. Such a result is worthy the serious attention of all electric railway men, whether or not they understand all the details through which the accomplishment was made possible.

A Street Car Exhibit and Its Significance

SIGNS all point toward a stimulated interest in car design development at the Cleveland convention. Space reservations by manufacturers and operating companies indicate that there will be brought together an exhibition of cars such as has never before been seen by the industry.

Manufacturers and operators have both been busy during the past year. There will be more cars shown than at any previous convention. But it is not in numbers alone that this exhibit will excel. The electric car is again making progress. There will be a feast of new ideas for railway men. Several interesting surprises are in store. At Cleveland there will be ample evidence that the industry is not headed for the scrap heap.

Out of this convention should come further interest in the replacement of obsolete cars. In Grand Rapids and more recently in Memphis there has been definite proof of the wholesome effect of such a program on the general public attitude toward electric railway service. This transcends in its importance the immediate effect on riding and operating costs. It has proved to be an effective means of winning public interest and cooperation.

Science and Engineering Needed in Car Development

NOISE measurement in electric railway car operation holds a multitude of possibilities. The equipment developed recently at the University of Wisconsin and the preliminary results obtained with it, as recounted in an article in this issue, show this. The reader undoubtedly will obtain the impression that much remains to be done both in development of the apparatus and in its use to determine and classify sources of noise. When this has been done, a new means of analysis will be available that should make radical improvements possible.

A moment's reflection on the application of science and engineering to car operation and construction leads one to the startling realization that such application has been conspicuous by its absence. Since the development of speed-time and energy curves, years ago, which led to a better understanding of railway motor performance, there has been little else than the practical application of practical methods. Of course improvements have been made in motor design. Substation equipment has been greatly developed, and to some extent new materials and new ideas have been adopted in electric car manufacture. But where has a searching analysis been made of the effect of different principles in car design, the effect of different types of cars on tracks and the counter effect of the tracks on cars, for the purpose of developing improvements?

Not long ago a railway operator admitted that he was vacillating between two policies in regard to car construction. At one time he believed that the high-grade interurbans must be operated by heavy cars that, due to their enormous weight, would damp out noise and vibrations. At other times he admitted that the economies of light-weight equipment and the easy riding qualities of this type of construction held a strong appeal. On this operator's property may be found new cars of both types. Upon what can this operator base his judgment? No one has determined by actual measurement whether or not a properly designed light-weight car could ride as easily as a heavy car. No one has determined how much less is the shock on both rolling stock and rails when cars of light weight are used.

The only criterion that exists with regard to noise

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is opinion. Opinion is valuable but not always convincing. In a court of justice it seldom is accepted, save as a last recourse, and then with many qualifications. Facts are the basic evidence that carry weight. And facts based on the application of science and engineering are badly needed to help in the development of the electric car to the position that it should and must hold.

Europeans Are Experimenting with Bevel Drive for Cars

GREAT interest should attach to the trials in Europe of bevel-gear drive for street railway cars. The general idea is not new, but the universal use of this kind of drive on automobiles has undoubtedly given an impetus to this form of construction. The construction of some 475 cars of this kind for Paris and others elsewhere in Europe shows that the application of this drive to street car propulsion has gone beyond the experimental stage. The differential form of axle construction, used with automobiles, has not been considered necessary in these cars. A solid axle is used for each pair of wheels.

The chief advantages claimed for bevel-gear drive for electric cars are: Reduction in total weight, amounting to from 15 to 20 per cent; a reduction in the unsprung weight of from 30 to 35 per cent; consequent reduced energy consumption and longer life of roadbed; better braking with reduced effort because the brake-shoes are applied to a drum on the motor shaft; reduction in height of car floor over the street level because of greater freedom in motor design.

It is somewhat notable that practically no change has been made in the position of the street car motor in this country during the last 40 years, or since Sprague first mounted it with journals on the axle. It may also seem strange that such a radical development should have been carried to the extent it has in Europe without more effort being made in this country to determine the possible advantages of this method of construction, in view of the far greater extent of the electric railway industry in this country than abroad.

The latter condition may be due, at least in part, to notable differences in manufacturing methods here and in Europe. These differences in some respects work to our advantage and in others to our disadvantage. They consist primarily in the practice here of manufacturing on a large scale with standardized parts as compared with the so-called "hand" manufacturing methods in Europe. Thus, for instance, an American achievement is the manufacture by machinery of millions of good watches which can be sold at a low price; Switzerland's achievement is the manufacture of a smaller number of hand-fitted, higher grade watches at a lower price than the similar grade of watch could be made in this country. The same principle applies in automobile manufacture here and abroad.

We do not know yet that the bevel drive for street cars is a permanent development. We do know, however, that if American electric railways are to utilize all of the possible improvements in their field, research work must be as active on this side of the Atlantic as on the other. It may be less easy here to change standard types of equipment, but at least we cannot afford to overlook the possibilities of radical improvements in design of electric railway equipment, such as the bevel drives for single-truck cars may be.

Consider the Value, Not the Source, of Suggestions!

TWO notable articles were published recently in ELECTRIC RAILWAY JOURNAL recording contributions made by women employees to the progress of utility organizations. They are not the first of their kind, but each of them carries a message to officials and personnel. The subject which Mrs. Mary C. Best discussed in the issue of Aug. 28 and that which Alice Schuetze took for her text in the issue of Sept. 4 are dissimilar, but each of them made her points well. Mrs. Best's "What One Car Said to Another" offers much food for thought. It is true that the idea in the analogy which she used is not new, but the clarity with which she made her points in contrasting the old with the new commends her comments highly. Her remarks, it would seem, should afford valuable publicity material, particularly to the operators of one-man cars. Miss Schuetze's contribution was of another kind. It recalls that the hand which rocks the cradle still rules the world, and the author shows some of the few ways in which it is done. The point she makes is a good one, that even the women who leave the utility industry for marriage continue to carry with them a message from the utilities to their neighbors, their club members and their families. These, of course, are some of the utilitarian values behind what these women have said, but their remarks have value entirely aside from this—value that shows the amount of real imagination and thinking many of the carefully selected female employees are putting into their work. This is something that it is feared not all men, even in this day and generation, appraise at its full worth.

Giving Away Other People's Money

PLATFORM men in the employ of the Cincinnati Street Railway have been insisting that they have their pound of flesh. And they have got it. They have got it through an arbitration award which will cost the company an additional $300,000 a year. Under conciliation they could have had an award of an increase of 1 cent an hour, but this they rejected.

In insisting upon getting their pound of flesh—and the expression is used to connote the worst—the men acted deliberately. It was to be expected that they would, but hope springs eternal in the human breast, when the mind is not obsessed with the idea of getting all one can, that labor may some time display a spirit of mercy. This is said not because of gullibility with respect to the motives that prompt labor, but because here was an unusual case.

It is one thing to say that the finding has been made, that it was in accordance with the evidence, and that the conditions it imposes should be borne and borne with grace. It is even granted that each side goes into a case of this kind fortified to uphold its contention, and that it is to be presumed the side against which the award weighs has failed to sustain its contention. There are many more things that might be said in extenuation of the policy of accepting the finding and saying nothing about it. Despite all these things the thought persists that in this case the insistence of the men was ill-advised.

The circumstances in Cincinnati are peculiar. Less than a year ago the complicated arrangement was

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unscrambled under which the local lines there were operated. Under the former arrangement, with economic conditions prevailing from which there was apparently no escape, a fare basis was reached that was onerous to the users of the service. Finally came the agreement under which the leasing arrangement between the Cincinnati Street Railway and the Cincinnati Traction Company was terminated and a new start made. That is all a matter of public record. In the present arbitration, the employees chose to disregard these things or not to heed them, and the two arbitrators who fixed the award, if they took the matter into account, must have minimized the effect of their findings on the company's ability to rehabilitate itself.

From the purely selfish point of view all this may be justified, but the feeling persists that Mr. McKnight was right when he said that "giving away other people's money may bring a pleasant thrill with it, but this does not justify awards that are economically unsound and hazardous." That is how the company arbitrator looked at it. That is how ELECTRIC RAILWAY JOURNAL looks at it. There may be some additional economies in operation which the company can put into effect, but despite this, the conclusion appears to be inescapable that the company's arbitrator was correct. So far as the men are concerned, they still have a chance to show that all is not self with them by rendering a super-service that may make it possible for the company to absorb some of the cost that the award has imposed. Under the circumstances, it will be a delicate test to which they will be exposed.

Most Men Wake Up When Their Pocketbooks Are Touched

MOST people do not worry greatly about the troubles of others. Indeed, La Rochefoucauld has said: "In the adversity of our best friends we often find something which does not displease us."

It may be that this somewhat cynical observation explains in part the attitude of the public to the street railway companies in connection with fare questions. now happily largely in the past, as well as the more modern problem of street congestion. The increases in fares of a few years ago were admitted to be necessary to public and carrier by those who had given serious consideration to the subject, but despite this public interest they did not come in most cases as the result of popular demand. It was only when an impartial commission granted them as a matter of justice or when the public came to realize that without an increase in fare the cars would stop and the community would no longer have an essential means of transport that higher fares were established.

Much the same explanation can now be given of the public apathy in connection with the parking evil in busy streets. Railway companies and others who have given study to the subject realize that with the amount of traffic greatly increased the effective width of the street is being cut down by a quarter to a half because automobile and truck owners use the streets for storage purposes. Still the public continue in their easy-going methods, thinking that after all it is some one else's worry, and that they personally are not affected.

The only way to wake these people up is to explain to them their really vital interest in the matter. This plan is now being followed in New York City, where a recent traffic investigation has shown that the cost per inhabitant for avoidable street congestion is at least $33 a year.

This figure is based on a report of the Fifth Avenue Association issued some time ago. When put in concrete form it becomes a very strong argument with the average citizen for some reform. Window announcements on the New York Railways cars therefore bear the words, "Traffic Delays Cost You $33 a Year," while the inside of the poster explains to the car rider how this figure is obtained.

The campaign for clearer streets is bound to be a long one, but it must be successful in the long run, as better conditions will benefit all.

Chicago's House-to-House Passenger Canvass

MORE attention than it apparently has received so far among electric railways is deserved by the house-to-house campaign conducted by the Chicago Rapid Transit Company. Counts have been made before among passengers of electric railways and canvassers have solicited from door to door in more than one instance, but the Chicago undertaking stands out as probably the most pretentious of its kind.

Figures of the canvass reproduced elsewhere in this issue are very interesting. Only 7 per cent of those interviewed were unfavorably disposed toward the company and about 1 per cent hostile. The reason for this hostility was deduced by the survey to show that the biggest factor was the personal service of the individual employee. That was mighty interesting. The company accordingly set about the work of spurring its men on to greater and greater effort, and the campaign was not only accepted with grace by the men but provoked enthusiasm to do even better than before.

More than a year ago the company staged its passenger partnership campaign, in the course of which about $5,000,000 of stock was sold locally, mostly among the company's riders. That did much to cement the community of interest between the company and its patrons, fostered before that in many ways, particularly by advertising the facilities of the company and the service, to say nothing of the modernization of the system physically with respect to new cars, improved station facilities and other changes.

Of course, the disposition of the so-called intelligentsia among car riders everywhere to sneer at all such movements will probably persist despite the tangible evidences already discernible of the efforts being made still further to improve public relations, but the fact remains that the contacts previously made between the company and its patrons and those fostered by the more recent canvass have been strengthened.

As indicated before, there has been plenty of evidence on the part of the company of its willingness to improve the physical property. So the patrons apparently appreciate that they are benefiting no less than the security holders. The obligations of the two have, of course, always been mutual, but in the past the disposition too frequently has been for one or the other, and sometimes both, to lose sight of this. To sum up, the canvass recently made and the campaign conducted among its own men show that the Chicago company has been studying its market and studying it carefully with profit to its patrons. This means profit to itself, not all tangible, perhaps, but still profit—profit in its broadest sense.

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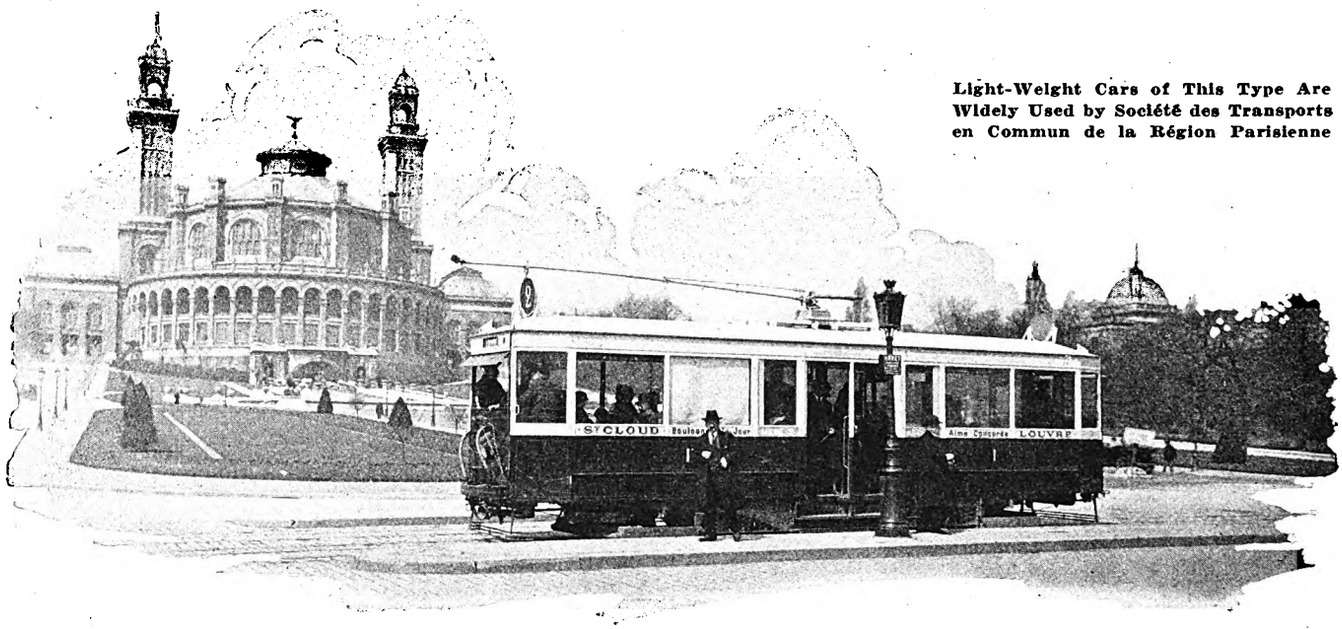

Light-Weight Cars of This Type Are Widely Used by Société des Transports en Commun de la Région Parisienne

Paris Uses Bevel Gear Drive Extensively

Four Hundred and Seventy-five Cars of This Type Are in Use or on Order—More than Four-fifths of Entire Weight Is Spring-Borne—Tests Show These Cars to Be Economical in Operation

A DEVELOPMENT extending rather rapidly in Europe, though practically unused in America, is the Cardan drive for electric railway cars. Previous articles in the JOURNAL have told about different installations with this drive, particularly in France and Switzerland. This lends interest to an extended article in the May 26 issue of *L'Industries des Voies Ferrées et des Transports Automobiles* which sums up the progress to date along this direction, particularly in Paris. Here the modern application of bevel gears to electric street cars seems to have begun with an experimental car built in 1921. Others of somewhat different construction followed and now 475 motor cars of the type known as "L" have been in use in Paris for about three years and eight cars of the same type have been in operation in Nice for a year or more. All were built under the patents of the Scemia Company (Société de Construction et d'Entretien de Matériel Industriel et Agricole) of Paris.

The abbreviation "L" stands for "light" because these cars are lighter in weight than the former standard equipment. The latest type "L" car, as used in Paris, is a four-wheel, center-entrance car with the following main dimensions and details:

Wheelbase, 11 ft. 10 in.
Seating capacity, 49 passengers.
Complete weight empty, 28,380 lb.
Weight per seated passenger, 580 lb.
Weight of body (with motors and equipment) 20,900 lb.
Unsprung weight, 4,180 lb.
Deflection of spring support, 0.18 in. per 1,000 lb.

The car has a chassis on which the body is supported, as shown in the accompanying illustrations.

The chassis is made up entirely of rolled shapes to secure lightness, the longitudinal members being one piece connected by cross girders and large gusset plates. All of its weight, however, is spring-supported on the axles through a system of horizontal and vertical springs, both semi-elliptic and helical.

The vertical spring support is obtained, as shown in an accompanying illustration, by semi-elliptic springs attached at their center to the journal box, while their ends support the car body and equipment through vertical helical springs. These latter take up small shocks from the track which cannot be absorbed by the large leaf springs. The total flexibility in a vertical direction of these springs, as stated, is about 0.18 in. per 1,000 lb., or about double that of an ordinary motor car on standard trucks.

COMPARATIVE PERFORMANCE RECORDS WITH TYPE "L" CAR AND STANDARD CAR ON TRUCK

	"L" Type Motor Car			Motor Car on Truck Standard Type			Economy Gained by Type "L" Car	
		Energy Consumption			Energy Consumption		Total Energy Consumption	
Condition of motor cars	Weight Metric Tons	Total Kw.-Hr.	Per Ton-Km. Watts	Weight Metric Tons	Total Kw.-Hr.	Per Ton-Km. Watts	Per Cent.	Per Ton-Km. Per Cent.
Motor car empty	13,180	9,520	63.5	15,500	11,300	64.0	15.7	0.78
Motor car loaded	16,060	10,720	58.7	18,250	12,320	59.3	13.0	1.01
Motor car and trailer.....	29,320	19,080	57.2	36,600	20,850	58.0	8.0	1.38

Transverse shocks, which occur while the car is rounding curves or passing over bad joints in the track, are absorbed by the resistance provided by the spring links connecting to the ends of the leaf springs and the chassis, as shown in the illustration. This system of spring support is so flexible that a single man can make the body of the car oscillate. This system of support is the same as used on many automobiles and has been found to give comfortable riding.

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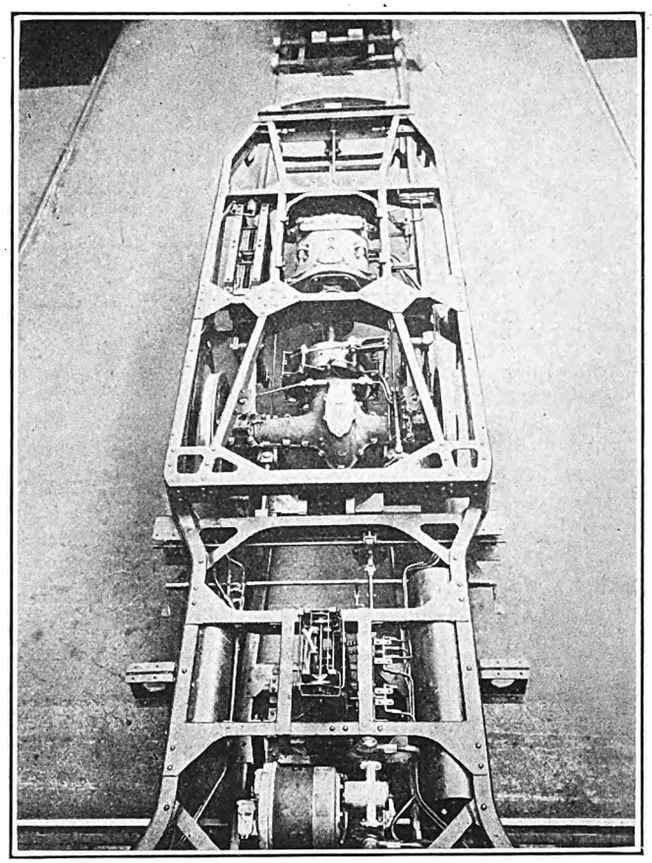
The driving equipment for each of the two axles consists essentially of the following four parts:

1. The driving equipment, consisting of the axle, the pedestal bearings and the bevel gear, these various parts being fully inclosed in a casing.
2. An electric motor, supported entirely on the chassis.
3. A driving shaft with universal coupling, connecting the motor to the driving mechanism and permitting free play of the motor about the axle.
4. Links transmitting the effort of propulsion from the driving equipment to the chassis.

Driving Equipment

The driving equipment is shown in an accompanying illustration and consists of (1) an axle carrying the bevel gear and the car wheels and (2) an oil-tight casing which surrounds the gearing and forms a support for the axle pedestals.



Underframe of Paris Light-Weight Car Showing Position of Motor and Cardan Drive

To insure the bevel gearing functioning correctly, it is necessary to have the axes of the bevel pinion and the bevel gear keep an invariable position, the one with respect to the other. This is accomplished in the following way:

The bevel pinion is carried on a shaft whose outer end passes through a thrust bearing in the casing, while the inner end is supported by a bearing in a swiveling collar mounted on the axle, and kept in position with respect to the gear by a shoulder on the axle. Though wear takes place the axes of pinion and gear remain in the same plane. Angular displacement of the pinion axis with respect to the gear is provided for in the thrust bearing. The bevel gear is made in two parts which are mounted on a hub of forged steel, pressed on the axle. Both oil and grease are used for lubrication. The bevel gear revolves in a bath of oil; the oil is distributed by grooves to adjacent bearings.

Motor

The motor is of the ventilated type with box frame. At 550 volts and 800 r.p.m. on a one hour's rating the output would be about 50 hp. The weight is 720 kg. (1,584 lb.) or 14½ kg. (31.7 lb.) per horsepower. As already explained, the motors are mounted directly on the chassis and are thus entirely spring-supported.

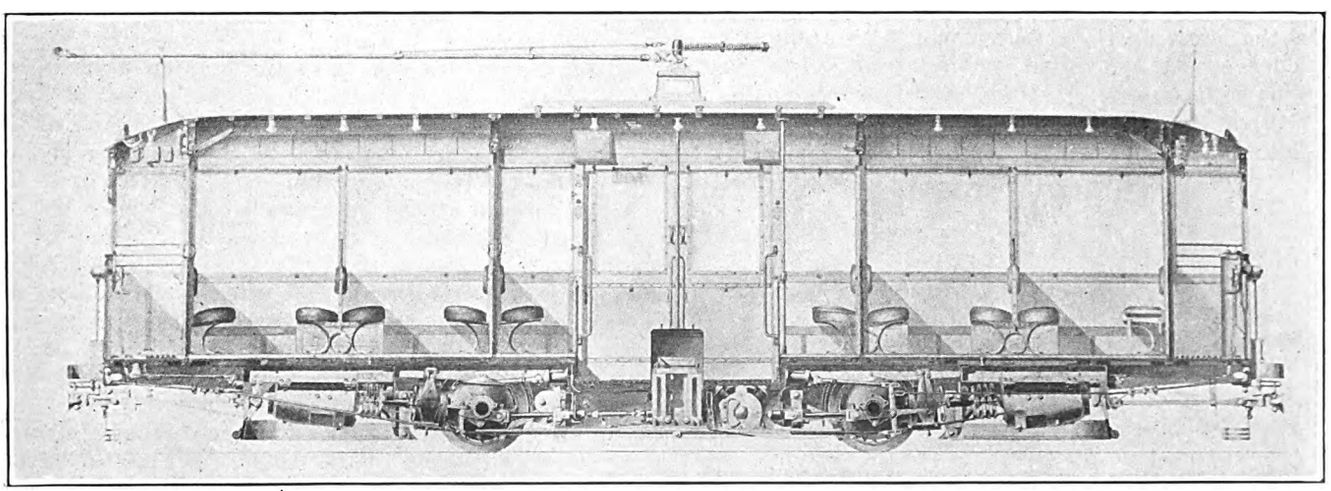
Ball bearings are used for the armature and these bearings are installed in the end housings, which are bolted to the frame of the motor. To remove an armature, only the rear housing has to be unbolted. The ventilating fan is mounted on the armature shaft on the end opposite to the commutator.

Since the motors are attached directly to the chassis they are subject to all of its transverse and vertical oscillations. Hence, to maintain the alignment between the motor and the gearing, it is necessary to have a flexible coupling which allows free play to the suspension so that the movement of the motor will have no effect on the alignment of the gearing. This is accomplished by equipping the transmission shaft at each end with a flexible coupling, made up with rubber gaskets.

Braking Equipment

Braking is done not against the wheels but by brake shoes which are forced by levers against a drum keyed on the pinion shaft. There are, of course, two pinion shafts, so there are two sets of brakes, one on each shaft.

The brake levers are arranged vertically on each



A Well at the Center Reduces the Step Height While Leaving Space at the Ends for Motors and Driving Mechanism

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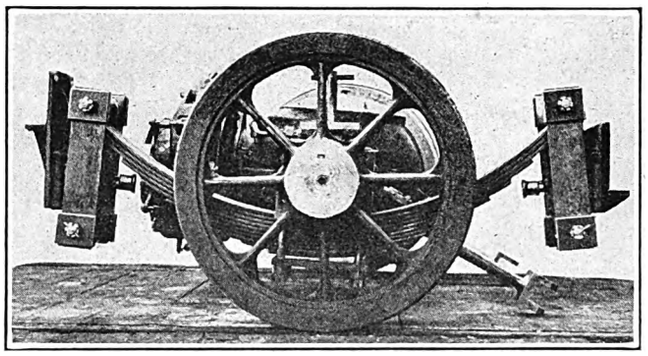


By This Arrangement of Springs the Unsprung Weight Is Kept Down to a Minimum

side of the drum and are attached at their lower ends to the casing, permitting movement for the application of the brake shoes. In order to provide for the wear of the shoes, the latter are pivoted at one point on the brake lever so that their wear is even over the entire face, irrespective of the position of the brake lever. An adjustment provides for taking up the wear of the brake shoes.

This method of braking is about three times as effective as that of braking on the wheels, as can be shown by a simple calculation. The rate of speed of the motor shaft as compared with that of the car wheels is 69 to 11, but the diameter of the drum is about 425 mm., as compared with 815 mm. diameter of the wheels; (69 x425) ÷ (11x815) equals somewhat more than 3.

The brakes can be operated by hand or pneumatically from either end of the car.

The compressor motor is of the series type, revolving at 1,100 r.p.m. and of 2½ hp.

Control and Collector

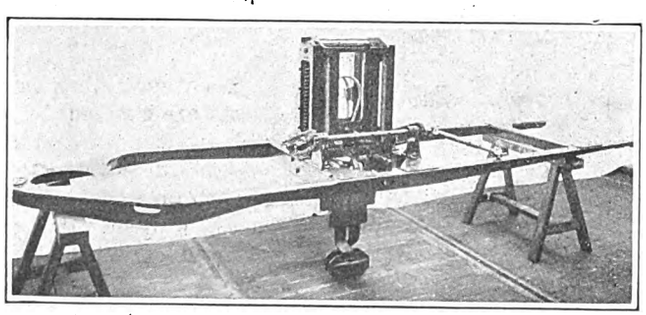
The control equipment contains no special features. It has nine operating positions and four rheostatic braking positions and has been especially designed to reduce its weight, which has been brought down to 104 kg. (229 lb.).

The current-collecting apparatus consists of a plow for operating in the conduit and also a trolley for use on the overhead system.

Operating Results

The new method of drive shown has given good results from the standpoints of both light weight of equipment and reduced maintenance. The results of some comparative tests with this type of "L" car and of the latest previous type of car with a single truck under exactly the same conditions are given in the table on page 408.

Other tests showed that at the same speed the tractive effort per ton was about 5.4 per cent less for the type "L" car than for the car equipped with trucks.



Conduit Plow Carried Midway between Wheels and Capable of Being Raised and Lowered by Rack and Pinion

The two cars were of exactly the same dimensions. The type "L" car used for the test had operated since being put in service 2,335 km. (1,460 miles) and consequently at the time of the test was in good operating condition. The other car, mounted in the usual way on a single truck, had run 2,000 km. (1,250 miles) after having received a general overhaul. It was equipped with two motors and presented the following general characteristics:

Capacity of each motor, 55 hp.
Potential, 550 volts.
Current rating, 88 amp.
Motor speed, 450 r.p.m.
Gear reduction, 71:17.

Tests were carried on with these two motor cars operating singly and then each hauling a trailer which was in good operating condition. The equipment was inspected in detail and was lubricated daily during the test. Tests were made with the cars empty and also loaded with 65 kg. (140 lb.) per seat.

The trial runs were made in the suburbs of Paris so as to get track free from street congestion and permitting regularity of operation. The profile varied from level to 4 per cent grade. The length of run was 11.375 km. (7.1 miles) and included 31 stops. The run was made in 34 minutes and the schedule speed was 15.5 km. (9.7 miles) per hour.

Maintenance

It is believed that there will be a considerable reduction in maintenance owing to the lighter equipment. A striking feature of these new motor cars is the ease with which they pass around curves of short radius on account of the radial action taken by the axles in respect to the car body. The result is a much decreased wear of track and tires, notably the latter, and an increase has been noted between re-turning of tires of from 20 to 30 per cent in car-miles for the motor cars with these axles as compared with those with rigid axles.

Reduced Lubrication Costs

With this type of motor with Cardan drive, the number of places requiring lubrication is much less, so the amount of lubricant required is less, as well as the time required in applying it. A number of inspections show that the gain in time required in lubricating amounts to 50 per cent and in quantity of lubricant used to 18 per cent.

Brakeshoe Equipment

The decrease in weight of the braking parts is not the only advantage which follows the method of braking on a drum. There is a gain also in the life of the brakeshoes. The ordinary type of brakeshoe applied on wheels is subject to rapid wear on account of the high pressure of the shoe against the wheel (in the order of 15 kg. per square centimeter), by the condition of the surface of the tire, which is apt to be rough in winter, when sand is often employed, and the effect of the sand on producing wear when it is between the tire and the shoe. Thus, one company with a large traffic reports that the average life of its brakeshoes is only from one month to five weeks.

With the type of brake used on these cars, on account of the higher speed of the motor, the pressure of the shoe on the drum can be greatly reduced, namely, to

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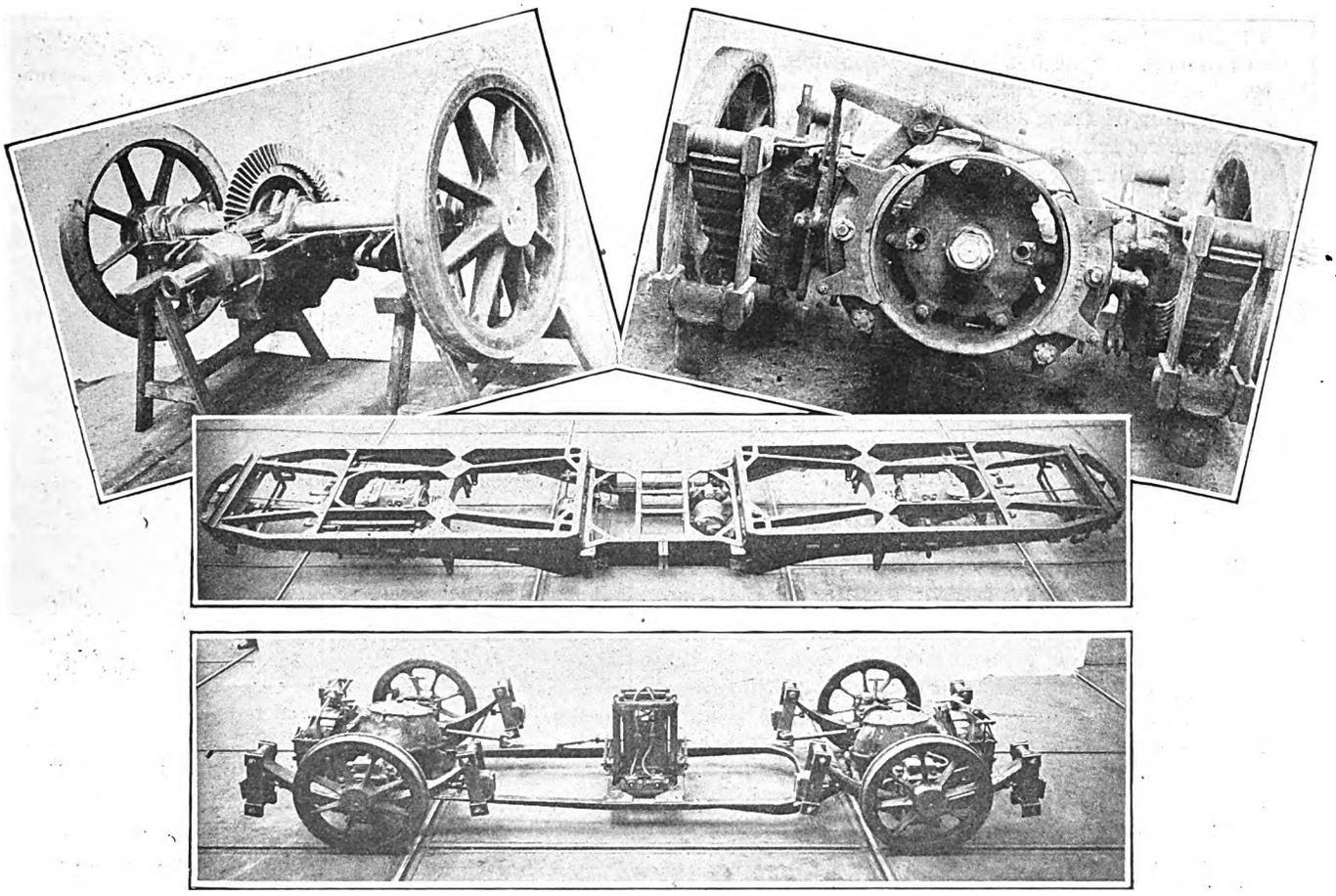


Parts of the Equipment of Car with Bevel-Gear Drive in Paris

At top, left—Bevel gear and pinion with upper half of casing removed.

In center—This view shows the frame which supports the floor, together with the car motors, the compressor motor, and the air tank. All of this weight is flexibly supported.

Below—The running gear, with bevel gear and gear casing mounted on axles and brake rigging mounted to act on driving shaft. The mechanism at the center in the lower view is the conduit plow.

At top, right—The brake shoes do not act against the wheels, but against a drum on the driving shaft.

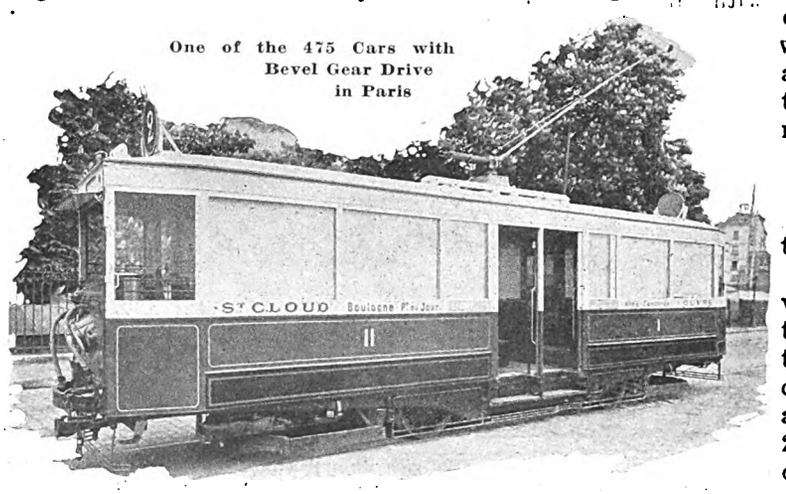
about one-sixth that required with the wheel shoe. In addition, the drum is protected against deposits of mud and dust so that it preserves its original surface. The life of the brakeshoe is thus increased to about four months on the average; that is to say, the life of the brakeshoe from this reason is about four times that of shoes used against wheels, but the weight of the metal worn away is reduced in the ratio of one-tenth.

With the "L" type of car the brakeshoes can be adjusted while the car is at the end of the line and it is not necessary to put the car over a pit. Brakeshoe renewal takes somewhat longer than with the ordinary type of shoe, but it should be remembered that the shoes wear four times as long as with shoes applied to wheels. The result of experience shows that the total saving in time in shoe renewal amounts to about 50 per cent.

Motor Repairs

The replacement of motors on this type of motor car is simple. It is necessary only to remove the four bolts which attach the motor to the chassis and disconnect the intermediate shaft with the elastic coupling. The motor is then dropped down on a hoist and a new motor is inserted in the same way. A change of motors in this way can be accomplished by two men in a half day. If done at night, when the car is not in service, no useful time of the car is lost.

Where wheels are to be turned down on a wheel lathe, the car body is jacked up and the wheels taken out with their gearings. But the motor does not have to be removed from the car. The whole axle, with gear mounting, is then put in the lathe. The time required to dismount a pair of wheels, turn them down and replace them takes the time of two workmen for half a day.



One of the 475 Cars with Bevel Gear Drive in Paris

Conclusions

The following advantages are claimed:

Reduction in total weight of the cars by the elimination of the truck weight. In the car and equipment this amounts to from 15 to 20 per cent in motor cars of the same capacity.

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A reduction in the non-flexibly supported weight of the equipment on account of the attachment of the motors to the chassis. This has been figured as a reduction in weight of from 30 to 35 per cent in motor cars of the same capacity.

A reduction in motor size and energy consumption.

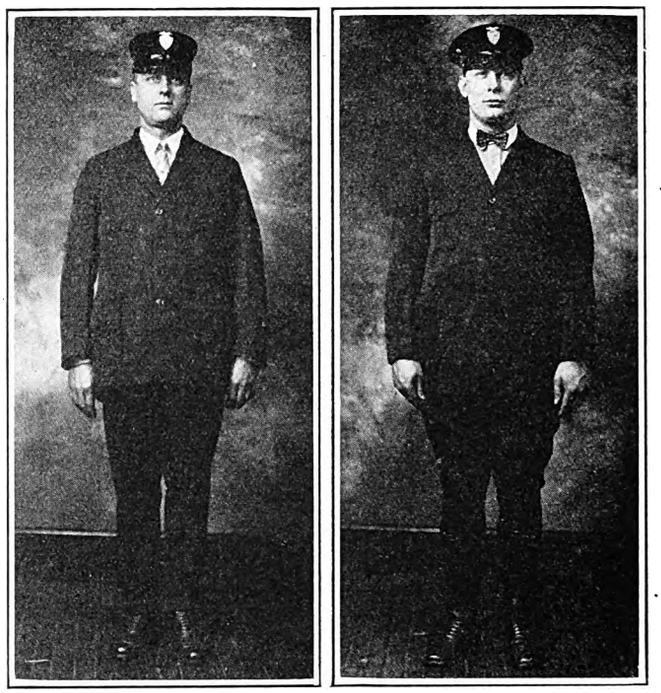
Better braking with reduced effort, reduced weight of braking equipment and reduced wear of brakeshoes; shoe adjustment more easy and less frequent.

Finally, the new type of car, owing to the great latitude permitted as to the length of wheelbase and because of the low floor available with this construction, permits the use of center or end entrances, hence allows a car design which is best adapted to the conditions on each property as well as a seat arrangement best fitted to local conditions. From these advantages it is possible to conclude that this new type of motor car has a definite future.

New Style Uniforms for P-O Men

FINDING that the blue serge or broadcloth, for many years the standard for uniforms, was not only more expensive but harder to keep clean than some of the newer materials, officials of the Pennsylvania-Ohio Electric Company decided to make a change. A sample uniform of gray whipcord was made up for Inspector Enyeart of the Youngstown Municipal lines and in the course of a few weeks he attended several safety committee meetings in Youngstown and also the various cities served by the company.

Two general types of uniform were made standard, one for car operators, consisting of coat, vest and regulation trousers, and one for bus operators, substituting breeches and black puttees for the regulation trousers. Many of the men were so pleased with this change of uniform that they immediately entered their orders for the new suits even before the local stores had an opportunity of stocking up on them. Later the company decided to present each car and bus operator with the initial uniform in order to effect the change as quickly as possible.

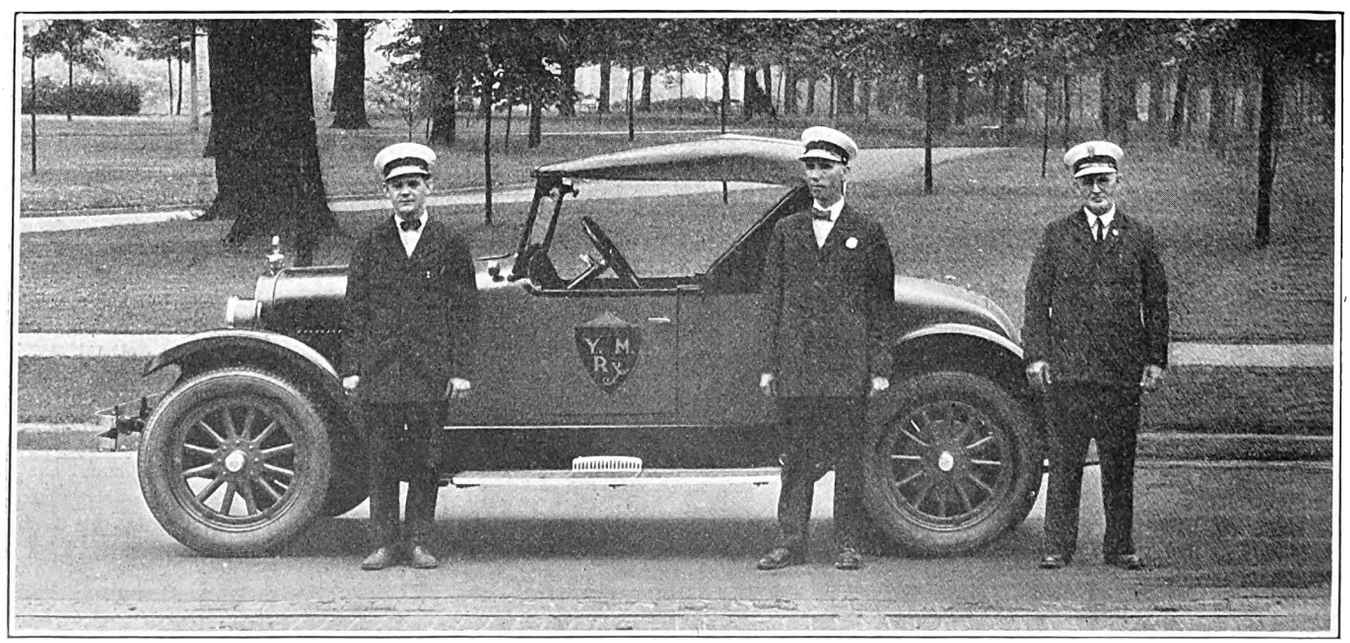


This Gray Whipcord Three-Piece Suit Is Now the Standard of the Pennsylvania-Ohio Electric Company

At left, car operator's uniform. At right, bus operator's.

The accompanying pictures illustrate the standard car operators' type of uniform, the bus operators' and the inspectors' as well. The inspectors' uniform differs in that a white cap is used as a distinguishing mark. On the front of the cap is fastened a metal shield with the insignia of the company. The only place where the trainman's number appears is on the back of the shield, so that it is not visible unless the shield is removed from the cap.

Three of the inspectors are shown standing in front of one of the runabouts assigned to the inspectors. By these cars an inspector may get to a point of trouble quickly. This is considered essential in rendering the quality of service now provided in Youngstown.



Three of the Seven Inspectors on the Youngstown Municipal Lines Equipped in Their New Standard Uniform of Gray Whipcord. The White Cap Is the Distinguishing Mark of the Inspector. The Runabout Is One of Several Used by Inspectors on Hurry Calls to Points of Trouble

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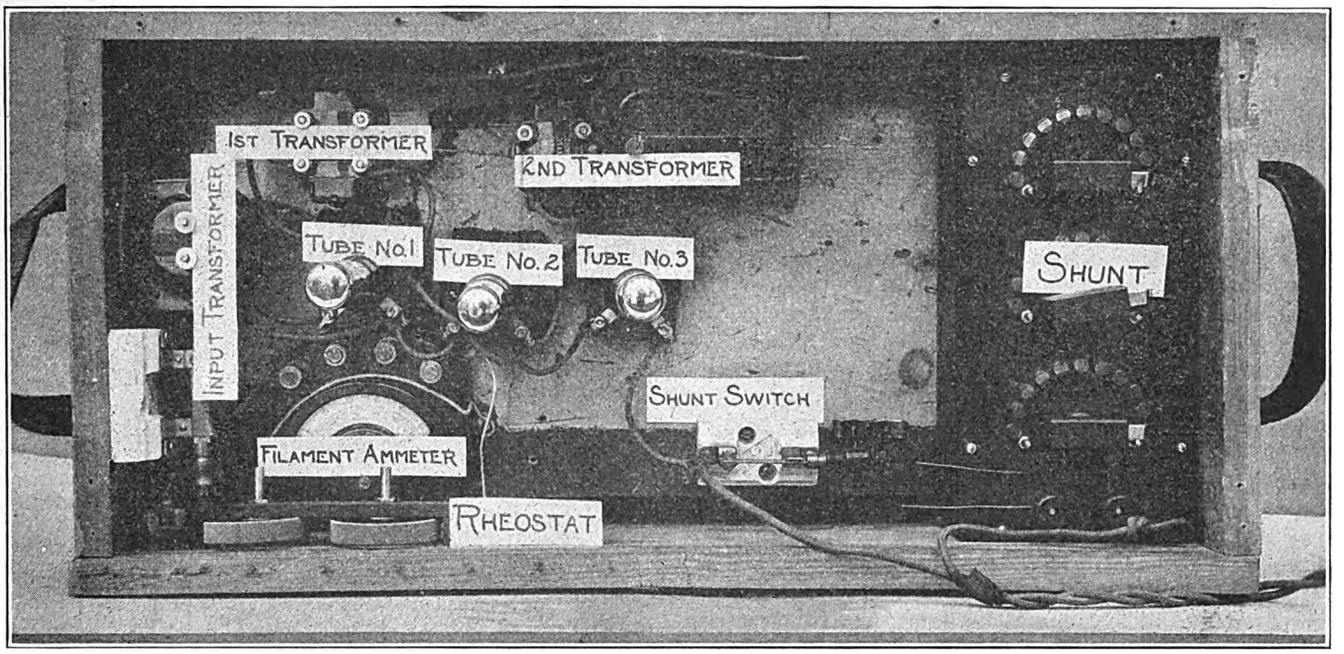
Recording Apparatus Measures Car Noise

Equipment Based on Radio Principles Developed at University of Wisconsin Through Electric Railway Fellowship of Wisconsin Utilities Association — Startling Possibilities Seen in Comparative Tests — Experiments Were Conducted on Several Wisconsin Street Railways

By James Theron Rood and Kent E. Wooldridge†*



The Amplifying and Detecting Apparatus Is Compactly Mounted in a Box so that It Is Portable. Tubes Are Mounted on Flexible Supports to Eliminate the Effect of Vibration

NOISE of street car operation has been measured during the last year by a device developed at the University of Wisconsin. The results indicate many possibilities. Because this work was a part of the preparation of a thesis, it was naturally allotted a limited time. About two-thirds of the year was spent in the development and construction of a practical measuring equipment that would at once be portable and yet practically unaffected by vibration or other extraneous conditions surrounding the actual use of the apparatus. Only a brief period was left available for actual tests, but many noise measurements were made of car operation in Fond du Lac, Sheboygan, Milwaukee and Madison.

The results accomplished and the tests made, as given in this article, are of significance in that they indicate the extensive possibilities that can grow out of the further development of this method, rather than in the intrinsic value of the tests themselves.

*Professor of electrical engineering University of Wisconsin.
†Chicago Rapid Transit Company.

EDITOR'S NOTE

Kent E. Wooldridge, a graduate student of the University of Wisconsin, was selected by the Electric Railway Section of the Wisconsin Utilities Association to hold for 1925 the fellowship established by that group of railway operators. The subject assigned was the study of noise in the operation of electric cars.

The work was carried on during the college year, in which time Mr. Wooldridge specialized in electric railway operation under Professor Rood, who spent considerable time with Mr. Wooldridge in the development of this equipment. Results of the tests and a description of the equipment are compiled in a volume that is jointly a report to the association and a thesis on which Mr. Wooldridge received his master's degree.

Since graduation, last June, Mr. Wooldridge has been employed by the Chicago Rapid Transit Company as a cadet engineer.

Investigations in the measurements of sound have heretofore been conducted in laboratories and were of scientific value only. Very recently the telephone companies have made studies and measurements of sound in connection with voice transmission and within the year there have appeared descriptions of similar tests applied to the automotive industry. The work at Wisconsin, however, has been devoted directly to the study of noise produced in electric railway operation, both in regard to its quantity and its source or cause.

The apparatus designed and constructed at the university is based upon the principle of sound amplification used in radio reception. In fact, the equipment is fundamentally a three-tube set with the elements selected to give a fairly constant relationship of sound received to energy measured independent of the frequency or type of the sound waves. This required extensive tests of several types of amplifying transformers and loud speakers as well as studies of tube characteristics to obtain uniform results in the measurements of

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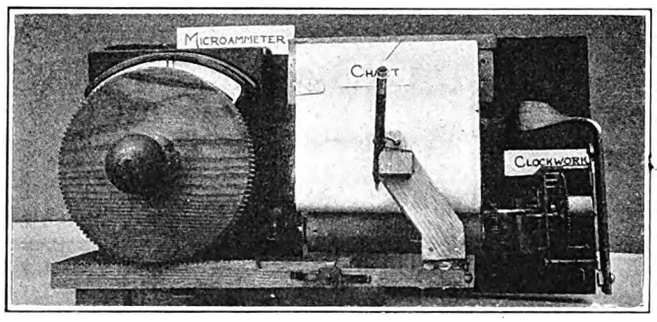


The Graphical Attachment Is Hand Operated
The movements of the micro-ammeter needle are followed by an operator, always keeping the pointer on the gear wheel opposite the needle. The pen attachment, shifted in accordance with the movement of the gear wheel, produces a graph on the paper tape that is moved at a constant rate of speed by the clockwork.

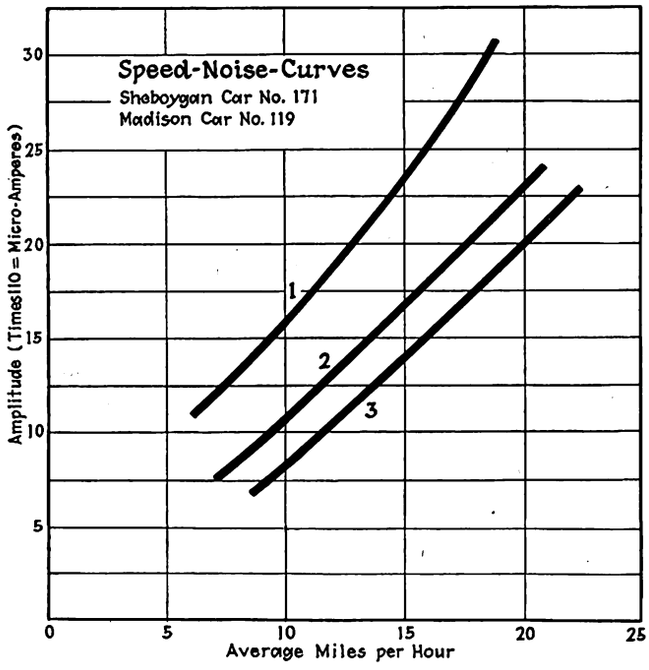
sounds of different frequencies as well as different intensities. The loud speaker was found to give more proportional variation between sound received and sound measured than any other element of the apparatus. It is believed that some of the better microphones used in radio broadcasting have characteristics that would give more uniform results, but such equipment was not available for these tests.

As shown in the wiring diagram, a loud speaker is used for the pick-up of the sound or noise to be measured. The loud speaker element acts as a generator to produce a current of varying intensity in proportion to the sound. This small induced current forms the input to the first of two stages of amplification, two stages of transformer coupling being used. The current is detected or rectified by the third tube. The output is then measured by a micro-ammeter.

In order to produce a graph giving a continuous measurement, a mechanical equipment was constructed that consists of wood gear wheel having approximately the same radius as the ammeter needle. This gear engages in a rack, also constructed of wood, which is connected to a pen that rests on a paper chart moved at a constant rate by clockwork. By moving the gear wheel forward and backward it was found that the variations of the micro-ammeter needle could be followed quite closely, with the result that a continuous record could be obtained of the noise produced over a run as long as desired. The determinations of speed in the tests were only approximate. When the car passed each street corner in a given run an operator marked the edge of the chart correspondingly. The average speed in that block could then be calculated from the known distance covered and the length of the tape, which was proportional to its speed.

All of the tests made were under like conditions of A, B and C battery voltage so that they were directly comparable. Since there is no standard of noise that can be readily used, the method of using this type of equipment is to establish relative values for different kinds of track construction, different kinds of cars and different kinds of apparatus used on the cars. The values can either be expressed in terms of micro-amperes or in per cent, using one set of conditions as a base.

For instance, the apparatus can be set up in a car and operated over different types of track construction on a property and at several speeds, so as to determine the relative value of the noise produced on each.



Speed-Noise Curves for Three Tests on Two Different Cars Made in Madison and Sheboygan, Wis.
Curves 2 and 3 are on the same car run over different track construction. Curve 3 is for a different car and in a different city.
Curve 1—Madison—72-lb. 6-in. tee rail on wood ties set in 12 in. of concrete reinforced with wire mesh, concrete paving.
Curve 2—Sheboygan—80-lb. A.S.C.E. tee rail on Dayton steel ties in concrete.
Curve 3—Same as curve 2, but with Carey Elastite rail filler used on each side and on the bottom of the rails.

NOISE MEASUREMENT DATA TAKEN IN SHEBOYGAN AND MADISON, WIS.

Curve	City	Amplitude	Micro-Amperes	Relationship, per Cent
3	Sheboygan	13.9	1,530	100
2	Sheboygan	16.75	1,840	121
1	Madison	23.5	2,585	169

Comparison at 20 m.p.h.

PRELIMINARY RESULTS PROVE INTERESTING

Several typical examples of tests made are reproduced in curve and tabular form. Certain conclusions have also been made based on the several tests conducted on the different properties in Wisconsin, some of which are of interest:

1. Cars running at the same speed over the same track transmit to a passenger's ear about 33 per cent more noise with the windows open that when they are closed (the apparatus is placed in the car so that the load speaker pick-up is in the center of the car about at the position of a seated passenger's ear). This test gives an indication of the noise-insulating value of the car itself.

2. With the same car run over paved track of the same general type a part of which is constructed with rail insulation of a mastic nature and a part without such insulation, the mastic insulated rail construction showed a reduction of 20 to 25 per cent in noise when running at 20 m.p.h.

3. The noise produced increases at more than twice the rate of speed, roughly in the order of the 1.25 power of the speed.

4. Tests made on cars equipped with different types of gears were considered insufficient to report relative values. It is certain, however, that there is a wide field of opportunity to accomplish noise reduction by the use of quiet running gears. The tests indicate a reduction in noise.

5. Comparisons of tests under widely differing con-

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ditions indicate a reduction in noise heard in the car due to the use of monolithic flooring, rubber cushions under the center plates and insulated side sheathing.

Noise Analysis Possible with Oscillograph

A few tests were made to analyze the production of noise over a fraction of a second. The loud speaker pick-up was installed in the middle of a city block and wires were run to the laboratory, where the output circuit of the measuring equipment was connected to an oscillograph. One of the oscillograms is reproduced. The lower curve is a 60-cycle wave from the lighting circuit imposed on the chart for the purpose of measurement. The upper curve is a record of the noise produced as the car passed the loud speaker. Tests such as this may be made of value if further developed in analyzing the types of sounds that all mingled together produce the resultant noise of operation. By the use of harmonic analysis the various frequency components and their relative amplitudes can be determined.

Most of the work done, however, was in the measurement of noise through the deflection of the micro-ammeter needle. Because this is a greatly damped instrument compared to an oscillograph, it responds only to the different volumes of sound produced. When mounted in the car it measures the noise as heard by a car rider. If the same portable equipment were set up on the sidewalk it would measure the effective noise as observed by a person outside. A graph would show an increase in amplitude as the car approached, reaching a peak as the car passed the instrument and tapering off as the car moved away. If the conditions of speed were constant this would give a relative comparison of the noise produced by different cars on the line and might be a fair check as between different kinds of maintenance on the different cars of one type. Likewise the effect of noise-deadening skirts or similar equipment on the car could be accurately determined.

Using the micro-ammeter with the apparatus either in the car or on the curb a speed-noise curve can be produced. By the use of a planimeter the total volume of noise can be measured either per block, per unit of constant speed or for an entire run, as desired.

Noise Study an Important Factor Today

With the coming of the automobile people have become educated to different ideals. Comparisons of street cars today with rubber-tired vehicles bring out clearly the noise feature as one of importance. The human ear is too inaccurate to compare results and it seems imperative that accurate noise measurements must be used in the improvement of car operation. While the actual energy wasted in the production of noise may be small, it may point to equipment defects and is certainly the conscious or unconscious cause of great irritation to those who ride the cars or who live near a car line.

As the elimination of noise primarily requires elimination of the cause a certain amount will always remain. Of secondary importance is the problem of deadening or absorbing the noise produced and the elimination of features that reinforce the noise.

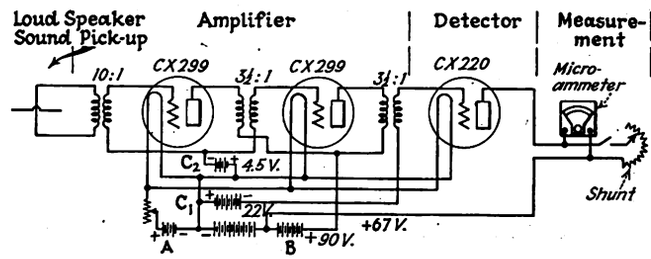


Diagram Illustrating Apparatus and Connections of the Sound Measuring Equipment

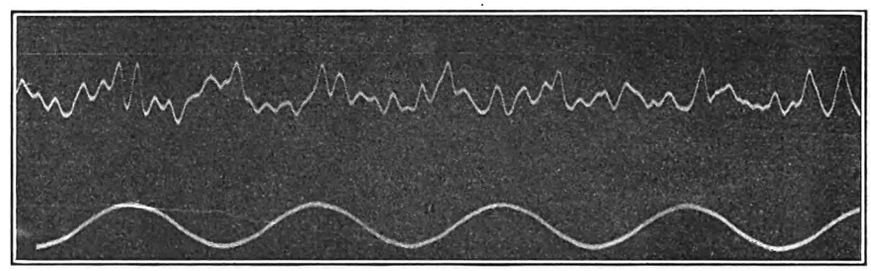
The input at the left is through a loud speaker. The small current developed in the coils of the elemenet through the vibrations of the diaphragm is amplified in two stages, then is detected or rectified and measured by the micro-ammeter.

Roughly, noises can be divided into several types, depending on the source. The first is that coming from the track itself and concerned with it are the types of ties, ballast and paving. The contact of the wheel and rail is a second source. Other sources of noise lie in the trucks, brake rigging, motors and gearing, and the air compressor. The current-collecting equipment is still another source. Noise may originate in the car body, but of greater importance is the sounding-board and resonant effect of the body in amplifying noise produced elsewhere.

So the problem resolves itself into two major parts: (1) The source, and (2) the amplifying or transmitting powers of the equipment and track structure used.

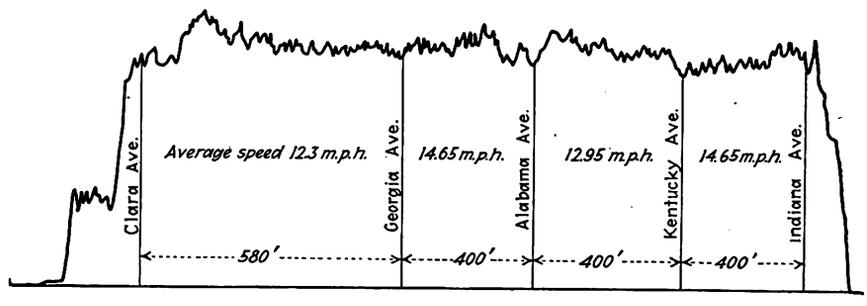
It is hoped that the equipment as developed and the tests described may be helpful in furthering the studies of noise reduction in electric railway operation along broad commercial lines.

So successful has this work been that the Wisconsin



By the Use of an Oscillograph an Analysis of Noise May Be Made

This reproduction of an oscillograph chart covers about 1/20 of a second. The lower curve is the 60-cycle wave imposed on the chart for time measurement, the upper curve is the resultant noise. Analysis of this chart presents interesting possibilities in determining the different elements producing noise.



A Typical Graph Produced in a Measurement Taken in One of the Cars at Sheboygan, Wis.

Average speeds are calculated from the length of paper consumed and the distance between streets being measured. Average noise volume is measured by obtaining the area of this speed-noise chart by means of a planimeter. This chart was taken in a Birney car run at moderate speed. Complete tests were made at different speeds.

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Utilities Association plans to continue this work the next college year with Edwin R. Summers, who has been appointed electric railway fellow and will receive the award of $500 offered by the Electric Railway Section of the Wisconsin Utilities Association.

100 Trains Are Moved Simultaneously by Long Island Each Morning

VERY effective advertising is being addressed by the Long Island Railroad "to those who commute" on that road. Especially interesting are some of the facts spread broadcast about the extent of the company's electrification program, particularly within the limits of the city of New York. Of this the company said:

All freight and passenger service located within the city limits must, according to state law, be operated by other than steam power by Jan. 1, 1931. This means that steam locomotives cannot be used to haul passenger and freight trains or for switching cars.

In order to carry out this requirement of the law the Long Island Railroad must spend about $13,000,000 on a program which has already been approved by the Public Service Commission. Not only main tracks but also yards, sidings, float bridge approaches and shops must be equipped for electrical operation.

Electric locomotives must also be provided to haul through passenger trains to Jamaica instead of Long Island City for interchange with steam locomotives. Later on arrangements must be made to keep steam locomotives out of Jamaica. Large capital expenditures must be made, too, for power house and substation equipment.

To relieve congestion at terminals and on trains during rush hours three things are recommended:

1. Adoption of the plan to establish a new terminal at Diagonal Street, in Long Island City. This project can be completed within twelve months from the time the city authorities give their sanction to proceed with the work.
2. Co-operation with the so-called stagger plan now being proposed by the Department of Health, city of New York.
3. Prompt extension of the city's proposed subway line to Jamaica.

About 1,200 passenger trains are moved over the Long Island Railroad every day. They carry between 275,000 and 400,000 passengers daily. At 8 a.m. approximately 100 trains are moving simultaneously.

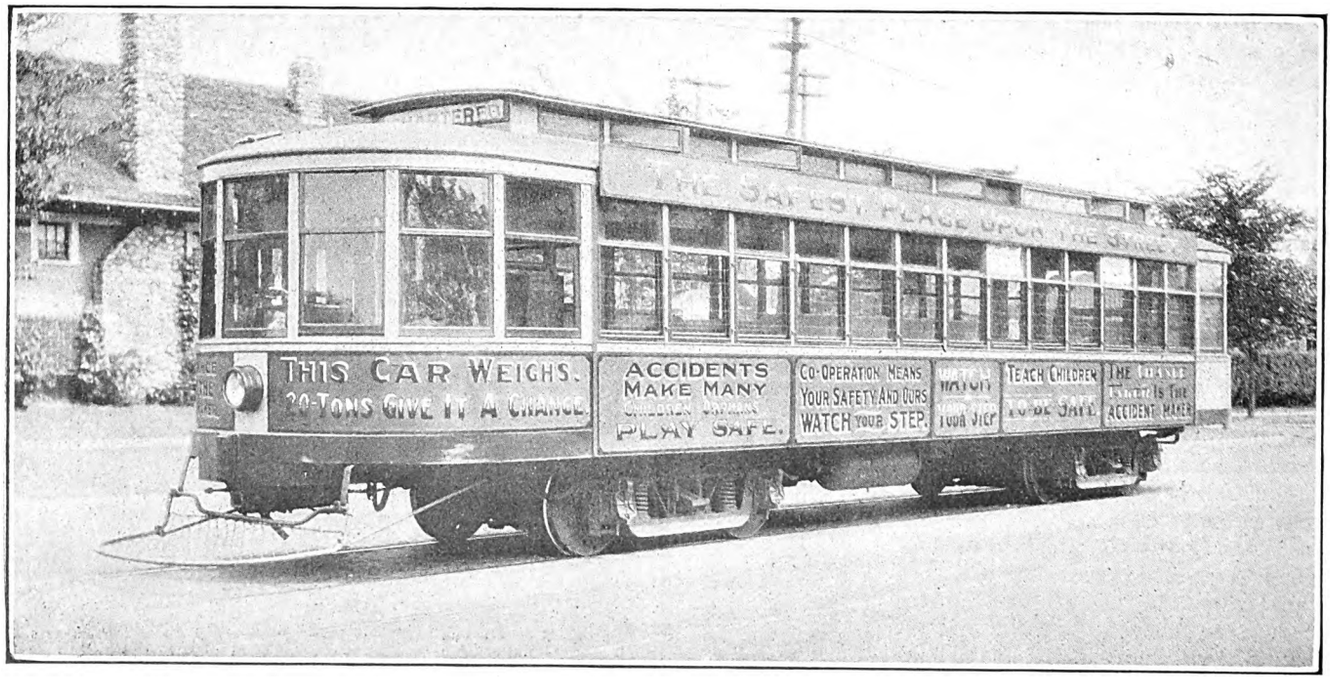
More Passengers in Milwaukee

COINCIDENT with the distribution of the regular quarterly dividend of $1.75 per share to the 11,126 customer owners of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., S. B. Way, president, announced that $8,541,000 of 6 per cent refunding first mortgage bonds had been called for redemption as of Sept. 1 and that they will be refunded with 5 per cent bonds. During the fore part of the year the capital structure of the company was materially strengthened through the retirement of a part of its funded debt. Bonds now constitute 55 per cent of the total capitalization.

In a statement which accompanied dividend checks Mr. Way declared that the company experienced a striking growth in business by its electric railway and electrical departments. For the first six months of this year the number of railway and bus passengers jumped to 106,706,000, against 102,498,000 carried for the first part of 1925, a gain of about 4 per cent. This increase in traffic is attributed to the difficulty which motorists are experiencing in parking their cars in the restricted business district and to the introduction of increased service through the use of additional one-man cars.

Teaching Safety Lessons in Minnesota

PUBLIC attention was arrested in St. Paul, Minn., recently by a street car of the Twin City Rapid Transit Company which was thoroughly bedecked with safety slogans to induce closer observation of Safety Week in that city. Among the labels on the cars were such ominous warnings as: "Accidents Make Many Orphans," "Co-operation Means Your Safety and Ours —Watch Your Step," "This Car Weighs 20 Tons—Give It a Chance," and others. As a selling appeal for street car transportation the care bore along the edge of the roof at each side the slogan, "The Safest Place Upon the Street." The car was operated over all of the lines in St. Paul and caused much discussion on the part of the public.



The St. Paul Safety Car Carries Its Own Messages

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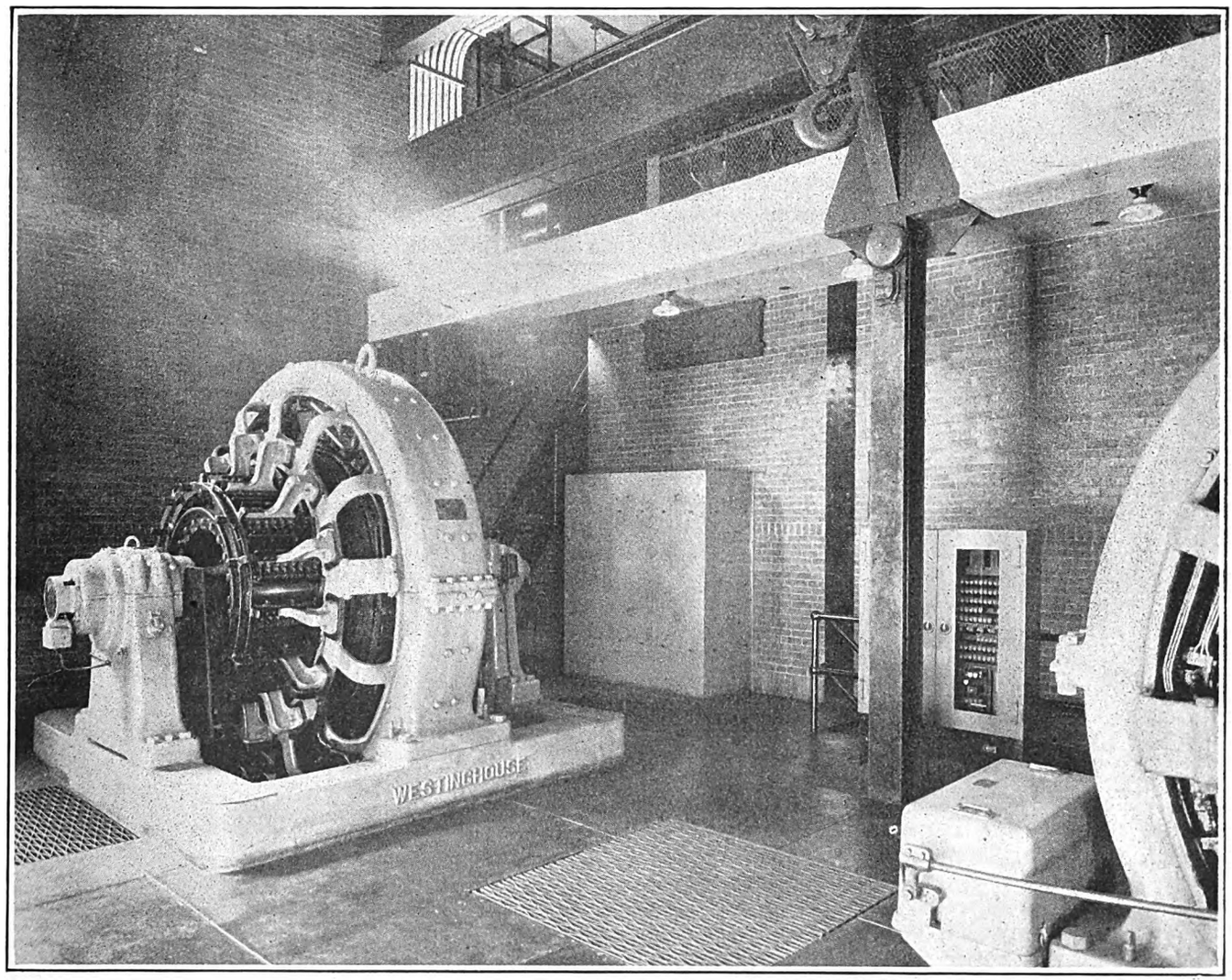
Cleveland Railway Extends the Use of Automatic Substations

SECOND ARTICLE

By L. D. Bale
Superintendent of Power the Cleveland Railway

Experience with Earlier Equipment Helped in Layout of Stations and Building Design—Standard 1,500-Kw. Converters Are Used Throughout—Steel Barriers Isolate High-Tension Equipment—Reliability Features Entire Design



General View on the Main Floor of a Two-Converter Substation, One of Seven Recently Constructed by the Cleveland Railway
Against the rear wall is a steel cabinet which contains the converter low-tension starting switches, the pneumatic contactors for shunting resistance into the converter circuit and the substation's remote control cabinet.

BASED upon experience gained in the operation and maintenance of the three stations of the earlier type an extensive study was conducted to determine the actual requirements of a building which would most economically house the equipment comprising an automatically controlled substation. Accordingly a layout was devised wherein the areas within the building were utilized to the fullest advantage, resulting in a very compact arrangement, with, however, ample clearance for safe operation and maintenance of all equipment.

The seven new substation buildings are identical as to interior arrangements and dimensions. The exteriors, however, were varied somewhat regarding architectural details and texture of face brick in order to agree with surrounding structures. In one instance, station No. 15, the station proper is situated on one corner of a large plot of ground upon which it is in-

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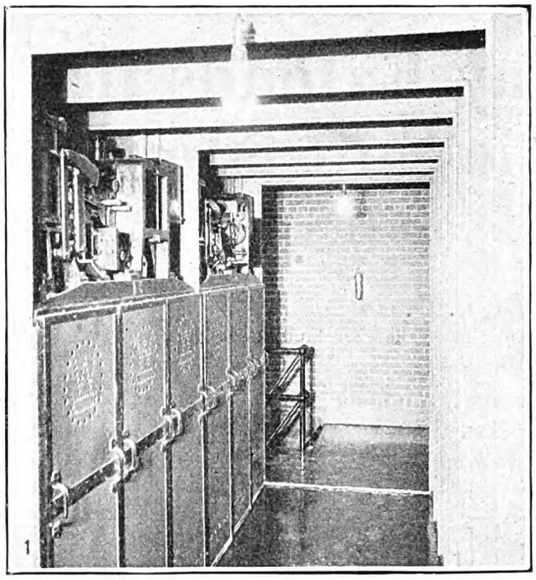
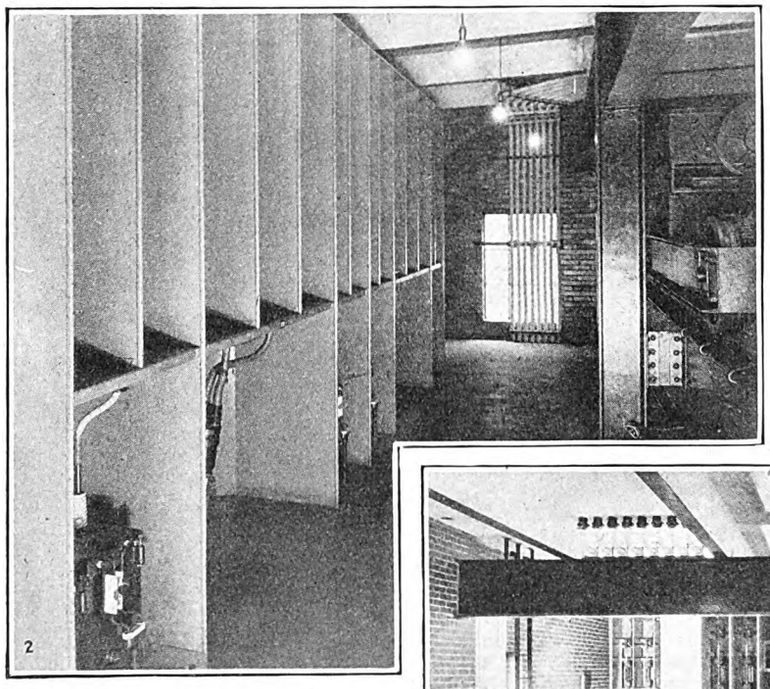
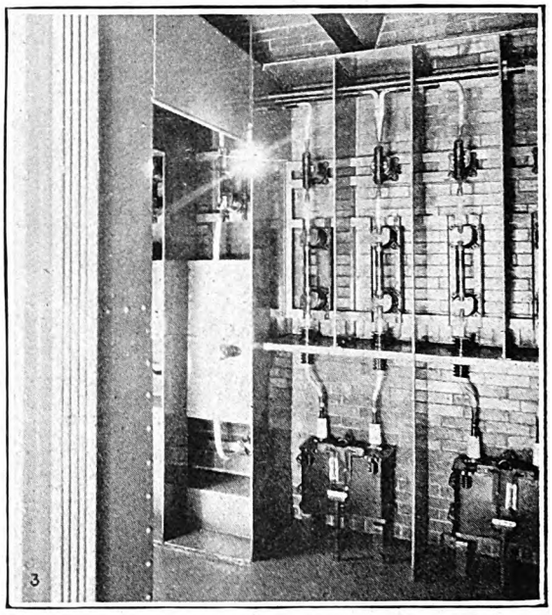
High-Tension Details of Cleveland's New Automatic Substation

No. 1. The main 11,000-volt oil switches controlling each of the two incoming underground lines are installed on the mezzanine floor. Steel barriers provide phase isolation.

No. 2. A general view of the mezzanine floor, showing the steel barriers to the left and the end of the crane over the main operating room to the right.

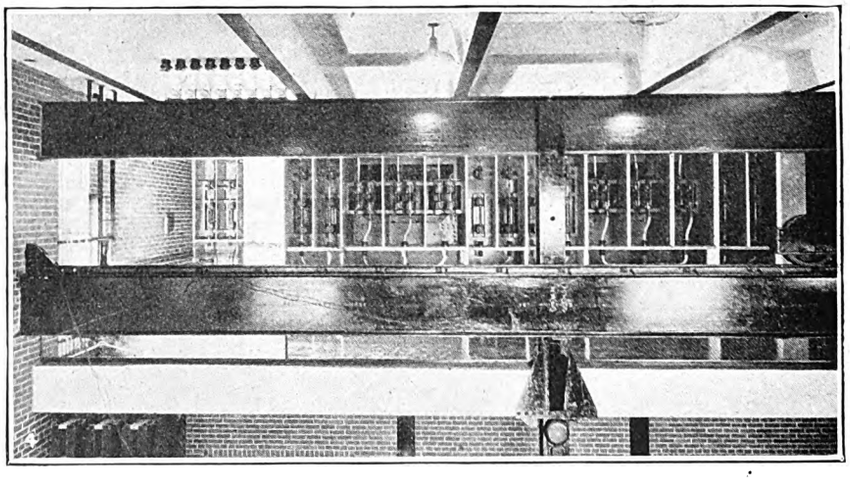






No. 3. Another view on the high-tension balcony showing a further use of the steel barriers for phase isolation. These steel barriers were constructed on a template and are therefore interchangeable.

No. 4. Looking into the mezzanine floor, showing a general view of the high-tension compartment.



building on the system. The buildings are of fireproof construction throughout and are completely equipped with all necessary facilities, including 15-ton, hand-operated, bridge-type cranes.

The method adopted for the natural ventilation of these stations is similar to that of the former automatic substations. Briefly, this arrangement consists of a large ventilating area under the converters, which extends across the width of the building. This area is connected with the exterior of the building at each end by means of air wells. Much of the warm air from the converters is carried out of the building by way of this area. Openings are provided under the front entrance from which ventilation is furnished for the main operating floor through floor gratings, in addition to air from the basement area through the stair well. Heated air is exhausted from this portion of the building through a 56-in. ventilator located on the roof in line with the magnet frames of the converters. Station No. 14 is an exception, inasmuch as three 36-in. ventilators have been provided, grouped in line with the converters. The elimination of the transformers from the building proper and the placing of the current-limiting resistance on the roof simplify the problem of ventilation.

It will be noted, by referring to the longitudinal sec-

tended to erect a three or four story power department service building. The walls of this substation building are to be incorporated in the proposed structure and were, therefore, arranged accordingly. With the exception of the latter station all the buildings are surrounded with more or less lawn space and further enhanced in appearance by the use of shrubbery.

The dimensions of these buildings are 36 ft. 10 in. wide by 39 ft. 1 in. deep by 40 ft. 7 in. from basement floor to underside of roof steel. Each building contains 44,000 cu.ft. This is equivalent to 14.6 cu.ft. per kilowatt of installed capacity, based upon 3,000 kw. This represents a 45 per cent reduction in cubical content compared with the earlier type of automatic substation

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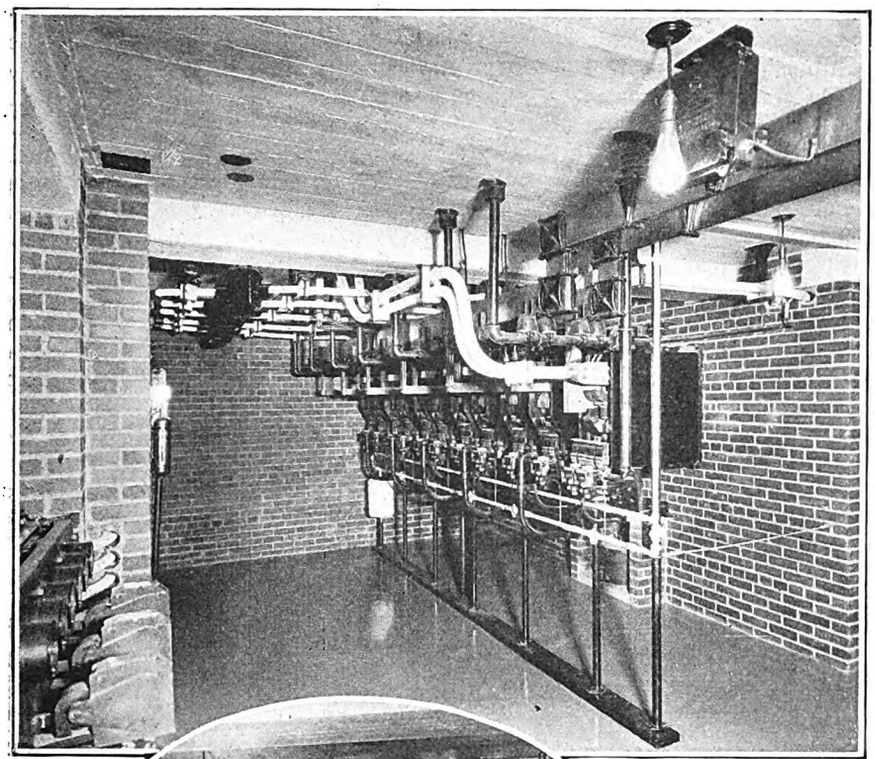

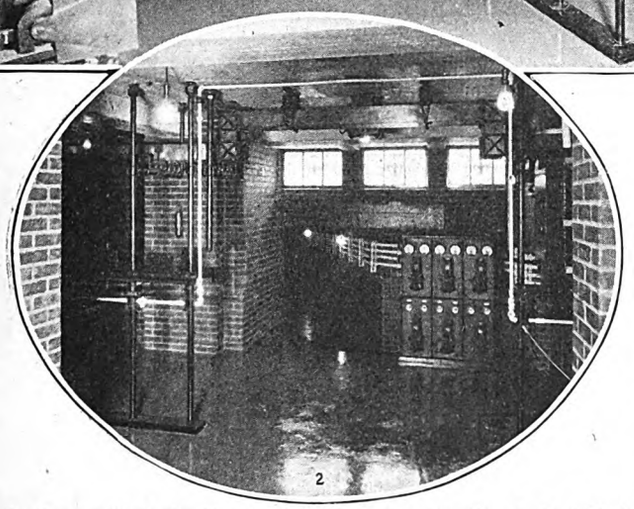

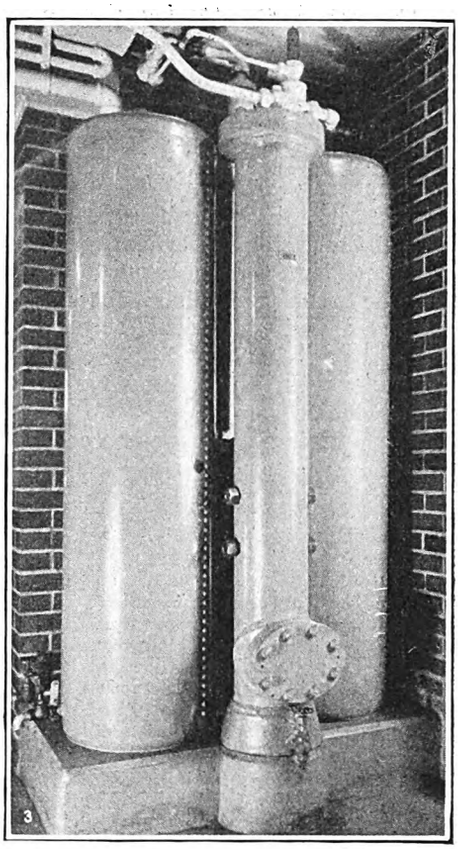

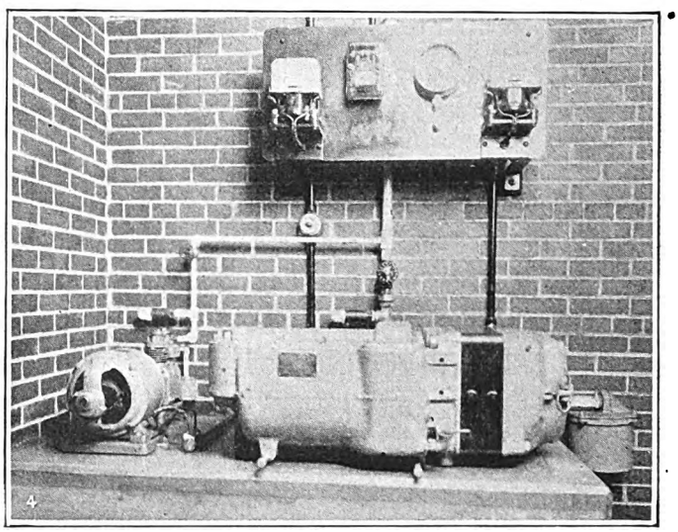

In the Basement of the Cleveland Automatic Substation Is Installed the D.C. Connections and Auxiliary Equipment

No. 1. Directly below the converter in the basement is installed a pneumatically operated positive converter contactor and the main and auxiliary d.c. contactors. This view shows the equipment for a substation with one 1,500-kw. unit. A second set of contactors is added in stations with two units.

No. 2. At the entrance to the outgoing d.c. feeder tunnel is installed a negative drainage panel for the mitigation of electrolysis.

No. 3. In the basement near the compressors are two air storage tanks each of 11.2 cu.ft. capacity. One is used for the operation of pneumatically operated contactors and the other for air cleaning around the station. A governor is arranged so that the tanks used for the operation of the contactors is not depleted. The middle cylinder is a dehydrator and contains 2.2 cu.ft. of calcium chloride, which lasts five months. By chemical analysis 70 per cent of the moisture in the air used in the operation of the station is removed by this process.

No. 4. Two air compressors are installed. The large one, generally used, is a standard 25-cu.ft. car type compressor supplying air to two reservoir tanks. In case of total failure of the station the small auxiliary unit shown at the left is available. This consists of a 3-cu.ft. compressor driven by a 110-volt motor using energy from the station storage battery.

tion drawing, that the building may be divided into five general sections based upon the grouping of the equipment. These divisions and the principal items of equipment which they contain are as follows: Main or operating floor, control board and converters; basement, all outgoing direct-current cables and contactors, positive converter contactors, direct-current buses and a majority of the station auxiliaries; mezzanine, all high-tension switching equipment, high-tension bus structure, etc.; transformer vaults, the main static transformers; roof, all current-limiting resistances.

The alternating-current supply, as is customary on this system, is obtained through duplicate underground 11,000-volt, three-phase, 60-cycle, grounded neutral lines, normally tied in parallel through the a.c. bus at the substation end. Each line is of sufficient capacity for the supply of both converters at rated load. The lines are protected by inverse-time-limit overload relays at the generating plant, while at the substation only instantaneous reverse-power relays are installed. This arrangement allows either of the a.c. lines to be disconnected, through routine operation or by reason of trouble occurring upon them, without interfering with the continuity of service of the station. Each line is connected with the a.c. bus at the substation through a 600-amp. oil circuit breaker, non-automatic except through the action of the reverse-power relay.

All high-tension equipment is isolated from the remainder of the building by its location on the mezzanine floor, which is utilized only for this purpose.

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The use of all-steel barriers, shown in four of the illustrations, was resorted to in order to economize space and to produce an economical high-tension bus and phase-isolating structure. These barriers were laid out with templates and, therefore, the various sections are interchangeable. Erection of this type of barrier not only facilitated construction but produced a satisfactory, light-weight structure at about half the cost of the customary brick and stone compartments.

Connection from the converter high-tension oil switch is made to the single-phase, 550-kva. power transformers located directly beneath. These transformers are oil-insulated and self-cooled. They are arranged three to a compartment, with facilities for natural ventilation and the drainage of oil.

The starting and running connections between the transformer secondaries and the 1,500-kw. converter are made through two 2,000-amp., heavy-duty, solenoid-operated oil circuit breakers. These breakers are inclosed in a steel cabinet, provided with oil drains and located on the main operating floor on the opposite side of the transformer vault wall.

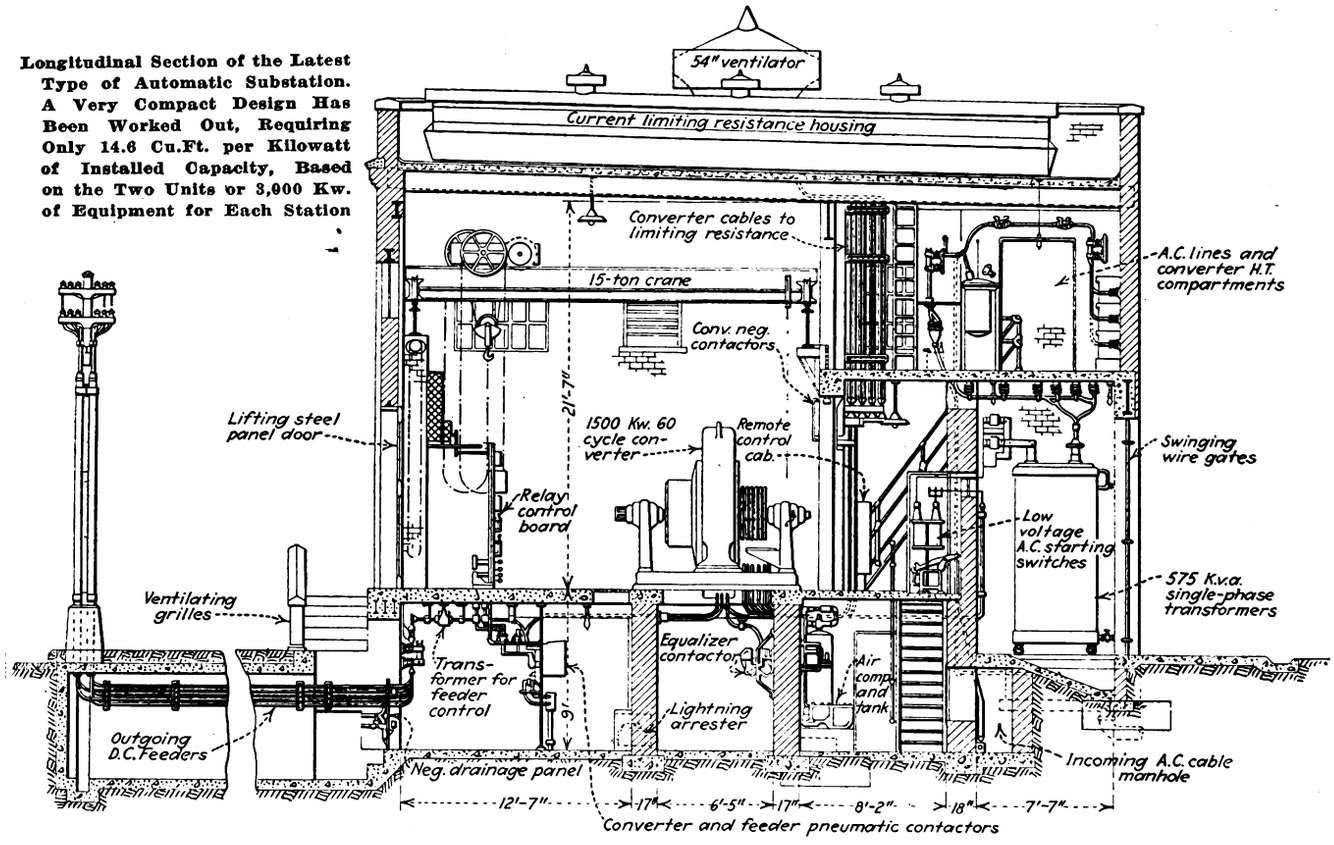
The d.c. energy for both converter and outgoing feeders is handled through electro-pneumatically operated contactors similar to those utilized in electric locomotive work. One of the illustrations shows a typical rack containing the main positive contactor, connecting the converter to the main bus, and the main and auxiliary feeder contactors for one-half of the outgoing d.c. feeders of the station. The controlling relays, etc., for these contactors are mounted on the main control board on the floor above.

The conditions leading up to the adoption of the electro-pneumatic contactor in preference to the magnetically operated contactor are of interest. This latter contactor is more or less standard equipment for automatic substation use, but it has the disadvantage of possessing a relatively high drop-out point and pick-up point expressed in per cent of solenoid operating voltage. Adoption of the magnetically operated contactor for the control of outgoing d.c. feeders to a railway system on which a large proportion of the conversion equipment consists of automatic substations of relatively small capacity would result in a situation where, in the event of trouble affecting one or more stations in an area, under peak-load conditions, the potential on the buses of the station affected would likely become sufficiently low to allow the contactors to unseal or drop open, thus isolating the station or area. It was deemed advisable, since the program of the railway calls for complete automatization, to discontinue the use of a contactor which was subject to the above difficulties and adopt one whose operation would be independent of voltage conditions of the station bus.

Air supply for the operation of pneumatic contactors is obtained from a standard 25-cu.ft., 600-volt d.c. car type compressor as a main source. A 3-cu.ft. compressor, operating from the 110-volt station control battery, is installed for emergency purposes and automatically cuts in on the failure of the main compressor. These compressors are illustrated herewith.

The air storage consists of two 11.2-cu.ft. tanks. One tank comprises the main reservoir from which air is supplied for the operation of contactors. The second tank furnishes air at reduced pressure for cleaning purposes about the station. The air flow between tanks is controlled through an auxiliary devices governor, thus assuring that the pressure of the main reservoir will not be lowered to a point which would jeopardize the successful operation of contactor during cleaning periods.

In the initial operation of these stations considerable difficulty was experienced with the high moisture content of the air delivered to the contactors. This resulted in corrosion of the piping system and the pistons,



Longitudinal Section of the Latest Type of Automatic Substation. A Very Compact Design Has Been Worked Out, Requiring Only 14.6 Cu.Ft. per Kilowatt of Installed Capacity, Based on the Two Units or 3,000 Kw. of Equipment for Each Station

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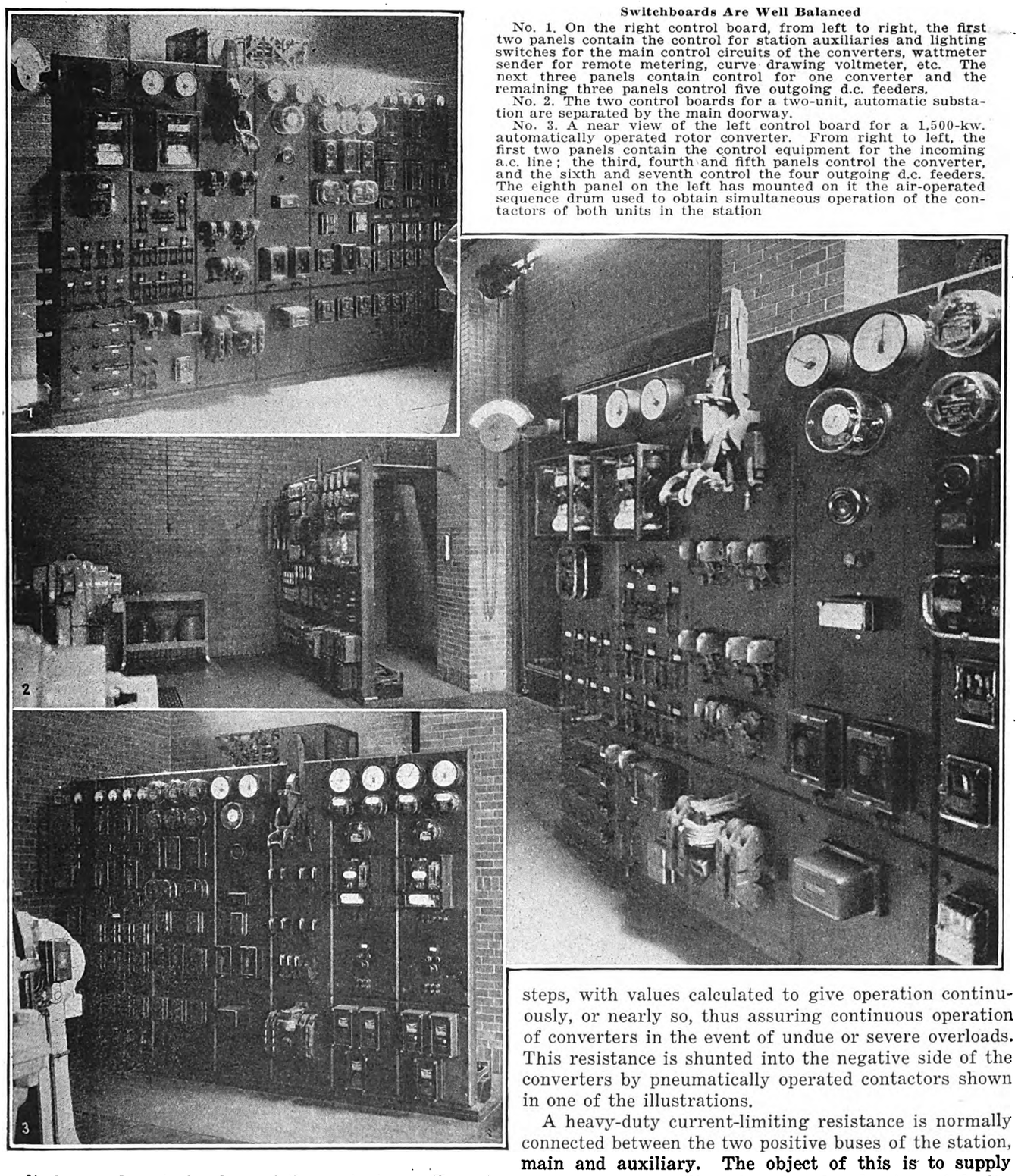

Switchboards Are Well Balanced

No. 1. On the right control board, from left to right, the first two panels contain the control for station auxiliaries and lighting switches for the main control circuits of the converters, wattmeter sender for remote metering, curve drawing voltmeter, etc. The next three panels contain control for one converter and the remaining three panels control five outgoing d.c. feeders.

No. 2. The two control boards for a two-unit, automatic substation are separated by the main doorway.

No. 3. A near view of the left control board for a 1,500-kw. automatically operated rotor converter. From right to left, the first two panels contain the control equipment for the incoming a.c. line; the third, fourth and fifth panels control the converter, and the sixth and seventh control the four outgoing d.c. feeders. The eighth panel on the left has mounted on it the air-operated sequence drum used to obtain simultaneous operation of the contactors of both units in the station

cylinders and control valves of the contactors. Experiments were conducted, using various mechanical moisture extractors, with little or no success, primarily due to the extremely small flow of air occasioned by the operation of a contactor. The elimination of moisture was finally attained by the use of a chemical dehydrator. This contains 2.2 cu.ft. of calcium chloride. On the average, as determined by chemical analysis, it removes 70 per cent of the moisture during the five months life of one charge of chemical. The air reservoirs with the dehydrator in the foreground are shown in one of the pictures.

The current-limiting resistance is arranged in three steps, with values calculated to give operation continuously, or nearly so, thus assuring continuous operation of converters in the event of undue or severe overloads. This resistance is shunted into the negative side of the converters by pneumatically operated contactors shown in one of the illustrations.

A heavy-duty current-limiting resistance is normally connected between the two positive buses of the station, main and auxiliary. The object of this is to supply energy to the auxiliary bus for the clearing of faulty feeders which have been automatically transferred from the main bus to the auxiliary bus as a result of short-circuit conditions. This resistance is under the control of the dispatcher. Energy through it may be supplemented or augmented by tie feeders transferred by the dispatcher from the main to the auxiliary bus.

All current-limiting resistance is located in steel cabs on the roof of the building. The maximum of natural ventilation is afforded in this position, in addition to keeping the building cubical content down to a minmum. The steel cabs containing the resistance grids are illustrated herewith. The control of resistance-shunting

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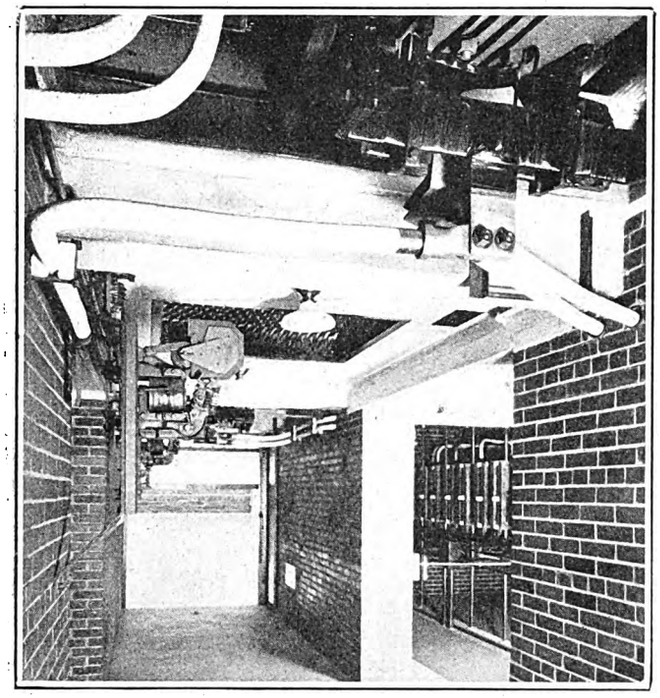


Directly Underneath the Converter Is a Large Ventilating Area. The D.C. Connections and the Positive Converter Contactor Are Seen

contactors, where two converters are located in the same plant, has in several instances presented a problem. This was due to the difficulty of securing simultaneous operation; i.e., of preventing pumping of contactors (interchange of load) of the two units when subjected to overload. This phase of the control has been decidedly simplified in the stations under discussion by the utilization of an electro-pneumatic sequence drum in connection with the pneumatic contactors. Control of the contactors of both units through the action of this drum insures their simultaneous operation. Sensitive relays, which function in conjunction with transformers located in the main leads of the converters, control the operation of the sequence drum. This device is an adaptation of the "notching-up" relay used in automatic acceleration of multiple car unit equipment.

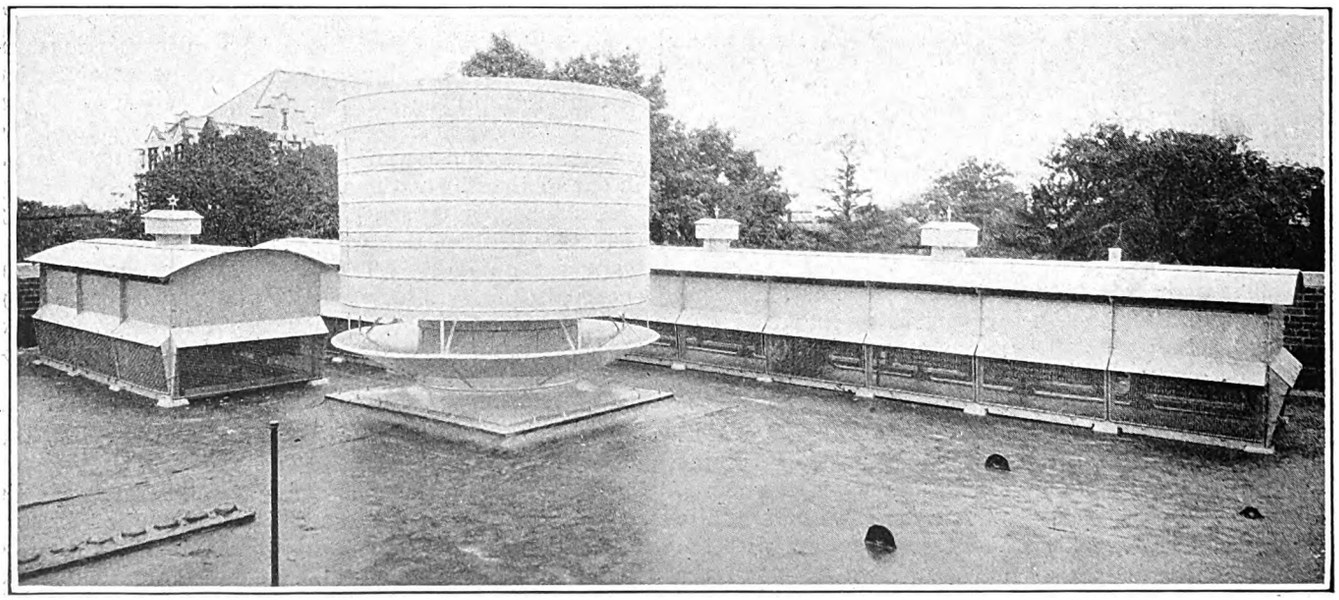
It will be noted that the main control board is structurally balanced, thus presenting a pleasing appearance. This board contains the control of all major and auxiliary equipment of the station. No heavy-duty buses or equipment are mounted on it, with the exception of one manual circuit breaker per converter, which is operated only in the event of overspeed of the converter.

Each station is complete with a 125-volt, 150-amp.-hr. storage battery, floated on the control bus with a differentially wound, 5-kw. motor-generator set. A center tap is taken off this battery for the supply of energy of the remote control and supervisory system. The combination of the battery and motor-generator set supplies a dependable source of energy for the operation of important items of converter and, particularly, feeder controls which must be depended on to operate satisfactorily over a rather wide range of conditions.

The small contactor board shown in the center background of the illustration on page 419 comprises the negative drainage board. This is standard equipment in all the Cleveland Railway substations. It is utilized to control the connections between subterranean structures (pipes, cable sheaths, etc.) and the station negative bus for the mitigation of electrolysis. The rail connections from the station negative bus are tapped to rails at points sufficiently distant to establish an area immediately adjacent to the station in which underground structures are drained. The potential difference of, and the current flow over, underground structures may be varied if desirable by the introduction of resistance in the connections.

Automatic Parcel System for Chicago

THE Chicago Rapid Transit Company has lately installed steel lockers known as the "Automatic Parcel System" at all Loop stations. They are placed at convenient points either in the stations proper or on the platforms. Each locker is individual and the keys are numbered to correspond with the number on the locker. The shopper places his, or her, package in the locker, drops a dime in the slot in the lock, turns the key and carries it away as a check. All that is necessary to obtain the package is to insert the key and open the locker. Hundreds of shoppers are using these lockers.



On the Roof of the Substation Is a 54-In. Ventilator and the Current-Limiting Resistance, Mounted in a Steel Cab
The bus tie resistance used to burn off short circuits on the line is also shown. This view was taken on the roof of a single-converter station. Duplicate equipment of resistances is installed on two converter substations.

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Maintenance Notes

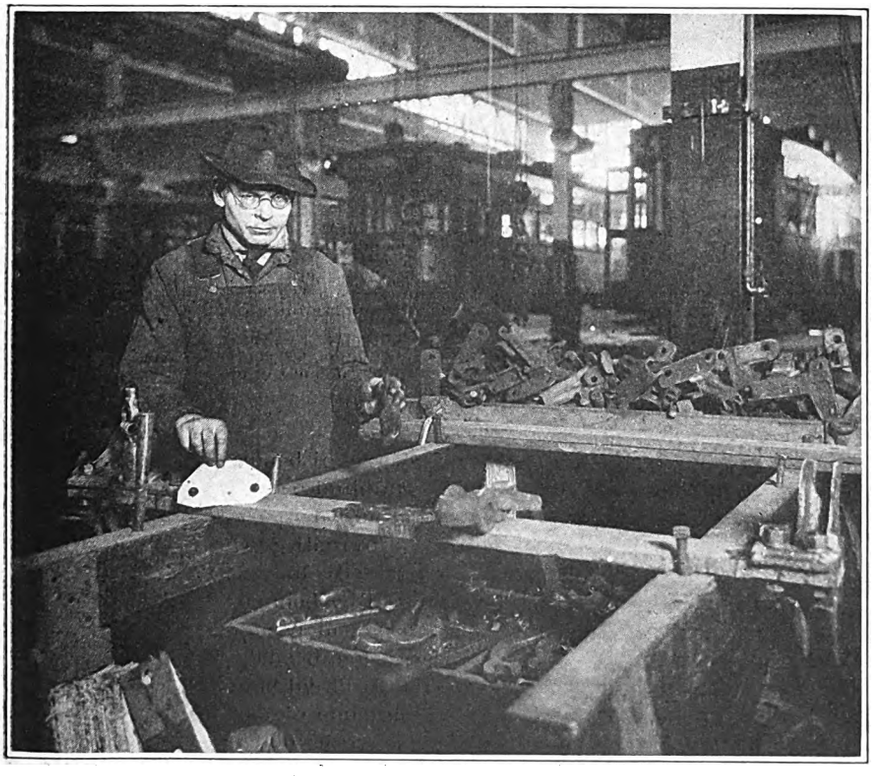
Lubrication Basis for Gears and Pinions

DESIRABLE inspection and lubrication periods for gearing were discussed at the semi-annual meeting of the Electric Railway Association of Equipment Men, Southern Properties. Of the various railways reporting, Knoxville inspects gearing and puts in gear compound every 30 days. Chattanooga makes an inspection at from 800 to 1,000 miles and lubricates if necessary.

Memphis and Little Rock have inspections every week and apply grease when needed. New Orleans has a 1,000-mile inspection basis, with lubrication when needed. Dallas inspects every 1,500 to 2,000 miles in interurban services and every 500 miles on city cars. This company has found that weather conditions have much to do with the lubrication and so it does this work when necessary. Birmingham has a 1,000-mile inspection period and lubricates every 60 days during warm weather. The company has found that safety cars do not need lubrication as often as other cars operated, the period for these usually running about 90 days. Mobile makes a weekly inspection and lubricates when necessary. Atlanta lubricates every 1,000 miles.

Canvas Liners Reduce Brake Rigging Noise

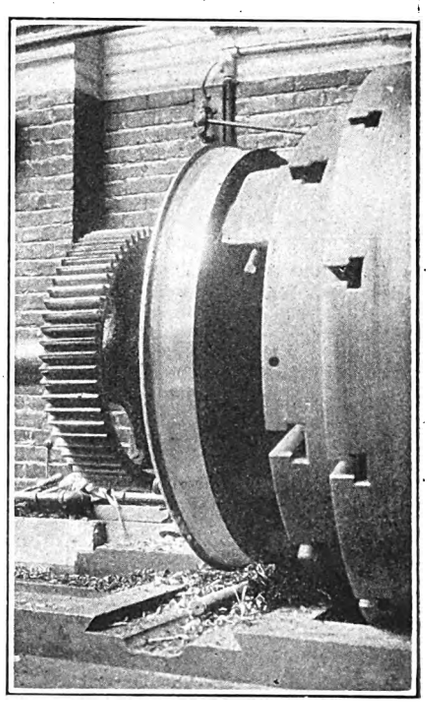
PIECES of canvas soaked in linseed oil paint are placed between brakeshoe heads and their hangers and at connections to brakeshoe beams on cars of the Department of Street Railways, Detroit, Mich. These canvas pads cut down vibration and so reduce noise. This method of installation insures a full surface contact and makes a tighter fit, so there is less danger of bolts and nuts working loose. The company also uses fine thread bolts which are S.A.E. standard, as it has been found that they have less tendency to work loose under vibration. Standard roofing canvas is used for the shims.



Installing a Canvas Pad at the Center Connection to the Brake Beam in the Shops of the Department of Street Railways, Detroit, Mich.

Machining Steel Wheels Before Building Up

REVERSING the usual process with regard to machining and building up car wheels by means of welding, the Holyoke Street Railway, Holyoke, Mass., follows the practice of first machining the wheels to approximately the right cross section across the tread and then building up around the flange to restore the desired section throughout. The major portion of metal is turned from



Turning a Steel Wheel Before Building Up with the Welding Process

inside of the tread, adjoining the flange, thus making it possible to obtain a smooth tread with a minimum loss of metal. The welding process which follows simply restores the flange to the proper thickness and shape.

It has been found possible to build up the flange with such accuracy that only a slight amount of turning is necessary to finish the surface and complete the operation. In the accompanying illustration a wheel is shown after the preliminary machining has been accomplished and the wheel made ready for the building up process.

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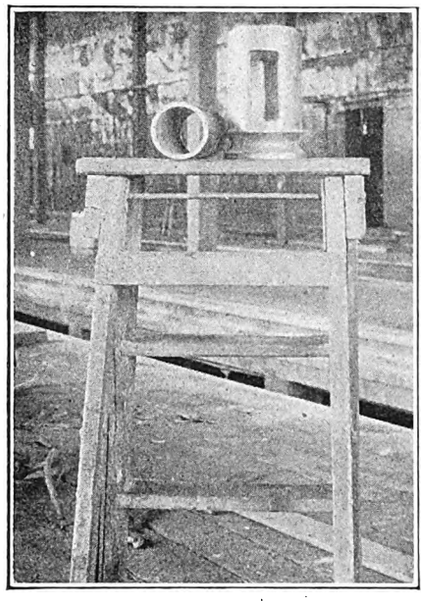
Using Oversize Steel Sleeves on Armature Shafts

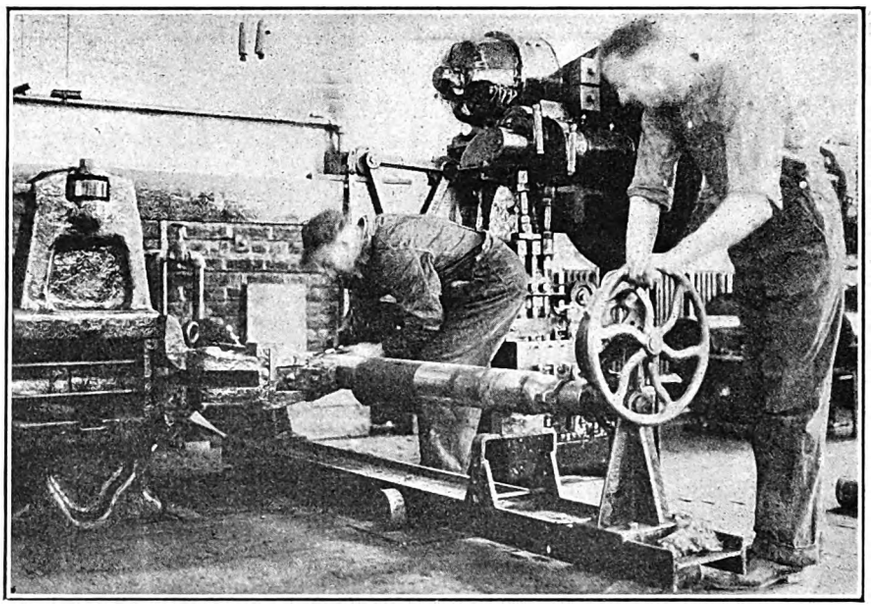
MANY railway properties have adopted the practice of shrinking steel sleeves on worn armature shafts, thus bringing the diameter back to size. The Concord Electric Railways, Concord, N. H., however, is perhaps the first to use sleeves with an outside oversize dimension. After the armature shafts on that property have worn down to a minimum diameter of $\frac{1}{8}$ in. below the standard a Shelby seamless steel tube with an outside diameter of from $\frac{3}{8}$ in. to $\frac{1}{4}$ in. over the normal dimension is shrunk on the shaft, its length being sufficient to fit snugly in under the thrust collar.



On the Right Is One of the Solid Brass Bearings, While a Section of Seamless Steel Tubing Used for a Sleeve on the Armature Shaft Is Shown on the Left

Solid brass bearings, made by the J. F. Hodgkins Company, Gardiner, Me., are used with the armature shafts which have been treated in this fashion. These were adopted when it was found that the babbitted steel bearings normally used were not entirely satisfactory for use with the oversize shafts. The motors are of the GE-67 type, specially equipped with Ransom vacuum oilers.

Occasionally a thrust collar will become worn before the oversize sleeve has again been worn down to the standard diameter. When this happens, making it necessary to remove the collar, the shaft is machined to normal size, the collar is removed and the armature may be operated with regular babbitted bearings. Generally, however, it has been found that the thrust collars remain in fairly sound condition and need not be changed during the life of the reconditioned shaft. The tubing is purchased in long sections and cut to size when needed.



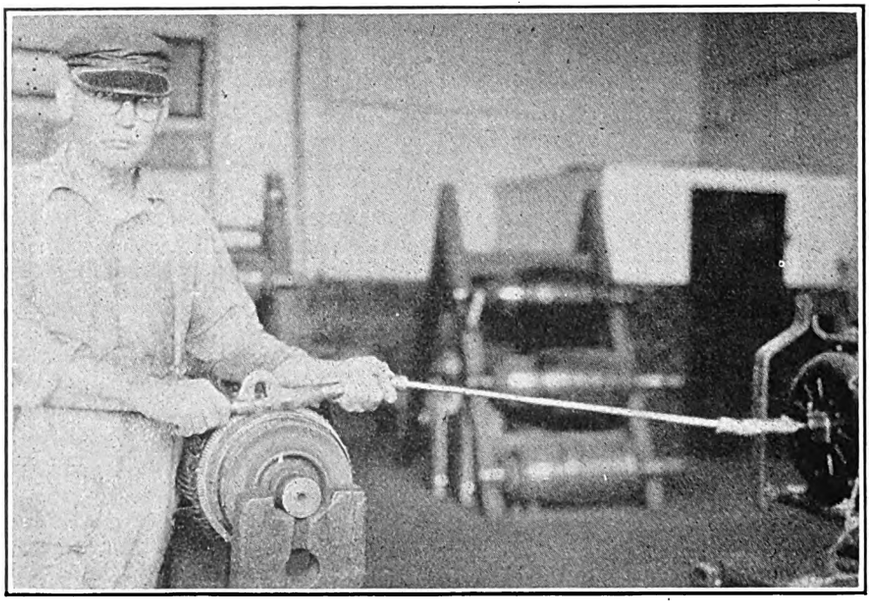
Bent Axle Being Straightened by Use of an Old Wheel Press in the Cleveland Railway Shop

Wheel Press Used to Straighten Bent Axles

STRAIGHTENING of axles is done in the shop of the Cleveland Railway with the assistance of an old wheel press. The special attachments for doing this work were described in the ELECTRIC RAILWAY JOURNAL for Oct. 19, 1918. As shown in the accompanying view, the axle is first mounted on a portable carrier, fitted so that it may be revolved. A workman seen at the right can revolve the armature quite rapidly by means of a hand wheel which turns the axle through a gear and pinion. The workman to the left holding a piece of chalk can mark the section that is out of line. The axle is placed against two horizontal supports seen to the left. When the axle is accurately placed against these supports the thrust arm of the wheel press is advanced against the axle. This process of measurement and straightening is repeated until the axle is straightened.

Portable Slotter Used in Huntington

UNDERCUTTING of mica on commutators is done by a small circular saw driven by a motor through a flexible connection in the repair shop of the Ohio Valley Elec-



Portable Undercutting Slotter Used in Huntington, W. Va.

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tric Railway at Huntington, W. Va. The saw is held in a heavy handle as shown in the illustration. It is moved along the slot by hand and guided by eye. The driving motor is supported in a hanger from a rig that is movable within a limited range.

New Housings for Los Angeles Railway Motors

EXCESSIVE wear of bearings and motor frames, together with frequent troubles with babbitt-lined bearings, has caused the engineering department of the Los Angeles Railway, Los Angeles, Cal., to inaugurate an extensive program for the rehabilitation of its Westinghouse 306-L railway motors. The company has 710 of this type in operation which have been in service since 1910.

The work to be done will include the boring out of the motor frames and the installing of new housings. The new housings are patterned somewhat after the design used by the Public Service Railway of New Jersey, which was described in the ELECTRIC RAILWAY JOURNAL, Dec. 20, 1924. In addition to providing new housings, the motors will have solid Kelley metal bearings and Rico oilers.

These motors have a large porthole in the motor frame at the commutator end. Trouble has been experienced in wet weather from water and mud entering this opening and causing grounds or short circuits of fields. A test of the temperature rise during the summer season on motors was made with the portholes covered up, and it was found that they could be operated without undue heating if the hole was done away with, so the new design provides for the elimination of this.

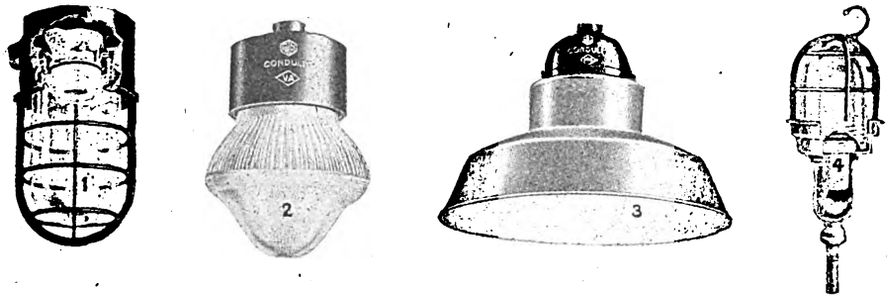
The work of making these changes has been completed on 32 cars or 64 motors. The program is being carried out as the cars are brought in regularly on the overhauling schedule and the work will extend over a period of two years. A wonderful improvement in the operation of these motors has been found on the cars already overhauled. Service of this railway is very exacting, but the improved motors have produced a material reduction in field coil and armature troubles.

New Equipment Available

Vapor and Dust Proof Condulets

FOR electrical installation of lighting or other wiring where vapors, fumes, gases or dust are present the Crouse-Hinds Company, Syracuse, N. Y., has just placed on the market a new series of condulets, hand lamps, switches and fuse boxes. These are particularly suited for installation in paint storage, gasoline storage, general oil storage and woodworking plants. Condulets of the V series have hubs cast solid with the body. The globe is threaded and screws into the condulet so as to bottom on a flat gasket. This series provides for installation of screw guards as well as various types of reflector units.

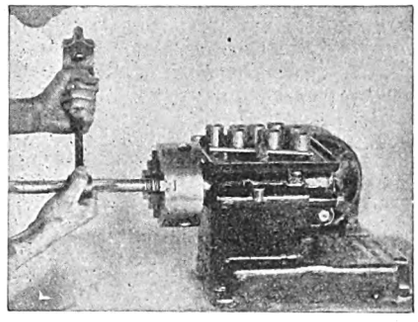
For portable lighting a vapor-proof hand lamp of similar construction is provided. It has a swinging bail, a watertight cord outlet with cord reinforcement to prevent chafing, a key receptacle with lamp grip and a watertight operating handle for the key receptacle. The body is aluminum and the guard, including the base, is brass. The handle is provided with a stuffing box which consists of a gland nut and tapered rubber plug which surrounds the cord, completing the equipment and making the lamp vapor and dust proof.



Vapor and Dust Proof Condulets Used in Lighting Installations. No. 1, Screw Guard; No. 2, Condulet Holophane Reflector; No. 3, Porcelain Reflector Unit; No. 4, Hand Lamp

Power Reamer to Do Work of Old Hand Reamers

WELL adapted for general machine shop use, but particularly valuable for reaming bushings and small compressor crankshaft bearings, a new motor-driven reaming machine has just been placed on the market by the Van Norman Machine Tool Company, Springfield, Mass. The new machine, called "Reamo," is a compact bench type, driven by a Westinghouse motor at a speed of 30 r.p.m. It produces a smooth polished job free from chatter and the work when finished resembles a broached bearing. For ordinary operation the work is held in a natural position at the waistline of the operator so that the reamer enters and follows through one or both bearings in a straight line. The work can then be withdrawn from the reamer while it is still turning, thus leaving no marks on the bushing or bearing. When the reamer has been set for the correct size the bearing can be reamed rapidly. The Reamo takes reamers up to 1½ in. diameter.



Reaming Out a Bushing by Means of the New Power Reamer, "Reamo"

Direct-Current Time Relay

A DEFINITE time relay for operation on direct-current circuits has been designed by the General Electric Company. This is made in two forms, designated as type MC-12, one for 115-volt operation and the other for 230 volts.

The new relay is designed to operate within a range of from five seconds, minimum, to 35 minutes, maximum. An extra lead is brought out through the enclosing case for connecting to the necessary resistor. A resistor mounted inside the case is connected in multiple with the motor armature to give constant speed.

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American Association News

Cleveland Exhibit Hall Completed on Schedule and Practically Sold Out

ON FRIDAY, Sept. 3, the immense new building which has been constructed to house a large portion of the exhibits at the American Electric Railway Association convention was completed. The next day, Saturday, it was formally turned over to the Cleveland convention committee. Thus the building was finished in just four weeks from the time the work of clearing the ground was begun.

The progress of construction has been told in a series of pictures published in this paper week by week. On this page the views show not only the appearance of the new building but its relation to the Auditorium and other city buildings. The top view was taken looking east along Lakeside Avenue from the roof of the County Building. In the extreme left is the City Hall and fronting it the Public Auditorium and on the right the newly completed building.

The middle picture is looking north-northwest from the corner of East Sixth and Superior and shows the relative position of the newly completed building and the Public Auditorium. At the right background is the City Hall, fronting Lakeside Avenue and overlooking East Sixth Street. The Public Auditorium is in the center and the new building is at the left. The parked automobiles are in the space that during the convention will be used by car exhibits.

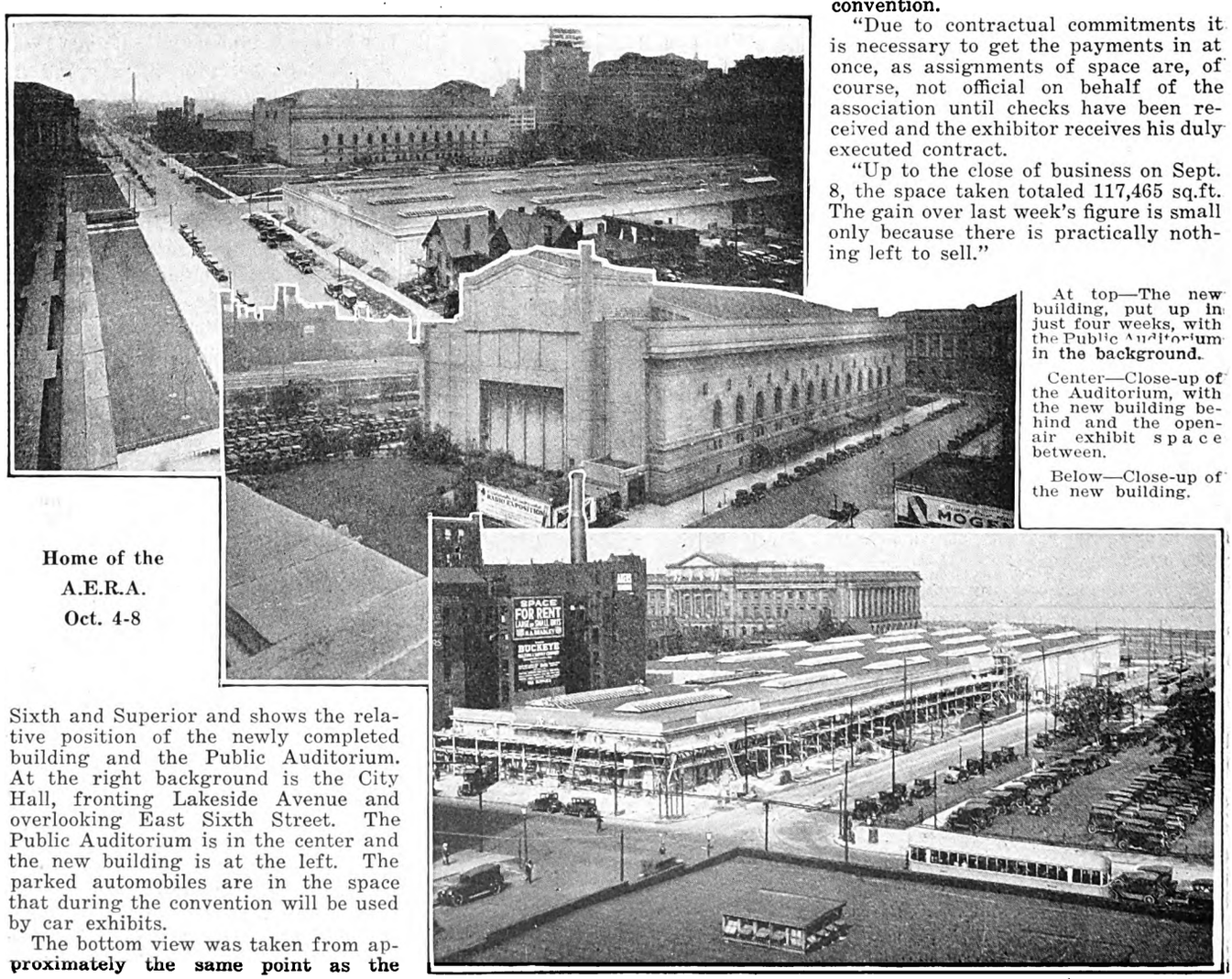
The bottom view was taken from approximately the same point as the previous pictures published of the new Exposition Building. This shows the outside finish (stucco) and skylights being completed. Work on the interior decorations, landscaping at the north end and cleaning off of the contractors' equipment was started immediately after the building was turned over to the committee. The parked automobiles in the right foreground are the same as those seen in the middle view, and likewise show the location of the car exhibits. In the center may be seen the car tracks serving the exhibit and connecting at the upper right of the view with the steam railroads. The large building in the background is the County Building (courts and administration offices).

The speed with which the work has progressed indicates the spirit of the Cleveland Railway management in doing everything possible to make the exhibit a success.

"Only four booths out of the entire space remain to be sold," said Fred C. J. Dell, director of exhibits. "What is still more important, all but sixteen of the exhibitors have paid. This is practically a full month in advance of the convention.

"Due to contractual commitments it is necessary to get the payments in at once, as assignments of space are, of course, not official on behalf of the association until checks have been received and the exhibitor receives his duly executed contract.

"Up to the close of business on Sept. 8, the space taken totaled 117,465 sq.ft. The gain over last week's figure is small only because there is practically nothing left to sell."



Home of the A.E.R.A. Oct. 4-8

At top—The new building, put up in just four weeks, with the Public Auditorium in the background.

Center—Close-up of the Auditorium, with the new building behind and the open-air exhibit space between.

Below—Close-up of the new building.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Sept. 17-18 — **Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.**

***Oct. 4-8*—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.**

***Oct. 10-15*—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.**

***Oct. 25-29*—Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.**

***Nov. 16-18*—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

***November 16-19*—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.**

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The News of the Industry

Wages Advanced in Cincinnati

Arbitrators Award Trainmen 2 Cents More an Hour at Cost of $300,000 a Year

An increase in wages that by 1926 will cost the Cincinnati Street Railway, Cincinnati, Ohio, $300,000 a year more than is now paid to workmen was granted to railway employees in an arbitration agreement announced by the arbitration board.

Walter A. Knight, the company's representative, refused to sign on the grounds that the company's expenses already had been increased through rehabilitation work required by the new franchise and also because the general tendency of wages was stationary.

The agreement was signed by James H. Vahey, representing the employees, and by former Judge Joseph W. O'Hara, the impartial member of the board.

The award follows:

Retroactive to July 1, this year, an increase of 1 cent an hour to 54 cents.

Oct. 1, 1926, an increase of 2 cents an hour to 56 cents. Jan. 1, 1928, an increase of 2 cents an hour to 58 cents.

CONTRACT TO RUN TWO YEARS

The contract is to expire on July 1, 1928. According to the company an increase of 1 cent an hour means an additional expense of $60,000 a year.

The new agreement is designed to include drivers of the buses operated by the company. The agreement provides that in the event electric railway transportation is discontinued and bus service substituted trainmen shall be given preference as drivers for the buses.

Both Mr. Vahey and Mr. Knight issued statements explaining their attitudes in the matter. Mr. Knight's statement follows:

As I cannot join in the award I desire to explain why.

The complicated corporate relations have been unscrambled and the city is now dealing with the owning company which operates the property.

The service-at-cost franchise granted the Cincinnati Street Railway effective on Nov. 1, 1925, reduced the dividends of stockholders from 6 per cent to 5 per cent for the first three years, and furthermore has improved its service materially.

Two crosstown lines and feeder lines of motor coaches have been put on by the company to supplement the street cars and round out the service.

All this tends to insure to users of public urban transportation safe, comfortable, convenient and rapid service and is sound business policy for it accommodates the public and because of the increased attractiveness of the service causes more people to ride.

But such service is expensive to furnish and can come only from the receipts from fares. If it is humanly possible to avoid it the rate of fare must not be increased and car riders hope the time will come when some decrease can be made.

At this time the cost of living in Cincinnati is declining a little and the tendency for the next year or so seems to be in that direction.

Wages are not generally increasing; in fact, are generally stationary with a slight tendency downward.

Considering all these conditions and, having the public's interest in mind, as it seems to me an arbitrator should in such a case as this, I am compelled to conclude that this is a time for conservatism, and that the two arbitrators who make this award to the motormen, conductors and carhouse men have gone too far. Giving away other people's money, especially when many will be benefited, may bring a pleasant thrill with it, but this does not justify awards that are economically unsound and hazardous, as I believe this one to be.

It is possible that the excess may be made up by new economies in the management of the property, by such additional and uniform courtesy to the public on the part of motormen and conductors as will attract more people to use the service offered, and by increased efficiency of employees generally. I am satisfied that nothing else can do it, and I hope that every effort will be made to bridge the gap in these ways.

It is with deep regret that I find myself unable to join in the award.

The new two-year agreement will take the place of the last two-year agreement, which ended July 1, 1926.

Improvement Planned at Holyoke

President Pellissier of the Holyoke Street Railway, Holyoke, Mass., has announced that plans are under way for extensive improvements to the lines in Amherst and from the Center to Northampton. The company recently abandoned that section of its lines from Sunderland to North Amherst, which has never been operated at a profit. Service in the abandoned section will be provided by George Fisher, South Deerfield, who has been authorized to extend his bus line to Amherst Center. Mr. Fisher is restricted and cannot take passengers on between Amherst and the bridge near the Sunderland line.

Improvements Promised on West Virginia Line

The West Virginia Utilities Company, Wheeling, W. Va., plans to consolidate the two traction lines it owns in Morgantown and to operate them as one unit with improved equipment and a service schedule doubling the number of cars used and halving the time between cars, according to O. L. Eaton, Jr., commercial manager of the company. Three new cars are being constructed for use in Morgantown. They will be on exhibition at the convention of the American Electric Railway Association in Cleveland. These cars are part of a consignment purchased by the company for use on its Wheeling and Morgantown traction units. Mr. Eaton states that the South Morgantown trackage, recently acquired by his company to be joined to its Sabraton line, will be improved and the entire line, comprising about 5 miles of track, will be placed in first-class condition.

Consolidation with Service at Cost in Chicago

City Plans to Appoint Committee to Collaborate with Companies in Working Out New Plans

For the first time since the negotiations began for a new traction ordinance in Chicago the city, representatives of the companies and bankers are unanimously agreed that the local transportation properties should be consolidated.

Whether an ordinance should be granted to a single corporation for the operation of all forms of local transportation, including surface, elevated, subway and motor bus lines, or whether the surface and elevated lines alone should be merged has not been definitely decided, but the general policy of consolidation is no longer a stumbling block in the way of traction progress.

The settlement of this important point was the feature of a meeting held in Chicago on Sept. 1, the second of a series of conferences to work out a solution of the city's perplexing transit problems. At the instance of the bankers, the city was authorized to appoint a committee to collaborate with the companies in working out the details of such a plan.

It was further agreed at the meeting that the type of grant to the proposed company should be an indeterminate permit. Although the traction officials have long been advocating a grant of this kind from the state, no opposition was expressed when the Aldermen proposed to have the franchise issued by the city. Their silence was taken to mean that they assented. The question of whether the city or the state shall exercise control over the consolidated properties was purposely left open for the time being.

Barring more or less determined opposition on the part of the bankers and company representatives to the Aldermen's notions about amortization and city compensation, the general proposition that the new ordinance should be based on service at cost, with a reasonable return on the investment, and not a fixed rate, was likewise concurred in. Such service at cost would necessarily include, it was pointed out, expenses of operation with adequate provision for damage, depreciation and renewal reserve funds.

The bankers and company officials, however, strongly urged an amortization fund to reduce the capital investment on the grounds that it would establish good credit, make available all the money needed for extensions and at the same time enable the company to maintain a reasonable fare.

Frank O. Wetmore, chairman of the First National Bank, voiced the con-

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viction of the majority of traction representatives in asserting that the city's compensation—55 per cent of net receipts—should be eliminated. By putting the surplus back into the properties, he contended, the city could, if it wished at some time to purchase, buy the properties at much lower cost than if it accumulated a traction fund, similar to the present $45,000,000 account, which draws only from 2 to 2½ per cent interest. City compensation is a charge against the car rider, Mr. Wetmore added, for which he receives no immediate benefit.

Short Shrift Made of Carhouse Bandits

Salvatore Merro and Salvatore Rannelli will pay—Merro with his life and Rannelli by life imprisonment, for the murder of Theodore M. Conway, paymaster of the Public Service Corporation of New Jersey, Newark, N. J., killed by bandits in a raid on the Central Avenue carhouse on June 4. Neither of the prisoners was actually seen in the act of shooting the paymaster nor in the carhouse, but more witnesses positively identified Merro than Rannelli as having been seen in a gun battle running from the scene of the attempted hold-up. The case was tried before Judge Van Riper in the Court of Oyer and Terminer. The jury deliberated 4½ hours before returning its verdict of guilty of first degree murder against both defendents, adding a recommendation for life imprisonment for Rannelli.

Summing up the state's case, Prosecutor Biglow praised the state witnesses, who, he said, rushed to the aid of the law at the time of the outrage and, further, came to court to see that justice was done, thereby doing their part toward stamping out the epidemic of murder and robbery.

Mrs. Conway, widow of the murdered paymaster, has been provided for by the welfare department of the Public Service Corporation. She will receive the full amount of her husband's pay until June 30, 1927, and thereafter one-half his yearly salary for twelve years, by which time her children will probably be self-supporting.

Island Ferries to Go to Toronto Transportation Commission

It appears that another activity is to be added to the operations of the Toronto Transportation Commission, Toronto, Ont. That body is about to take over and operate the ferryboats across the bay. The stage is all set for this, and the board of control has requested the ferry company to give the commission access to all books and other documents. Mayor Foster is quoted as follows:

As we will not be taking over until the end of the season, it will be next year before the T.T.C. would have to operate the ferries, and the question of fares or change in the staffs operating the ferries would not come up until then. Of course, after the regular season closes, about the end of October, I suppose either the city or the T.T.C. will operate an abbreviated service for the convenience of Island residents for a few weeks, as Mr. Solman has done in past years.

Paving Relief Approved

Pennsylvania Commission in Agreement with New Arrangement Made at Williamsport

Another name has been added to the long list of electric railways that have received relief from burdensome paving requirements. The company is the Williamsport Passenger Railway, Williamsport, Pa. The case was passed upon some time ago by the Public Service Commission of Pennsylvania, but the full text of the finding has only recently become available. The commission says that the proceeding involving the operation of the railway in Williamsport came before it under unusual and exceptional circumstances. It held in substance that the modification by the city of the street railway paving obligation previously imposed was in line with modern thought on the subject and in conformity with the expressed opinion of the commission.

Some time ago the electric and railway systems operating in Williamsport were sold to the Lehigh Power Securities Corporation. The new management advised the City Council that it would require an expenditure of $300,000 to place the system in proper condition; that under the present rate of fare of 5 cents and the street paving burdens imposed under the existing ordinances it was impossible to raise the money for the improvements. The Council, by resolution, authorized the Mayor to appoint a committee to investigate the matter and make definite recommendations. This committee filed its report on Nov. 6, 1925. This report discussed in detail the history of the street railway system in Williamsport. On Dec. 15, 1925, the report was finally adopted by the Council, including specific recommendations covering additional equipment and facilities, suggested rate of fare, increase of employees' wages, rerouting, and modification of paving obligations.

As a preliminary step to carry the report into effect the Council on Dec. 30, 1925, enacted an ordinance to authorize and empower Lewis W. Heath, as trustee for the Williamsport Passenger Railway, Vallamont Traction Company, East End Passenger Railway and South Side Passenger Railway, and as trustee for Williamsport Railways (to be formed by the merger and consolidation of the four first-mentioned companies), to maintain a railway upon certain streets in Williamsport, then occupied by the four railway companies. The ordinance repealed on the date it becomes effective all existing ordinances granting franchises to the then operating companies.

The commission in this case did not pass upon or fix any value of the property and franchises of the companies nor any rate of fare. The only question before it was whether the terms and conditions of the ordinance of Dec. 30, 1925, were reasonable and the approval of the ordinance contract necessary or proper for the service, accommodation, convenience and safety of the public. It points out that the ordinance does not become effective until a new corporation is legally created by the consolidation and merger of the existing railways in the city. Before the charter can issue to the new corporation the commission must approve the terms and conditions of the consolidation and merger. Any or all questions with respect to capitalization of the new corporation can be raised in the subsequent proceeding before the commission. The proceeding does, however, change and modify the existing obligation resting upon the companies for street paving. In this connection the commission says:

Under the laws of Pennsylvania, street railways must look to the municipalities which granted the franchises for any relief from such obligation. The Appellate Courts of Pennsylvania have held that this commission has no jurisdiction to vary the franchise ordinance imposing upon a street railway the obligation to pave or keep in repair the streets upon which its tracks are located. (Swarthmore Borough vs. Public Service Commission, 80 Superior Court 59; 277 Pa. 472.)

In a former proceeding, Borough of Swarthmore vs. Philadelphia, Morton & Swarthmore Street Railway, and Philadelphia Rapid Transit Company (Complaint Docket No. 3579) Volume V, Decisions of Public Service Commission, pp. 438 and 446, in which the question of street paving was involved we said:

"It is a matter of common observation that the street railways of the country have been forced to meet a considerable diminution in street passenger traffic. This has been caused in large part by the use of privately owned automobiles. It is manifest, therefore, that street railways should not continue to be burdened with obligations beyond that which is directly involved in the service which they are called upon to render and reasonable for them to bear in connection with the maintenance of state and municipal governments under whose authority they are authorized to render service.

"The Federal Electric Railways Commission, called together to study the street railway situation of the country, in reporting to the President of the United States, after extended hearings, recommended: 'Effective public co-operation should be exercised by eliminating, in so far as it is practicable, special assessments for sprinkling, paving, and for the construction and maintenance of bridges, which are used by the public for highway purposes.'"

The modification by the city of Williamsport of the street paving obligation now imposed on certain of the companies operating street railways in the city is, therefore, in line with the modern thought on the subject and in conformity with the expressed policy of the commission.

One of the operating companies—Williamsport Passenger Railway Company—is incorporated under the special act of Assembly approved April 16, 1863 (Pamphlet Laws of 1864, page 1080) and is not required to obtain a franchise from the city or contribute any moneys toward the paving or repaving of the streets occupied by its tracks. This company owns and operates more than one-half of the trackage in the city. Before the company can merge with the other companies operating in Williamsport, it must accept the provisions of the street railway act of 1889, and subject itself to the requirements of said act and relinquish the special provisions it now possesses under its charter. It would be unjust and unreasonable to require this company, after the merger, to assume a street paving burden and obligation which it is not now required to bear.

We have given careful consideration to all the provisions of the ordinance submitted for approval and find nothing therein which in our opinion is inimical to the interests of the public.

In conformity with the above, we find and determine that the approval of the aforesaid ordinance contract is necessary and proper for the service, accommodation, convenience and safety of the public.

More Skip Stops in Baltimore

The United Railways & Electric Company, Baltimore, Md., has notified the Maryland Public Service Commission that it will start the skip-stop system on six additional lines in the city. The plan is to be effective only between 6 and 9 a.m. and 4 and 7 p.m.

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Formal Order in Milwaukee One-Man Case

The Railroad Commission of Wisconsin has issued its formal order authorizing the Milwaukee Electric Railway & Light Company to operate one-man cars on its Wells-Downer line. The operation of two-man cars will be continued on this line, but the company offers to provide the extra service recommended in the commission's report on railway service in Milwaukee by the partial use of the one-man car.

The investigation which the commission conducted last spring following complaints by the public showed a deficiency of service on many lines. Recommendations consequently were made by the commission in its report urging the purchase of 75 additional cars, increased service on a number of lines, track extension of certain lines and other improvements.

In its report the commission recommended the purchase of 75 new cars to improve service, but the commission in its latest order cut the number down to 40 cars. The order provided, however, that 95 per cent of these cars are to be available for service during the winter months.

Engineers of the commission also recommended the double tracking of the Oakland-Delaware line north of the Atwater road, extension of the Eighth Street line to Lake Street on the north and extension of the Mitchell Street line two blocks beyond the Northwestern tracks on Forest Home Avenue, on which work has already been started. The engineers also recommend that if the Pabst-Wauwatosa line is to be maintained it should be double tracked as far west as Third Avenue in Wauwatosa. If, however, the Vliet Street and North Avenue lines are to be extended in the future, the Pabst-Wauwatosa line west of 60th Street could be discontinued.

A House-to-House Canvass in Chicago

Much success has attended a service improvement campaign being conducted by the Chicago Rapid Transit Company, operating the elevated lines in that city, among the employees who come into direct contact with the public. As a first step in the campaign an accurate survey was made of the public attitude toward the railway company.

A staff of trained men and women was sent into homes in the evening to ask the people questions regarding "L" service. Many people were interviewed and their answers to the questions asked were carefully analyzed. It was found that 61 per cent were favorable toward the company, 21 per cent were indifferent, 9 per cent very friendly, 7 per cent unfavorable and 1 per cent hostile. The reasons given for the attitude toward the company were carefully studied and it was found that the biggest factor was the personal service of the individual employees. The least important factor was the rate of fare.

With the information obtained from this survey and analysis of the public reaction toward the company, the campaign was started among the employees. The idea is to get the employees thinking of their work and how they can best please the patrons of the company. When the matter was explained to the employees they showed a fine spirit of co-operation.

Forty Years of Faithful Service

William S. Fisher, motorman with the Concord Electric Railway, Concord, N. H., completed his fortieth year of service on Aug. 17. Mr. Fisher would be an asset to any company on account of his loyalty, carefulness and the deep interest he takes in the company for which he works. He has seen the change from horse cars to narrow gage steam, then to electric power on the same gage, and finally from the 3 ft. to the standard gage of 4 ft. 8½ in. At the time that he entered the service, horse cars were run from Fosterville to Allison Street, while steam motors or steam "dummies" were run from Fosterville to the northern terminal at Penacook. About four years later the electric railway was instituted. Mr. Fisher worked for six years as a fireman on the Boston & Maine Railroad previously to his employment with the electric road.

Chicago Bank Favors Terminable Permit and Service at Cost

A terminable permit and service at cost—two of the outstanding features of the Chicago traction ordinance now pending before the local transportation committee of the City Council—are indorsed as sound principles in a bulletin recently issued by the Northern Trust Company, Chicago.

"Regardless of the chances for final adoption of the ordinance," the bulletin reads, "its framers are entitled to gratitude for bringing before the citizens of Chicago the principles of a terminable permit of the right sort, and service at cost."

The so-called barometer rate of fare, or service at cost, it points out, has been found successful in other cities. It allows a fair rate of return on investments under all conditions, even when earnings are diminished.

Showing the advantages of the terminable permit, the bulletin explains that street railway franchises under the Illinois state law are now limited to twenty years. As a result, near the close of the franchise, a company is uncertain as to its future, and both its service and profits deteriorate.

"Under the present law," the bulletin continues, "it appears impossible to frame a franchise under which refunding of the $162,000,000 in Chicago street railway bonds now outstanding can be accomplished."

Traction officials have declared flatly that they will not negotiate on the basis of the ordinance as now drawn, but Corporation Counsel Francis X. Busch, the author of the draft, believes that at least the principles may be retained if other independent financial interests take the same attitude as the Northern Trust Company in that the attraction of capital is admittedly the vital problem in any agreement.

Transportation Business Increases in St. Louis

Col. Albert T. Perkins, general manager for Receiver Rolla Wells of the United Railways, St. Louis, Mo., in commenting on the improved conditions on the street cars expressed the belief that the gain in revenue passengers for the six months ended June 30 compared with the same period in 1925 was due in large measure to several large conventions and public gatherings held in St. Louis this year. These included the Grotto convention, centennary of the St. Louis Archdiocese and dedication of St. Louis Cathedral and the Lutheran convention and dedication of Concordia Seminary.

The total number of passengers carried by the United Railways for the six months ended June 30 was 135,460,138, compared with 135,093,695 in the similar period of 1925. However, this year was far behind the total for the six months of 1923, the company's banner year. In that year the first six months registered 137,651,059 passengers.

The St. Louis Bus Company, which exchanges transfers with the railway, in the six months ended June 30 carried 2,217,115 passengers, compared with 881,598 the first six months of 1925. On the last day of June last year this company had twenty buses in regular service. At present it is operating 28 buses. However, in the early months of 1925 the company's lines were not fully organized and for that reason the large increase in traffic shown is somewhat abnormal, but its business has been growing steadily on all its lines.

Fare Continuance Authorized on New York & Stamford Road

The Public Service Commission of New York on Sept. 1, by formal order, authorized the New York & Stamford Railway, Portchester, N. Y., to continue in force until July 1, 1927, the passenger fares in effect prior to July 1, 1926, on its lines within the State of New York and within the zones prescribed as follows:

Zone No. 1—Between Mechanic Street, New Rochelle, and dividing line, 1.5 miles, a fare of 5 cents with free transfer privilege to and from lines of the Westchester Electric Railroad in New Rochelle.

Zone No. 2—Between Dean Place and westerly boundary of Larchmont, 2.2 miles, with lap zone extending east to Delancey Street, Mamaroneck, a fare of 7 cents with free transfer privilege to and from cars of Larchmont Manor line. The Larchmont Manor line, extending from the New Haven Railroad station and the terminus of line at Larchmont Manor, village of Larchmont, a distance of 1.49 miles, is included in zone 2, with fare of 7 cents and free transfer privileges between main points in village of Larchmont only.

Zone No. 3—Between westerly boundary of village of Mamaroneck and the Mamaroneck-Harrison town line, 1.9 miles, with lap zone extending west to Beaver Street, town of Mamaroneck, fare of 7 cents.

Zone No. 4—Between westerly boundary of town of Harrison and North Street in village of Rye, about 1.8 miles, fare of 7 cents.

Zone No. 5—Between North Street, Rye and Liberty Square, Port Chester, 2.61 miles, with lap zone extending to Mill and Main Streets, Port Chester, fare 7 cents with free transfer privileges to and from Rye Beach-Rye station line and the Rye Beach-Port Chester line.

Zone No. 6—Between Liberty Square.

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Port Chester, and Railroad and Greenwich Avenues, Greenwich, Conn., about 3.12 miles, with lap zone extending westerly to town hall, Greenwich, and easterly to New York & Stamford Railroad's carhouse in Port Chester, 7 cents.

Special tickets or books containing 28 tickets will be sold for $1 to pupils under eighteen years old attending school. Each ticket is good for one ride between any two points within any zone except between Dean Place and Mechanic Street, New Rochelle.

Passengers boarding cars in the village of Port Chester are entitled to free transfer within the village of Port Chester only.

Passengers boarding cars in zones 5 and 6, outside Port Chester, are entitled to transfer to local line within Port Chester for 3 cents for transfer. Passengers boarding cars of local line in Port Chester are entitled to transfers to points in zones 5 and 6 outside of Port Chester, including Rye Beach line, upon payment of 3 cents for transfer.

The village of Mamaroneck waived the provisions of the franchise restricting fares within the village of Mamaroneck zone.

The schedule is of interest because it represents an agreement largely mutual, arranged on a basis believed to be all that the traffic will bear.

Elevated Tramway Proposed for Montreal

Particulars were disclosed at a recent meeting of the City Council of Montreal, Que., of the main plans for an elevated high-speed tramway line north from Place d'Armes. By the proposed system, cars would be able to reach Mount Royal Avenue from St. James Street in five minutes, according to an authoritative opinion, compared with the present rate of twenty minutes by the surface lines. These plans, it was stated, have been prepared for three or four years by the Montreal Tramways and the Montreal Tramways Commission. St. Urbain Street is considered the logical route for the proposed elevated line. The change would necessitate widening from about 30 ft. to 80 ft. from Craig to St. Catherine. Plans call for elevated tracks on St. Urbain Street from Craig Street to a little above Ontario Street. At this point the tracks would go underground, below Sherbrooke Street, and come out on the surface again at Milton Street. From there north surface lines would be followed. By laying the elevated line made in this way grade crossings at the congested intersections would be avoided. Beyond Milton Street, St. Urbain is considered wide enough for the surface lines.

Provision is made for one stop only between Craig Street and the reaching of the street surface at Milton Street. This is at St. Catherine Street. Steps would lead up to the elevated lines from that thoroughfare.

Provision is also made for a convenient entrance to the terminus of the elevated lines at Craig Street extending to St. James Street, where passengers could step off the street into the passageway to the landing platforms.

With an 80-ft. street there would be room for parking cars and traffic in both north and south directions.

Consideration has been given to providing better transit north from Place d'Armes, because that is the most congested area.

Final Eucharistic Congress Facts

Further Particulars Are Given About Passenger Movement Over Rapid Transit and North Shore Lines

The International Eucharistic Congress of Chicago, Ill., is now largely a memory, but interest still attaches to the final transportation figures, unavailable heretofore because of the vastness of the whole undertaking and the difficulty experienced in keeping a comprehensive check of the number of tickets sold and cars operated. In the archives of the electric railway industry will repose the record of this stupendous achievement in mass transportation by the Chicago Rapid Transit and Chicago, North Shore & Milwaukee lines, which last June hauled more than 225,000 pilgrims to the scene of the closing ceremonies at Mundelein.

Some amazing disclosures of the Mundelein trek follow: Four hundred and forty-five special trains, composed of 2,785 cars, operated into a six-track terminal in a single day! Three hundred and twenty rapid transit trains of six cars each operated from Chicago over the elevated tracks to Howard Street and thence over the Skokie Valley route of the North Shore line directly to Mundelein, 40 miles away. Ninety trains of eight cars each were operated in shuttle service over the 13-mile branch of the North Shore Line from Lake Bluff to Mundelein. From Milwaukee, Racine and Kenosha, Wis., 35 special trains, composed of 177 cars, were run by the North Shore Line during the morning of the great Catholic pilgrimage.

THURSDAY THE BIG DAY

For the suburban roads the big day was Thursday, June 24, when the congress moved to Mundelein, Ill. It is estimated the attendance at Mundelein that day was more than 400,000. Details of the passenger movement on June 24 supplementing those contained in the account published in the ELECTRIC RAILWAY JOURNAL for July 3 follow:

Nearly 250,000 were transported over the combined Chicago Rapid Transit and North Shore Line to Mundelein and return.

Approximately 170,000 were carried by the Chicago Rapid Transit from Chicago, 45,000 via shuttle train from the Lake Bluff station of the Northwestern steam road and approximately 30,000 from North Shore line points in Wisconsin, making a total traffic over the joint electric lines of roughly 250,000.

Combined facilities of the three steam roads accommodated only about 85,000.

About 340,000, or 80 per cent of the great throng, were transported by rail. The rest went by automobile.

The total number of Rapid Transit cars in the Mundelein service was 932.

A total of 372 trains was operated by the Rapid Transit and North Shore Line.

The number of pilgrims transferring from the Northwestern steam road and from North Shore Line points at Lake Bluff is estimated at 75,000.

There were approximately 1,000 cases of fatigue and heat prostration during the day at Mundelein, several minor injuries incurred in the crowd that jammed the stockade outside the terminal, but not an accident occurred which could be laid to the Rapid Transit or North Shore Line.

In addition to the six-tracked terminal at Mundelein, three temporary substations were installed on the Libertyville branch to meet the extraordinary power demand. Overhead trolley equipment was placed on 125 motor cars of the Metropolitan division of the Rapid Transit lines, which normally operate on third-rail only. Arrangements were made to short circuit a part of the resistance in the headlight circuit of the elevated cars and to install special lamps to provide for the extra candlepower needed for operating in the country. Emergency crews from all maintenance departments and first aid teams were located at strategic points along the right-of-way. All available employees were drafted by the transportation department for train and platform service, and in addition a large number of employees of the Commonwealth Edison Company and of the Public Service Company of Northern Illinois were used for transportation service. Means were taken to reduce as much as possible the chance of danger due to the inexperience of these men. The car switches for changing from overhead trolley to third rail were closed with busbars, keeping both the overhead trolleys and third rail shoes alive, so that the trainmen did not have to manipulate the dangerous knife switches. At the points where the change from overhead trolley to third rail and vice versa was made, the trains were stopped and men stationed on the ground saw that everything was in readiness for going ahead.

A fare of $1.50 was charged for the round trip of about 80 miles. To avoid confusion and save time, fares were collected at the Mundelein enclosure on the pay-leave system outbound and on the pay-enter system inbound. An advance ticket sale was started some time before Thursday, first in the different parishes, and then at "L" stations and other convenient points.

The two companies went to great length to safeguard their patrons. Practically all injuries experienced by the visitors were due to crowding at the gates of the terminal, once when a deluge of rain and hail fell during the program, and again at the close of the ceremonies. Employees worked heroically to keep the crowds in order, and a large medical force, under the direction of Dr. Hart E. Fisher, chief surgeon, treated the injured. Two hospital cars were on hand, one at Mundelein and the other at Lake Bluff. The car at Lake Bluff was transferred to Mundelein when the rush for home began.

The problems of the Chicago Surface Lines were of a different character, but no less exacting than were those of the "L" and the North Shore. The record of the Surface Lines was equally impressive. It has been given quite fully before. The city's experience with traffic during the Eucharistic Congress last June, when a rigid ban was placed on parking in all loop streets for three days, was so satisfactory that a resolution establishing a permanent no-parking rule for the downtown district has been introduced in the City Council.

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There were close to 1,000,000 visitors in the city, but downtown traffic was less congested during the great religious conclave than it has been for years. Reports from official observers indicated that the greatly augmented traffic moved with more swiftness than that attained by the ordinary business day's traffic. The no-parking rule had the effect of doubling the width of the downtown streets. In spite of the heavier riding, the speed of Surface Lines cars through the Loop was much greater than usual.

Chicago Elevated Wage Controversy Is Settled

The wage controversy between the Chicago Rapid Transit Company and 4,500 of its trainmen, begun on June 1 when the last agreement expired, has been effectively settled by compromise between the two parties.

Under the terms of the arbitrators' award, which was made on Sept. 4, the company will pay the entire cost of maintaining a $20 a week sick benefit for all employees in service one year or more and a $1,000 death benefit for all employees in the service of the company three months or longer. Heretofore the men have contributed three-fifths of the cost of maintaining these welfare features and the company two-fifths.

B. J. Fallon, vice-president of the company, and Maclay Hoyne, representative of the union, who composed the board of mediation, denied the trainmen's demand for an increase of 5 cents an hour over the present 77 cents paid motormen and the 72 cents paid conductors.

Had the demands for increased wages been granted, rapid transit officials say, the annual payroll of the company would have been increased by more than $700,000.

The new agreement is retroactive to Sept. 1. It will run until May 31, 1927.

Wages Fixed in Birmingham

The Birmingham Electric Company, Birmingham, Ala., and its union conductors and motormen compromised on Sept. 7 on a top wage of 54 cents an hour, thus averting a strike which had loomed for a week. More than 800 men are affected, with a cost to the company of $125,000 a year.

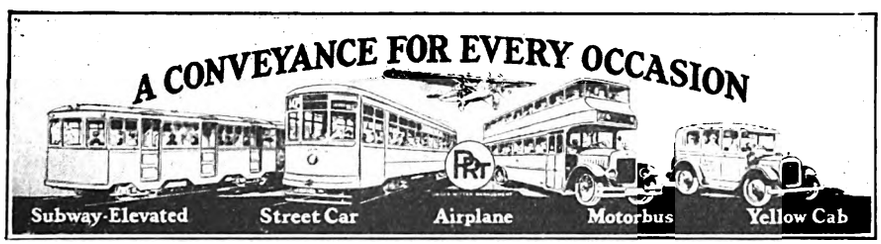
The amicable settlement was brought about by the City Commission intervening as arbitrator when railway officials and men were deadlocked. Just before the compromise the men voted to strike. The railway had offered 52 cents, but the men had demanded 57½ cents. The old top wage was 50 cents. The new contract terminates on Sept. 1, 1929. It calls for 44 cents for the first year of service, 49 cents for the second year and 54 cents for the third year. The agreement also includes a 2-cent increase for other railway employees.

Street Car Company Has Air Service to Norfolk, Va.

On Sept. 13 the air service of the Philadelphia Rapid Transit Company, Philadelphia, Pa., will be extended to Norfolk, Va. Chairman T. E. Mitten announced during his address to the eighth annual meeting of employee and employer committeemen at Willow Grove Park, Philadelphia, on Sept. 1, that this step would be taken. The extension in daily service is another step in Mr. Mitten's demonstration of the possibilities of commercial aviation in this country. Heretofore the service has been available only between Philadelphia and Washington, but with the delivery of a third triple-motor Fokker plane the plan is being made more comprehensive. Possibly before the close of the Sesqui-Centennial exposition another step will be taken in providing passenger air service from New Brunswick, N. J., to Philadelphia, Washington and Norfolk. This would be the nearest available landing field in the vicinity of New York City.

Chairman Mitten explained the venture of the Philadelphia Rapid Transit Company into commercial aviation as an effort to demonstrate that such a service has real possibilities in this country. In spite of the proud boast of Americans that commercial flying is further advanced here than elsewhere in the world, Mr. Mitten pointed out that prior to the establishment of the P.R.T. air service as a feature of the Sesqui-Centennial practically all that the country had in this direction was "hoptoads at $5 a hop."

While the P.R.T. air service will cease with the close of the Sesqui-Centennial, Mr. Mitten announced himself as willing to aid in the formation of an American Air Service Corporation to carry on the establishment of routes throughout the entire country. This could only be done, however, provided the government is sufficiently appreciative of the value of such an undertaking to back the venture with its resources. The Philadelphia Rapid Transit Company will go out of the aviation business, but it will have served a real purpose in demonstrating the fundamental possibilities of this line of endeavor.



Miniature of Sign Displayed in Street Cars by Philadelphia Rapid Transit Company

Some Recent Wage Settlements

The United Electric Railways, Providence, R. I., has settled with its employees on a new wage scale effective for one year from June 1, 1926. Motormen, conductors and one-man car operators have been granted an increase of 1 cent an hour. Bus operators, who formerly received the same rate as motormen and conductors on two-man cars, namely, 61 cents an hour, have been granted the same rate as one-man car operators, 68 cents an hour.

The wage rates for trainmen of the Macon Railway & Light Company, Macon, Ga., have been renewed for one year from Aug. 1, 1926.

The wage rates for trainmen of the Oklahoma Union Railway, Tulsa, Okla., which expired July 15, 1926, have been continued in effect, without change.

The agreement between the Great Falls Street Railway, Great Falls, Mont., and its employees, which expired Aug. 15, 1926, has been renewed for one year without change.

The contract between the Joplin & Pittsburg Railway, Pittsburg, Kan., and its employees, which expired Aug. 1, 1926, has been continued for an indefinite period by mutual consent.

The wage rates for trainmen of the Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, have been renewed for one year from Aug. 16, 1926.

Crash on Detroit United Causes Ten Deaths

Ten deaths and the injury of 30 other passengers resulted from the head-on crash of two Detroit United interurban cars while traveling at high speed on a curve near Monroe, Mich., on Sept. 2.

According to a statement by the general manager of the Detroit United Lines, the conductor of the southbound car has admitted that orders to await a second car at a siding were forgotten. The motorman is in the Monroe Hospital seriously injured. Both the conductor and motorman had been instructed at Rockwood, Mich., to await two cars on Pine siding, 3 miles north of Newport, according to the statement attributed to the D.U.R. official, but they awaited only the first, a local car, and then continued on, forgetting that the northbound Toledo-Detroit express was approaching. A report of the accident gave the speed of each car at about 45 m.p.h. They met in the middle of a 2,000-ft. curve, and because of trees and telegraph poles which obscured the view neither motorman could see the other car approaching. In the collision one car ripped loose from its trucks and rode over the other, crashing through the vestibule and into the smoker. Six of the passengers killed were taken from the smoker of the southbound car.

Separate investigations are being conducted by the D.U.R. officials and authorities of Monroe County, in which the wreck occurred. Both motormen on the wrecked cars are reported to have had fine records. One was considered one of the oldest and most trusted employees of the division.

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Offers Made to Co-operate in Whitestone Operation

Willingness of the Brooklyn-Manhattan Transit Corporation to operate the Whitestone branch of the Long Island Railroad, if the city acquires it, was announced by Borough President Maurice E. Connolly of Queens in an interview on Sept. 3. Mr. Connolly said that William S. Menden, president of the B.-M. T., had assured him that the company would operate the branch as a part of its Queensboro rapid transit line without an additional fare.

The Long Island Railroad has offered to give the city its Whitestone branch, together with twenty acres of shore property, in order to be relieved of half the expense of the elimination of its grade crossings, the total cost of which is estimated at $4,000,000. Under the terms of the offer the railroad right-of-way may be used for rapid transit purposes or for a highway. The company's contention is that the branch is unprofitable and that the company cannot afford to pay half the cost of the proposed elimination of grade crossings. This offer is pending before the Board of Estimate, and Mr. Connolly is expected to move for its consideration at an early meeting.

At the B.-M. T. offices it was stated that Mr. Menden at his conference with Mr. Connolly had assured the Borough President that the B.-M. T. was "ready and willing to co-operate with the city authorities in extending rapid transit service in Queens."

Another Dorchester Transit Award Announced

The C. & R. Construction Company is the lowest bidder and undoubtedly will receive the contract to build the third section of the Dorchester rapid transit system, to be operated by the Boston Elevated Railway. The bid was $626,550 and the nearest competitor for the contract was the J. C. Coleman Sons Company, bidding $650,695. There were eleven bidders and the highest bid was $1.069,400.

This section covers about 1 mile between Geneva Avenue and Peabody Squire and will include the construction of the Shawmut station and the rebuilding of Peabody Square bridge. With the awarding of this contract more than one-half of the 6-mile extension will be under construction. The New Haven Railroad has discontinued its service to four stations and permanently abandoned the location to clear the way for the rapid transit electric railway construction work.

One-Man Cars on Two More Buffalo Lines

One-man cars have been placed on two more local lines in Buffalo, N. Y., by the International Railway. Similar cars are now in operation on almost every line in the city. Additional cars have been placed on all routes where one-man operation is in effect, thus reducing the headway between cars. Cars which have been rebuilt for one-man operation have been equipped with all of the latest safety devices.

B. J. Yungbluth, president of the International Railway, announces that one-man car operation has enabled the company to increase service and at the same time reduce accidents more than 16 per cent in a two-year period. Mr. Yungbluth explains that, despite the opposition to the one-man car service in Buffalo, the company has found that this form of transportation has proved of benefit to car riders and the management because no attempt would be made to increase the number of one-man car lines if it was found that accidents were increased, for Mr. Yungbluth says accidents are the most costly by-product of transportation.

A change announced by the company on all one-man cars allows passengers going toward the business section of the city to pay as they board and to pay as they leave on the outbound trip.

Albany Fare Case Reopened

The Public Service Commission has fixed Sept. 30, at Albany, N. Y., as the time for the hearing of the petition of the United Traction Company for a determination that increased passenger fares may be charged in various municipalities and that new fares may be put in effect on short notice. At the same time the complaint of the city of Albany against the United Traction Company asking for a reduction of fares will be heard.

This reopening of the fare case is the next step in the application of the United Traction Company for an increase in its fares in the Capitol district from 7 cents to 10 cents. On Aug. 18 the Public Service Commission decided that the Legislature had taken away its power to regulate fares as against local franchise fare restrictions in the cities of Troy and Rensselaer. This left the company in the position of being able to petition for an increased fare on such of its lines as are located outside the cities of Troy and Rensselaer only.

Urge for Rapid Transit Line Felt in Seattle

Spurred into activity by a report by the City Planning Commission urging construction of subways and elevated tracks for a rapid transit system, the utilities committee of the City Council recently took up the matter of creating a rapid transit line along Westlake Avenue from Virginia Street to Fremont, rebuilding the roadbed and replacing the present rails with heavier ones.

D. W. Henderson, superintendent of the municipal railway system, said for three years the required rails have been at the Georgetown station, but that he has been unable to obtain the $62,000 necessary to pay for the cost of laying.

It is proposed that the project be financed by the issuance of interest-drawing warrants, to be sold to the Water Department, which has sinking funds to invest. The railway superintendent states that the reduction of running time on Meridian Avenue, Phinney Ridge and Green Lake lines will increase the revenues.

City Orders Brunswick Company to Remove Rails

The City Commission of Brunswick, Ga., recently adopted a resolution instructing the Brunswick & Interurban Railway to remove its tracks beginning on Newcastle and Gloucester Streets, and then on other streets until all have been removed and the streets repaved in the same condition as those parts adjacent. Some time ago the sale of the rail and overhead of the company was reported with the intimation that the purchaser intended to salvage the old tracks, but to junk all of the other material. Apparently this deal was never concluded and the company still has the property on its hands. It is trying to make some disposition of the rails and hopes to be able to do so before long. The matter evidently has been brought to a head by the condition of the paving in several places in Newcastle Street, because the city will not consider repairing the paving until the rails are up and out of the way. The company that owns the rails was composed of a group of public-spirited citizens who bought the car line in an endeavor to keep it operating. The owners have been figuring on selling the rail to reimburse themselves for losses sustained in operating the company.

Franchise Details Completed in Louisville

All details of the new franchise and operating ordinance of the Louisville Railway with the city of Louisville, Ky., have been completed, the bill having been passed by the Board of Councilmen, Board of Aldermen and signed by Mayor A. A. Will. The company has 60 days in which to accept the provisions of the law. The car fare rate will remain at 7 cents straight as at present, with half fare for school children and free rides for policemen and firemen in uniform, as well as park guards. The contract also provides for transfers from bus lines to street car lines, with a maximum of 10 cents for combination rides. The ordinance is to run for a period of two years, after which a readjustment of fare rates will be based on earnings.

Deadlock in Newark, Ohio

Citizens and company are still talking it over in Newark, Ohio. Despite many conferences attended by prominent citizens who have the best interests of the city at heart, no tangible plan for the restoration of railway service has been evolved that is satisfactory to the Southern Ohio Public Service Company. There were stumbling blocks enough in the past to a settlement, but it now develops that the Council, in passing the city-wide bus ordinance, legally authenticated competition under a grant in some respects just as binding as that under which the Southern Ohio Public Service Company functioned. No ready means appears to be at hand to nullify this ordinance, a condition understood to be necessary to secure the resumption of railway and bus service by the Southern Ohio Public Service Company.

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"Follow the Ball!" Says Dana

Edward Dana, not as general manager of the Boston Elevated Railway, Boston, Mass., but as plain Edward Dana, tells the employees of the railway in *Co-operation* for August that now is the time to plan ahead in order that the ninth year of public control may end sucessfully on June 30, next. He says that this year "calls for the best our organization can give." As he sees it, the degree of success that is reached "will be governed by the extent to which we 'follow the ball' daily and weekly until June 30." He asks the men to "exert every effort to increase revenue by rendering courteous service and displaying real interest in our patrons."

Incidentally *Co-operation* hammers away at the idea of increased car riding. It spreads the gospel that "A Ride a Day Keeps Poor Service Away," and says: "Secure all the fares, guard transfer losses, cultivate more riders. It's our business." And in this work it recognizes that "modern rolling stock is necessary to provide adequate and dependable car service." Then the company furnishes these facts:

New rolling stock costing $13,905,935 has been placed in service on the lines of the Elevated since July 1, 1918, as follows:

35	Cambridge subway cars..	$657,597
48	East Boston tunnel cars..	889,390
65	Elevated cars	1,305,698
296	Center-entrance cars	4,108,593
46	Trail cars	317,518
461	Double-end surface cars..	5,344,857
184	Single-end surface cars and buses	1,282,282
1,135		$13,905,935

There are 82,450 electric passenger cars in operation in the United States.

28,085, or 34 per cent, are more than twenty years old.

30,685, or 28.7 per cent, are between ten and twenty years old.

23,680, or 37.3 per cent, are less than ten years old.

On the Boston Elevated approximately 46 per cent of the cars have been purchased since 1918 and the average age of all cars is only nine years.

The rapid transit lines have 79 per cent of the service operated on the Boston Elevated with all steel cars, Philadelphia has 100 per cent, New York 50 per cent, and Chicago 24 per cent.

In 1918 the cars out of service for repairs amounted to 17 per cent, whereas in 1926 only 6 per cent are under repairs.

The total of reported car defects for each 10,000 miles operated is only 5.3 at the present time.

"L" Platform Extension Work in Chicago Nearly Finished

Completion of the Chicago Rapid Transit Company's program of station platform extension is expected soon. The platforms of elevated stations in the Loop district were the first to be completed after the work was begun last autumn. In many instances platform lengths have been virtually doubled to take the new eight-car express trains.

The Lake Street west side division has already been completed and the final extension on the south side division is being made at the 55th Street station. A new section of steel structure has been installed at Sheridan Road on the north side division to permit straightening of tracks for lengthening the platforms. The Addison Street station is all that remains to be extended on this division.

Extension work on the Garfield Park branch was finished last month, and when the three other branches of the Metropolitan division are equipped with longer platforms the facilities for passenger handling over the entire Rapid Transit system will be greatly increased.

$1,500,000 to Be Spent by Ohio Interurban

Improvements to cost $1,500,000 are proposed by the Cincinnati, Hamilton & Dayton Traction Company, Cincinnati, Ohio The program provides for the construction of a freight siding in Cumminsville, at which place the interurban company's Cincinnati terminus is located. Quite recently the City Council of Cincinnati granted the interurban company a 25-year franchise to enter the corporate limits of Cincinnati. New equipment will be purchased and general improvements made to the roadway.

Contempt Action to Be Appealed by Detroit

Charles P. O'Neil, corporation counsel of the city of Detroit, has announced that he will initiate before the Michigan Supreme Court certiorari or mandamus proceedings for the purpose of setting aside contempt proceedings brought against William P. Rutledge, commissioner of police, in the jitney case.

Judge Guy A. Miller in Circuit Court refused to set aside the proceedings, which were started after Rutledge is alleged to have violated the injunction issued by Judge Harry J. Dingeman restraining the police from interfering with the jitney drivers. Judge Miller held that the injunction issued by Judge Dingeman was valid. O'Neil maintains that it was void and for that reason the contempt proceedings were not legal. It is upon this point that an appeal is planned. Details of the controversy between the city of Detroit and the jitney drivers were told in the ELECTRIC RAILWAY JOURNAL of July 31.

Vote on Detroit Transit Plan in Spring

The rapid transit ordinance, embodying a subway system for Detroit, Mich., to cost approximately $180,000,000, will not be submitted to the voters at the Nov. 2 election, but will in all probability be presented to the people for final action in the spring.

Mayor John W. Smith said he believed additional time should be given for the thorough study of the project, in view of the enormous amount of money involved. At the hearing before the City Council at which the matter came up for discussion serious opposition to the plan advanced by the transit commission developed, especially as applied to the proposed plan for the financing of the scheme. The Mayor believes that with more than 200 candidates seeking office at the November election the opportunity for proper discussion of the transit question does not present itself.

Sidney D. Waldon, chairman of the Transit Commission, stated that it was his personal opinion that the people should have ample time to study the question.

The plan for Detroit was reviewed in the ELECTRIC RAILWAY JOURNAL for Aug. 28, page 355.

Something May Be Told

OF THE hundreds of corporation executives who have been discussing with animation Professor Ripley's strictures upon the reticence of annual reports, not a few have offered a rebuttal which fails to rebut. . . . Professor Ripley's main premise, that the stockholder has a right to enough information to enable him to draw intelligent conclusions concerning both the safety and the profitableness of his investment, is unassailable. . . .

That the majority of stockholders throw annual reports away unread is more easily asserted than proved. The assumption cannot be offered in defense of present practice, if only on the principle that the accused cannot take advantage of his own wrongdoing. If annual reports are not read, it is primarily because so many of them are either unreadable or not worth reading.

To publish a mass of technical and uncorrelated facts is not to meet the stockholder's legitimate demand. He is not an auditor and neither are the directors of the company auditors. The chief executive has no difficulty in making himself intelligible when he talks to the board; neither does he find it impossible to engage their interest. The difference is that in one case he wants to do these things and in the other he frequently doesn't. But he should infinitely prefer to make the effort, rather than have bureaucratic dictation dragged into a naturally personal and private relation.

It has been remarked that schools should be opened for the training of stockholders in the study of corporation affairs. H. G. Wells supports Carlyle in his dictum that the only real university consists of books. What better university for the stockholder can there be than annual reports of going—or coming—concerns, properly written?—*Wall Street Journal.*

News Notes

Easton Road Gradually Ceasing Service.—The Philadelphia & Easton Electric Railway, Doylestown, Pa., has discontinued carrying United States mail between Easton and Doylestown. The company will continue in service a few more months. The road has already discontinued service into Easton.

Rerouting Proposed to Speed Up Service.—In an effort to furnish faster service on the Olive-University and Olive-Delmar lines the United Railways, St. Louis, Mo., proposes to consolidate the Olive-University and Olive-Maryland lines and change the routing of the

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Olive-Delmar line. Consent of 51 per cent of property owners of three blocks is needed to make the proposed changes. As usual some are opposing the plan, which means better facilities for many thousands of residents of the territory served.

Strike Pickets Discharged by Indianapolis Judge.—On the grounds that the strike was over and "there should be no malice," Judge Paul C. Wetter in Municipal Court Sept. 2 dismissed a woman and six men who appeared to answer charges of picketing, congregating and vagrancy, preferred against them during the recent strike of employees of the Indianapolis Street Railway. Mrs. Jeanette O'Brien, the woman, had been prominent as a speaker and leader at meetings of strikers.

More Power Sought by Brooklyn Company. — The Brooklyn-Manhattan Transit Company, Brooklyn, N. Y., is negotiating with the Brooklyn Edison Company for a contract by which the latter would supply such additional power as may be needed by the B.-M. T., which now produces part of its power and obtains the remainder from the Interborough Rapid Transit Company.

Denver Orphans Ride Free.—The Denver & Intermountain Railroad, operating between Denver and Boulder, Col., on the recent receipt of its seventeen new buses invited the orphans of Denver to a free ride throughout the city. The line, known as the "Kite" route, operates buses as an auxiliary to its electric railway service.

Jamaica Line Issues Time-Table Booklet.—The Jamaica Central Railways, Inc., Brooklyn, N. Y., has furnished a time-table for its patrons of the Belmont Park and Liberty Avenue Divisions. In the foreword the company expresses the intention of exercising the greatest care in operation and of adhering rigidly to these schedules. Interruptions, which are usually due to causes beyond the company control, will no doubt occur, but everything will be done to restore service to normal as quickly as possible. The booklet includes a list of the officers of the company. The time-table carries advertising of local merchants.

Six Hundred Cars of Peaches.—Fruit movements on the Salt Lake & Utah and the Bamberger Electric Railroads, Salt Lake City, Utah, have been said to indicate one of the heaviest total shipments in the history of the lines. A total of 600 cars of peaches is expected to be moved to Eastern and Middle Western centers during the month of September. The Bamberger line, serving the territory between Ogden and Salt Lake, from early estimates will handle about 200 cars of the fruit for New York, Chicago, St. Louis, Kansas City, Detroit and other centers of population. The Orem line, serving Utah County, will move about 400 cars, if predictions are fulfilled. Shipments of peaches started fully two weeks ahead of the usual season. Cantaloupes also will be shipped eastward in great quantities, although not in as large numbers as peaches.

Recent Bus Developments

Report on New York Bus Proposals Expected Sept. 15

Mayor Walker of New York has called a special meeting of the Board of Estimate for Sept. 15 to receive the report of the Board of Transportation analyzing the bus franchise applications which have been pending several months. No action will be taken on Sept. 15, Mayor Walker said, because the board members will need time to study the report first.

Chairman John H. Delaney of the Board of Transportation says his completed report will comprise 1,000 pages. It is assumed it will deal with the respective virtues of the three city-wide bus systems proposed and the borough and sectional bids which make up the 70-odd applications.

Another feature which has received attention by the board is that of fare rates which will prove most desirable to the public and still afford income sufficient to enable the operators to pay their franchise tax to the city. The proposals range from a flat 5-cent fare to a flat 10-cent fare.

Mayor Walker said the Board of Estimate would probably vote to refer the report to the committee of the whole and then study it informally. He thought it probable the members might be prepared to take action at the regular meeting on Sept. 21.

Express Service in Buffalo

Express bus service has been started by the International Bus Corporation, a subsidiary of the International Railway, Buffalo, N. Y., on the Delaware Avenue line between the downtown business district and the Kenmore-Tonawanda village line. The one-way fare is 25 cents, compared with 15 cents for the usual service. Only four stops are made in the city of Buffalo, one at the Buffalo city line and two in the village of Kenmore. The stops are marked with signs. The express service is ten to fifteen minutes faster from terminal to terminal than the local service. Double-deck buses are run during the morning and evening rush hours.

Traction Company Opposes Steam Road Bus Charter

The petition of the Alton Transportation Company, a subsidiary of the Chicago & Alton Railroad, for permission to operate motor coaches between Jacksonville and East St. Louis, Ill., was opposed by officials of the St. Louis Electric Terminal Railway, St. Louis, Mo., at a Commerce Commission hearing in Chicago recently.

The St. Louis Electric Terminal Railway is a subsidiary of the Illinois Power & Light Corporation and according to E. A. Roehry, general manager and one of the principal witnesses, the granting of a charter to the railroad's bus line to do a local business in Venice, Madison and Granite City would divert substantial traffic from the traction company's lines.

Mr. Roehry declared that his company has more reserve equipment than is needed at peak hours now. He produced numerous exhibits to show that the Illinois Power & Light Corporation absorbs a deficit registered by the St. Louis Electric Terminal Railway almost every year.

Buses on Templeton-Gardner Run

Stockholders of the Templeton-Gardner Street Railway, Templeton, Mass., have voted to ratify a decision of the directors to substitute bus service for electric service on the company's lines. Orders have been placed for the immediate delivery of the latest type passenger buses, and it is expected the complete change from electric to bus service will take place within 60 days.

Community Builder in Oregon

Another bus has been added to the fleet of the Oregon City Motor Bus Company, under the direction of G. C. Fields, superintendent of the interurban lines of the Portland Electric Power Company, Portland, Ore. These buses run between Portland (Sixth and Salmon Streets terminal) and Oregon City over the West Side Highway, serving the communities of Dunthorpe-Oswego, Bolton and West Linn en route, and maintain a 30-minute schedule between terminals on weekdays and more frequent service on Saturdays, Sundays and holidays.

When the Oregon City Motor Bus Company commenced operation on this line on Sept. 24, 1924, the West Side Highway between Portland and Oregon City was without a dependable transportation system and in consequence there was very little building activity along the way. The Oregon City Motor Bus Company purchased first-class equipment, put on frequent and dependable service and in a short time real estate values commenced to move and homes to arise.

Lakewood, located between Oswego and Oswego Lake on the peninsula, has been developed into one of the most beautiful residential spots in the country. About ½ mile south of the town of Oswego, at the foot of Oswego Lake, one of the finest bathing, boating and picnic resorts to be found anywhere is patronized by thousands of people, particularly on Sundays and holidays. The buses discharge and pick up passengers at the entrance and may be credited in a large measure with building up this resort. Robinwood, a beautiful and sightly tract just south of Marylhurst, has been opened up recently and promises to be a fine residential district. Many new homes have recently been built at Bolton and West Linn and many more are under construction. These activities are all reflected in in-

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creased travel on the buses. At the present time the Oregon City Motor Bus Company owns and operates three Yellow coaches and four Fageol "Safety" coaches over this route.

Buffalo-Niagara Falls Operation Sanctioned

The Public Service Commission of New York on Sept. 2 granted to the International Bus Corporation a certificate of convenience and necessity for the operation of a bus line between Buffalo and Niagara Falls.

Opposition was offered to the granting of the certificate by the New York Central Railroad, the Lehigh Valley Railroad and M. L. Van Dyke, operating a sightseeing bus line between Buffalo and Niagara Falls, Ont.

At the hearing on the application, which was held in Buffalo on Aug. 16, it was shown that the International Bus Corporation, a subsidiary of the International Railway, proposed to substitute buses on certain lines to meet an increasing and insistent demand on the part of the public for bus transportation.

No local passengers will be carried in the village of Kenmore, the town of Tonawanda, city of Tonawanda, city of North Tonawanda, or from Tonowanda to North Tonawanda, town of Wheatfield, the village of LaSalle or the city of Niagara Falls.

The buses will be operated on an hourly schedule from 8 a.m. to 8 p.m. from Buffalo and from 8.30 a.m. to 7.30 p.m. from Niagara Falls, with an additional trip from Niagara Falls at 10 p.m.

Rates of fare will be: Buffalo to Kenmore, 25 cents; town of Tonowanda, 35 cents; city of Tonawanda, 50 cents; town of Wheatfield, 70 cents; LaSalle, 80 cents, and Niagara Falls, $1.

New Bus-Trolley Equipment for Richmond

The Virginia Electric & Power Company has placed orders for $500,000 in new bus-trolley equipment for Richmond's unified transportation system, following the action of the Board of Aldermen in over-riding, by a vote of nine to one, Mayor J. Fulmer Bright's veto of the bus line ordinance. The measure became a law on Sept. 3. Officials of the company say equipment has been ordered sufficient to render satisfactory service on all the new routes and that operations would start about Jan. 1. The orders just placed also include some new trolley equipment for extensions and betterments that are to be made, and this work was started without delay, as well as the rerouting that is to be carried out under the blanket trolley franchise recently adopted.

Municipal Buses at Buffalo a Costly Farce

Local newspapers in Buffalo, N. Y., are calling upon Mayor Frank X. Schwab, who started the municipal buses after his return from Europe, to give a detailed accounting of the $15,000 bus fund voted by the City Council. Charges are made that all this money has been spent and that the income from the operation of the municipal buses, run in competition with the lines of the International Railway and its subsidiary, the International Bus Corporation, is not sufficient to pay the operating expenses. Newspaper editorials say that continued operation of buses by the Department of Public Safety is piling up a big deficit for the taxpayers to discharge.

Letters from the public being printed in Buffalo newspapers describe acts of discourtesy by the policemen-conductors, attempts by drivers of the municipal buses to coerce drivers of the double-deck buses of the International system and cite cases in which abusive language has been used by the policemen-conductors toward passengers and crews on International operated bus routes.

Change of Route Starts Bus Battle in Ohio

What may be the first skirmish to an extended legal battle between the suburban bus companies and interurban railroads operating from Cincinnati, Ohio, to surrounding villages recently developed in the Common Pleas Court of Clermont County.

F. A. Nichols, general manager of the Cincinnati, Georgetown & Portsmouth Electric Railway, appeared before Common Pleas Judge Charles White at Batavia and obtained an injunction against Victor Nobis, owner of the Cincinnati-New Richmond Bus Company. Mr. Nichols told Judge White that the bus had taken passengers on in territory which legally was to be served by the Cincinnati, Georgetown & Portsmouth Railway only.

Due to recent washouts which destroyed several small bridges on the River Road, Nobis, according to Mr. Nichols, changed his bus route from the River Road to the Grant Highway, deviating far up on the road and detouring through Mount Pisgah, Lynnedale and Hamlet and going thence over the road between Fruit Hill and Mount Washington.

According to Mr. Nichols, the territory between Hamlet and Cincinnati is reserved for electric railway traffic only. Basing his decision on the complaint, Judge White issued the temporary injunction. No date has been set for the final hearing.

Railway Granted Bus Privilege

The Public Service Commission of New York has issued an order granting the Binghamton Railway Bus Lines, Inc., certain bus rights. The railway is permitted to lease for a period of five months from Sept. 1, 1926, the operating rights, together with the equipment, of the Triple Cities Bus Lines, Inc., and Edward J. Dorey for bus routes in certain streets in the city of Binghamton, the village of Endicott and the towns of Dickinson, Union and Vestal in Broome County. The Binghamton Railway Bus Lines, Inc., applied to the Public Service Commission on Aug. 9 for the right to lease the above-mentioned property. The stock of the petitioner, it was stated, was owned by the Binghamton Railway, which stated that it had amended its certificate of incorporation so that it might operate the bus lines in conjunction with the existing service on the trolley lines. In the transaction were included eight buses, which would bring the total number of buses owned and operated by the Binghamton Railway up to eleven. Under the plan the belt line would be so combined with the bus line now being operated by the railway as to cover more territory.

Denver Extends Bus System.—The Bus Transportation Company, a subsidiary of the Denver Tramway, Denver, Col., has applied to the State Board of Public Utilities for a permit to operate an automobile line between Denver and Golden on West Colfax Avenue and the Golden paved road.

Transfers Interchanged.—The Virginia Electric & Power Company, Richmond, Va., began the interchange of transfers from its trolley cars to the buses on Sept. 5. Also effective Sept. 5 a straight 8-cent fare was being charged on the buses. The railway fare is 7 cents with transfers from street cars to buses costing an extra cent.

Bus Line Discontinued in Washington.—The Capital Traction Company, Washington, D. C., has been directed by the Public Utilities Commission of the District of Columbia to discontinue the operation of its Rock Creek Park Golf Course bus line. Under the date of Aug. 11 the company submitted to the commission the operating results for the months of May, June and July showing a total loss for the three months of $1,326. A hearing was held in July, at which the railway showed that the line was operated at a loss. The application was opposed by the concessionaire of the golf course and by the Director of Public Buildings and Public Parks, and the company's representative finally requested that no action should be taken at that time, but that the returns from a longer summer period should be awaited.

Extension of Bus Service in Indiana.—G. O. Nicholai, manager of the Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind., has announced a further improvement in the bus service of his company. On some routes buses are being added and on others the lines are being extended.

Railway Has Competing Bus Line Suspended.—Operation of the bus line run for the last five years by F. W. Herzog between Edwardsville and Glen Carbon, Ill., a distance of 5 miles, was suspended Aug. 31 on an injunction granted by Circuit Judge George A. Crow at Belleville on an application filed by the East St. Louis & Suburban Railway, East St. Louis, Ill. The company contended that Herzog had failed to obtain a certificate of convenience and necessity from the Illinois Commerce Commission. Herzog stated that he had applied to the Commerce Commission for the permit some two months ago. He also sought to have the line extended to Granite City, Ill. Counsel for Herzog announced that an appeal would be taken.

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Financial and Corporate

Net Off in St. Louis

Receiver Reviews Conditions Which Confronted Company in 1925—Prospects Ahead Are Better

Gross operating revenue of the United Railways, St. Louis, Mo., for the year ended Dec. 31, 1925, was $18,894,574. This compares with the sum of $19,515,275 for 1924, or a decrease of $620,700. Net income for 1925 showed a loss of $206,174 compared with a surplus of $29,876 for 1924, or a decrease of $236,051 for the year. These and other significant facts about the operation of the company are all contained in the pamphlet report of the company for the year presented by Rolla Wells, the receiver, of which this account is merely a digest.

No interest has been paid on the underlying bonds, or on the bonds of the St. Louis Transit Company, since Oct. 1, 1923, and no interest has been paid on the St. Louis & Suburban Railway general mortgage 5 per cent bonds since April 1, 1923. Interest has been accrued on the books to Dec. 31, 1925, at the rates provided by the mortgages and extension agreements, on all the issues of bonds.

The amount expended by the protective committee of the St. Louis Transit Company bondholders in payment of interest coupons No. 49, on United Railways first general mortgage 4 per cent bonds due Jan. 1, 1924, was refunded to that committee on Feb. 15, 1926, with interest at 6 per cent by order of federal court.

The receiver was authorized by the court on Feb. 15, 1926, to enter into a contract with the reorganization committee conformably to the committee's offer of Feb. 10, 1926, providing for payment of series "B" receiver's certificates, the obtainment of $6,000,000 par value United Railways 4 per cent bonds in exchange for divisional bonds, and the sale of 4 per cent bonds to the reorganization committee.

The outstanding issue of $4,200,000 series "B" receiver's certificates was called for payment April 1, 1926, at 100½ and accrued interest. The principal of these certificates, together with accrued interest and premium for calling the issue before maturity, aggregating $4,347,000, will be paid with $1,900,000 cash supplied by the reorganization committee and $2,447,000 supplied by the receiver from funds on hand.

The three issues of divisional bonds, viz.: Compton Heights, Cass Avenue and Lindell bonds, aggregating $4,100,000, were also called for payment on April 1, 1926.

On Feb. 23, 1926, the court ordered the St. Louis Union Trust Company, trustee under the mortgage securing the first general mortgage 4 per cent gold bonds of the United Railways, to certify and issue to the receiver $6,000,000 par value of United Railways 4s, which bonds will be delivered by the receiver to the reorganization committee, for $6,000,000 cash supplied by it for part payment of series "B" receiver's certificates, and for refunding the three issues of divisional bonds amounting to $4,100,000 par value.

The court also ordered the trustee to cancel $3,768,000 first general mortgage 4 per cent gold bonds of the United Railways remaining in its hands for refunding divisional bonds.

The payment of the receiver's certificates and the three issues of divisional bonds on April 1, 1926, will cure the default in the United Railways first general mortgage 4 per cent bonds, which bonds will remain on the property until their maturity July 1, 1934, in accordance with the plan and agreement for the reorganization of the company, dated Oct. 1, 1924.

No payments were made during the year on the liability of $2,396,321 for mill tax due the city of St. Louis, this

STATEMENT OF FUNDED DEBT OF UNITED RAILWAYS, ST. LOUIS

Issue	Total Outstanding Dec. 31, 1925
Underlying bonds:	
Compton Heights, Union Depot & Merchants Terminal Railroad, first mortgage 6s, due 1923	$986,000*
Cass Avenue and Fair Grounds Railway, first mortgage 6s, due 1923	1,640,000*
Lindell Railway, first mortgage 8s, due 1923	1,474,000*
St. Louis & Suburban Railway, consolidated mortgage 8s, due 1923	2,000,000*
Total underlying bonds	$6,100,000
United Railways of St. Louis, first general mortgage 4s, due 1934	30,300,000*
St. Louis & Suburban Railway, general mortgage 5s, due 1923	4,500,000*
St. Louis Transit Company 5s, due 1924	9,790,000*
Total	$50,690,000
Receiver's certificates, series "B" 6s, due 1926	$4,200,000

* In default.

CONSOLIDATED INCOME AND EXPENSE STATEMENT OF THE UNITED RAILWAYS ST. LOUIS, YEAR ENDED DEC. 31, 1925

Operating Revenue:		
Revenue from transportation:		
Passenger revenue	$18,628,734	
Special car revenue	31,288	
Express revenue	9,753	$18,669,775
Revenue from other railway operations:		
Station and car privileges	$172,754	
Rent of equipment	1,765	
Rent of buildings and other property	23,663	
Sale of power	26,615	224,798
Gross operating revenue		$18,894,574
Operating Expense and Charges:		
Current operating expense:		
Way and structures	$1,055,856	
Equipment	1,690,175	
Power	1,852,732	
Transportation expense	6,708,803	
Traffic expense	22,630	
Injuries and damages reserve	1,133,674	
General and miscellaneous	720,203	
Depreciation reserves	1,500,000	
	$14,684,076	
Taxes	1,810,701	
Total operating expense, depreciation and taxes		$16,494,778
Income from operation		$2,399,796
Non-operating Income:		
Rents—Less expenses and taxes	$11,092	
Interest on deposits	13,503	
Interest from investments	260,829	
Miscellaneous	24	285,449
Gross income		$2,685,246
Other Deductions:		
Interest on bonded debt	$2,361,980	
Interest on receiver's certificates	252,000	
Interest on bond interest coupons matured—not paid	36,360	
Interest on mill tax judgments	143,779	
Amortization of discount and expenses in connection with sale of receiver's certificates, Series "B"	74,717	
Income tax on bond coupons	21,000	
Bank services, payment of bond and receiver's certificates, interest coupons	2,677	2,892,514
Net loss for the year from railway operations		*$207,268*
Less: Net rental income from bus equipment		1,093
Net loss for the year		*$206,174*

CONDENSED INCOME ACCOUNT OF THE UNITED RAILWAYS, ST. LOUIS, FOR YEAR 1921 TO 1925, INCLUSIVE

	1925	1924	1923	1922	1921
Revenue from transportation	$18,669,775	$19,288,743	$20,220,765	$19,740,118	$19,498,946
Revenue from other railway operations	224,798	226,531	232,679	223,437	159,604
Gross operating revenue	$18,894,574	$19,515,275	$20,453,445	$19,963,555	$19,658,551
Operating expenses (including depreciation)	14,684,076	15,093,195	15,123,183	14,895,508	15,093,218
Surplus over operating expenses	$4,210,498	$4,422,080	$5,330,262	$5,068,047	$4,565,332
Taxes	1,810,701	1,772,134	1,832,602	1,845,722	1,675,697
Income from operation	$2,399,796	$2,649,945	$3,497,659	$3,222,324	$2,889,635
Income from other sources	285,449	287,870	225,700	202,830	216,349
Gross income (less operating expenses and taxes)	$2,685,246	$2,937,816	$3,723,359	$3,425,155	$3,105,985
Deductions from income	2,892,514	2,907,939	2,913,614	2,912,063	2,802,939
Net income—Railway	*$207,268*	$29,876	$809,745	$513,091	$303,045
Net rental income from bus equipment	1,093	0	0	0	0
Dividends	0	0	0	0	0
Surplus	*$206,174*	$29,876	$809,745	$513,091	$303,045

Figures in italic denote deficit.

TRAFFIC STATISTICS

	1925	1924	1923	1922	1921
Revenue passengers	270,105,400	279,222,520	292,671,781	286,076,475	282,447,190
Transfer passengers	145,698,764	149,555,651	155,343,193	152,261,868	150,562,354
Total passengers	415,804,164	428,778,171	448,014,974	438,338,343	433,009,544
Percentage of revenue passengers using transfers	53.94	53.56	53.08	53.22	53.31
Average fare per passenger (including transfers), cents	4.48	4.49	4.50	4.49	4.49
Average fare per revenue passenger, cents	6.90	6.89	6.89	6.89	6.89
Passenger car-miles	42,440,837	43,911,064	45,652,714	44,229,300	44,229,210
Revenue passengers per car-mile	6.36	6.36	6.41	6.47	6.39
Total passengers per car-mile	9.80	9.76	9.81	9.91	9.79

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STATEMENT OF CAPITAL EXPENDITURE MADE BY THE UNITED RAILWAYS, ST. LOUIS, 1925

Way and structures	$318,084
Equipment	91,033
Power	6,563
Total additions	$415,681
Deductions:	
Way and structures	$21,728
Equipment	183,118
Power	13,801
Total deductions	$218,648
Net addition during the year	$197,032

amount being the balance of judgment obtained by the city against the company for mill tax to Dec. 31, 1918. The interest on this judgment, however, has been provided on the books to Dec. 31, 1925, and the current mill tax has been paid regularly.

The total taxes, street paving costs and expense on account of city sewers construction were $2,229,193, or 11.8 per cent of gross operating revenue, or 0.825 cent per revenue passenger, as compared with 0.796 cent per revenue passenger in 1924.

In addition to the direct taxes the United Railways expended $365,399.65 for street paving and furnished free transportation for the policemen and firemen of St. Louis.

There was also expended and charged to operating expenses an amount of $23,993.97 for carrying tracks over or around new sewers built by the city.

The total mileage in single track on Dec. 31, 1925, was as follows:

	Miles
City track	347.2787
County track	115.6013
Total	462.8800

During the year 1925, 0.7486 mile of track was added and 1.0440 miles was removed.

Since 1904 the amount of track reconstruction, renewal and extensions of track of the company in the city and county was as follows:

Year	Miles	Year	Miles
1904	21.56	1916	15.39
1905	8.90	1917	19.72
1906	29.18	1918	15.80
1907	21.65	1919	25.01
1908	32.99	1920	26.50
1909	39.93	1921	29.82
1910	45.34	1922	23.54
1911	32.69	1923	26.82
1912	25.85	1924	26.24
1913	27.72	1925	17.28
1914	21.77		
1915	28.05	Total for 22 years	561.75

The number of passenger cars owned at the end of 1925 was 1,608, of which 1,429 were motor cars and 179 trail cars. This compared with 1,638 at the end of 1924, 1,614 at the end of 1923 and 1,579 at the end of 1922.

Thirty-two passenger cars were retired from service and destroyed during 1925 and two special cars, "Ariel" and "Electra," were converted into passenger cars for use on the St. Charles line.

One hundred and forty-three cars were remodeled by changing old-type folding steps to well-type steps, with manually operated doors.

One hundred and ninety cars were equipped with a manually operated tripping device on rear door operating mechanism, preparatory to one-man operation.

One hundred and fifty-four cars were provided with special sash at conductor's booth to give conductor a clear view.

Twenty-six cars of the large "600" type were equipped with independent air compressors to replace the storage air equipment.

One flat car was entirely rebuilt and provided with steel underframing in place of wood.

Twenty cross-bench open cars were provided with additional guard rods the full length of car on closed side.

The roofs of 527 cars were painted.

	Cars
General overhauling and repainting	320
Car body and collision repairs	1,413
Truck and motor repairs	195
Revarnishing	377
Total	2,305

This total compared with a total of 2,245 in 1924, and 1,861 in 1923.

Five Six-Wheel Safeway 29-passenger buses were purchased, the chassis from the Six-Wheel Company and the bodies from St. Louis Car Company.

The seven automatic substations, installed principally during 1924, have resulted in improved operating voltage, decreased distribution losses, better return-circuit conditions and (due to decreased loads at adjoining stations) a reduction in the cost of maintenance of substation equipment. Studies are being made to determine the most efficient operating methods under various conditions, substation and transmission losses at different loads being balanced against distribution losses.

In spite of the fact that the number of automobiles registered in St. Louis in 1925 was more than 8 per cent greater than in 1924, and nearly four times as great as at the beginning of the receivership, and in spite of the increased number of buses and bus lines, the increased efficiency of operations and the excellent co-operation on the part of the police department not only prevented a decline but actually caused an improvement in the street car transportation service.

The average miles per hour (including terminal delays, etc.) for 1925 was 9.76, as compared with 9.73 in 1924 and 9.75 in 1923,

The average number of revenue passengers in 1925 was 3.27 per cent less than in 1924. Car-miles in 1925 decreased 3.35 per cent from 1924 and car-hours decreased 3.01 per cent.

A check made of a typical day of the traffic in and out of the congested business district, as published by the special committee of the Board of Aldermen, was as shown in the accompanying table.

As in the past two or three years, since the great growth of the automobile traffic, the Saturday, Sunday and holiday street car traffic showed in 1925 a much greater falling off than that of the remaining days of the week as shown in the accompanying table.

Toward the latter part of 1925 and in the early part of 1926 it would appear that the street car traffic is again beginning to increase and to be gaining proportionately over automobile and bus competition.

The popularity of the street car service is also being gradually increased by the co-ordinated system of transportation started in connection with the St. Louis Bus Company early in 1925. Under that system the 10-cent fare on the bus gives free transfer privilege to street cars, and transfers from the street cars to buses are issued on the payment of 3 cents in addition to the regular 7-cent street car fare. These buses are all run in extension of or in supplement to the street railway service, and seven lines of these buses are now in operation.

TRAFFIC IN AND OUT OF THE CONGESTED BUSINESS DISTRICT OF ST. LOUIS

(Entire business day, 7 a.m. to 6 p.m., both in and out)

	Vehicles		Passengers		Passengers per Vehicle
	Number	Per Cent of Total	Number	Per Cent of Total	
Street cars	9,645	9.6	308,779	62.8	32.1
Private automobiles	87,700	87.2	142,759	29.0	1.6
Buses	1,976	2.0	36,233	7.4	18.3
Service cars	1,208	1.2	3,913	0.8	3.2
Total	100,529	100.0	491,684	100.0	4.9
Commercial vehicles	37,837	.....	50,893	.....	1.3
Total	138,366	.....	542,577	.....	3.9

(Maximum hour, p.m. peak, leaving district, one way only)

	Vehicles		Passengers		Passengers per Vehicle
	Number	Per Cent of Total	Number	Per Cent of Total	
Street cars	868	8.4	62,332	72.4	71.8
Private automobiles	9,291	89.3	17,601	20.4	1.9
Buses	123	1.2	5,557	6.5	45.2
Service cars	117	1.1	634	0.7	5.4
Total	10,399	100.0	86,124	100.0	8.3
Commercial vehicles	2,722	.....	3,576	.....	1.3
Total	13,121	.....	89,700	.....	6.8

PASSENGER REVENUE

	Days	Year 1925	Days	Year 1924	Decrease	Per Cent Decrease
Total		$18,628,734		$19,247,650	$618,916	3.22
Average day	365	51,037	366	52,589	1,551	2.95
Average week-day	257	53,637	256	55,053	1,415	2.57
Average Saturday	50	55,394	51	57,146	1,751	3.06
Average Sunday	52	35,931	52	38,105	2,174	5.71
Average holiday	6	34,280	7	36,859	2,579	7.00

Holidays: New Year's Day, Decoration Day, Independence Day (year 1924, 4th and 5th), Labor Day, Thanksgiving Day, Christmas.

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During the year one-man operation of street cars was put into effect on Sundays only on the Park line, Compton line, Tower Grove line and the Sarah line. Cars have gradually been fitted for such service and operators broken in for one-man operation on various lines. Regular one-man operation was also put into effect on October, 1925, on that part of the St. Charles line between Wellston and Woodson Road.

In order to bring about a uniform system of entrance on all types of cars and to bring weekday operations in that respect in line with the one-man operations on Sundays, and in order to increase the rapidity of loading of cars, a general front-entrance arrangement with "pay-as-you-pass-conductor" system went into effect in November, 1925.

In the summer of 1925 an ordinance was passed prohibiting parking of automobiles in certain congested districts between 7 a.m. and 10 a.m. and between 4 p.m. and 6 p.m. These hours were later changed by a new ordinance to 7 a.m. to 9:30 a.m. and 4:30 p.m. to 6 p.m. This arrangement has helped materially in getting cars through those districts.

There was no change in the basic 7-cent fare during 1925.

The total number of employees on Dec. 31, 1925, was 5,811, compared with 5,803 on Dec. 31, 1924, and with 6,014 on Dec. 31, 1923. The maximum number of employees during 1925 was 6,269 compared with 6,361 in 1924.

No changes in agreements as to wages and working conditions were made in 1925. But a materially decreased labor turnover and the reaching of the fourth year wages by an increased percentage of motormen and conductors made a material increase in the average wages in that department over the previous years.

The total miles in single main track of the Missouri Electric Railroad on Dec. 31, 1925, were 23.4838. Of this mileage 7.6551 was double track, measured as such, and 7.8922 single track, measured as such. In addition to the above there was 0.2814 mile of spurs and miscellaneous track. This main track mileage includes 2.5139 miles of track of the St. Louis County Street Railroad, operated as part of the Missouri Electric.

INCOME STATEMENT OF THE MISSOURI ELECTRIC RAILROAD

	Year Ended Dec. 31, 1925	Year Ended Dec. 31, 1924
Revenue from transportation	$154,897.96	$164,746.82
Revenue from other railway operations	2,505.10	2,114.26
Gross operating revenue	$157,403.06	$166,861.08
Current operating expense and depreciation	$160,252.30	$158,973.04
Taxes	13,709.88	12,452.80
Total operating expenses, depreciation and taxes	$173,962.18	$171,425.84
Loss from operation	$16,559.12	$4,564.76
Non-operating income	1,521.50	1,624.30
	$15,037.62	$2,940.46
Interest on bonded indebtedness	35,000.00	35,000.00
Net loss for the year from railway operations	$50,037.62	$37,940.46
Net loss from bus operations	*$9,507.19*	.....
Net loss for the year	*$59,544.81*	*$37,940.46*

Financier Optimistic

Representative of Banking House Says Carefully Selected Bonds Should Prove Profitable

Bonds of electric railways, which can now be obtained on an attractive basis, afford an excellent opportunity for the intelligent investor. This is the opinion of D. F. Jordan of Halsey, Stuart & Company, expressed in an article contributed by him to the San Francisco *Examiner*. Mr. Jordan says it would be premature to say that the electric railways have generally re-established their pre-war earning status, but for those companies which operate in large cities under a favorable franchise, which enjoy cordial public relations and which are economically and capably managed he sees the outlook as encouraging.

Mr. Jordan said:

A study of the situation in electric railway securities indicates that in certain companies improvement has progressed to a point which warrants favorable investment consideration.

The difficulties which have confronted the industry for several years are too well known to require detailed comment. The competition of the passenger automobile and the bus, the handicap of a stationary 5-cent fare, and the burden of heavy increases in operating expenses have combined to affect adversely the corporate earnings.

The extent to which these obstacles have been met and overcome to a large extent is not fully appreciated by the public generally or by investors.

The competition of the passenger automobile and the bus was never so serious as might readily have been assumed from casual comment. The passenger automobile did harm to interurban traffic, but had limited effect upon city riding. Bus operation, save in outlying districts, has yet to prove more economical or serviceable than the trolleys. No major city rail operation has been suspended and buses substituted permanently for cars.

Incidentally, the traction lines are carrying more passengers than ever before. Their chief difficulty has never been lack of traffic, but inadequacy of earning power. The handicap of a stationary fare has been a more serious problem. A 5-cent fare for a street car ride had become an American institution. The companies found it difficult to secure rate increases because of franchise restrictions and the general impression that lower operating costs were not far distant.

Eventually, but unfortunately not before several companies were brought to the brink of receivership, relief came in the form of higher fares. The 5-cent fare has disappeared save in a few cities like San Francisco and New York, where exceptional conditions exist.

In theory, the actual cost of service, large or small, should be covered, with a reasonable margin of profit based upon capital investment, by revenue rates set sufficiently high by the regulatory public commissions. In practice the companies find it more profitable to insure earnings by keeping down expenses than by seeking higher rates.

Many economies have been put into effect, such as one-man cars, decrease of transfer abuse, cheaper power, elimination of unprofitable lines, substitution of buses where economical, reduction of paving obligations and more efficient equipment.

Mr. Jordan says that wages, however, the chief operating cost, remain high and will continue so under existing economic conditions, but that it should be carefully noted that anything approaching a depression in business will enhance rather than harm the position of the electric railways.

Property at Rome, Ga., Goes to Southeastern

Acquisition of the Rome Railway & Light Company, Rome, Ga., by the Southeastern Power & Light Company was announced on Sept. 3. The former company, which furnishes electric light, power and transit in Rome, Ga., and vicinity, was valued at about $2,000,000. As a result of this and other recent purchases Southeastern has brought under its control practically all utilities in Middle and North Georgia.

Passengers carried by Southeastern transit systems in July totaled 9,802,000, and those carried in the first seven months of the year totaled 68,780,585. Buses operated by Southeastern carried more than 2,500,000 passengers in the seven-month period.

More Moves in Kansas City Reorganization

William G. Woolfolk, president of the Kansas City Public Service Company, and Powell C. Groner, attorney for the company, on Sept. 2 submitted a formal request to the State Public Service Commission for the issuance of the latter body's formal order transferring the properties of the Kansas City Railways to the potential owners. They also sought permission to issue new securities as provided in the reorganization plan.

Frank P. Sebree, attorney for the holders of second mortgage bonds of the old company, is said to have entered objections to the commission's issuance of the order of transfer.

It is said that the filing of the report of John T. Harding, special master commissioner, fixes Dec. 1 as the limit in which the physical transfer of the railway may be made, and Mr. Woolfolk has expressed the belief that it will be possible to effect the transfer some time in October.

An extension of 12½ years of the old Jost franchise in Kansas City, Mo., so as to permit issuance of 30-year securities by the new owners is under consideration by the City Council, although an amendment, said also to be under consideration, would stipulate that the new company shall sell fifteen car tickets for $1.

On the other hand, Howard Payne, city clerk of Kansas City, Kan., was notified on Sept. 3 that the reorganization plan of the Wyandotte Railways, successor to the Kansas City Railways in that city and a subsidiary company of the Kansas City Public Service Company, potential owner of the old Kansas City Railways, had been approved by the Public Service Commission of Kansas. Simultaneously the commission authorized the issuance of $1,250,000 of first mortgage bonds to finance the property.

Through Mr. Woolfolk, president, and Mr. Groner, attorney for the Kansas City Public Service Company, the Wyandotte company on Aug. 17 applied to the Kansas commission for authority to consummate reorganization of the property in Kansas and for a certificate of convenience authorizing the issuance of the necessary securities.

Mr. Groner said the plans of the company included the re-establishment of service over the Twelfth Street viaduct to the Argentine district and that further extensions and improvements of service would be taken up for discussion with the city authorities immediately, when the property has been

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finally transferred to its purchasers by the federal court. Service over the viaduct has been eliminated since the reconstruction was begun in October, 1923. Mr. Woolfolk, however, is said virtually to have promised service over the bridge by Oct. 1 if the company's plans were approved soon by the Kansas commission.

No franchise for operation in Kansas City, Kan., has yet been applied for by the new company, but it is said that the city commissioners will demand the fulfillment of various obligations of the Kansas City Railways before a franchise will be granted the Wyandotte company.

Radial Lines Report Deficit

In a recent report the Hydro-Electric Power Commission of Ontario stated that the total deficit on all divisions of the York Radial Railways was $162,022 for the six months ended April 30. For the similar period last year the loss was $142,276, while two years ago it was $172,925. Revenue from the Scarboro and Mimico divisions was less than that returned last year, while on the Metropolitan it increased slightly.

Operating expenses were $366,669, while the income from the three divisions was $303,059. The deficit from operation shown is $63,609. To this is added interest to the extent of $93,237, and taxes to the amount of $5,175.

I.R.T. Directors Nominated

Herman A. Metz, former City Comptroller, was named on Sept. 8 by the Transit Commission to continue as a director representing the public on the board of the Interborough Rapid Transit Company, New York, N. Y., for a three-year term. Mr. Metz, head of large chemical enterprises and identified with milling and banking interests, already has served three years on the Interborough board and his re-election by the board is taken for granted.

Edward J. Berwind, Mortimer N. Buckner and Charles E. Dunlap were nominated for re-election as directors of the Interborough Rapid Transit Company by holders of Interborough voting trust certificates. Charles Day was nominated for re-election as a director representing the 5 per cent first and refunding mortgage bondholders. The annual meeting for the election of directors will be held Sept. 22.

Receiver Takes Management of Insolvent Road

Frederick W. Kruse, former Supreme Court Justice and member of the Appellate Division, named receiver for the Olean, Bradford & Salamanca Railway, Olean, N. Y., when it was declared insolvent, has taken up the duties of his new office.

The company was placed in the hands of a receiver as a result of action taken by Justice Thomas H. Noonan in Supreme Court in Buffalo.

Judgment creditors were represented by John K. Ward, attorney, Olean, formerly city attorney, and James P. Quigley, Olean attorney, appeared for the company. The State Tax Commission and the public were represented by Donald S. Dudley, deputy attorney-general.

It is the second time the property has gone into the hands of a receiver. The present company is a reorganization of the Western New York & Pennsylvania Traction Company.

Car Line Dismantled in Indiana.—Work has begun of tearing up the rails on the Normal City line of the Union Traction Company of Indiana, at Muncie, Ind. The line served one of the most populous parts of Muncie, the seat of the eastern division of the Indiana State Normal School. Two bus lines, one of them owned by the traction company, are now being operated between this section and the business district. Bus competition also caused the railway to abandon its Avondale line running to the southwestern part of the city. Traction buses are operating over that route. Only four car lines have been retained in service.

Would Abandon Portion of Line.—The Buffalo & Erie Railway, Fredonia, N. Y., filed on Sept. 7 a certificate of abandonment of that portion of its constructed road in the city of Lackawanna on Ridge Road between South Park Avenue and Abbott Road.

Quarterly Dividend Deferred by Indianapolis Railway.—The Indianapolis Street Railway, Indianapolis, Ind., has sent the following notice to preferred stockholders: "The expenditures found necessary to protect the company's property against the recent attacks of labor agitators and to restore normal transportation conditions, together with the constantly increasing use of privately owned automobiles and continued bus competition, were very fully considered at the last meeting of the board of directors and it was voted unanimously to defer the payment of the quarterly dividend on the preferred stock due Sept. 1, 1926."

Railway Placed Under Receivership.—The Denver & Interurban Railway, Denver, Col., known as the Kite Route, running between Denver and Boulder, was placed in the hands of a receiver on Sept. 2 by Federal Judge Robert E. Lewis of the United States Circuit Court of Appeals, acting as United States district judge at Denver. William H. Edmunds, general manager, was named receiver. This is the second time the road has been placed in the hands of a receiver. On June 12, 1918, Federal Judge J. A. Riner of Cheyenne, Wyo., sitting for Judge Lewis at Denver, ordered the road into the hands of a receiver on the application of the Guaranty Trust Company, New York, acting for the holders of bonds secured by a mortgage on the property. At that time the road was unable to pay interest on $1,000,000 indebtedness. Three years later Judge Lewis restored the road to its private management. The Kite Route is a subsidiary of the Colorado & Southern Railroad. Only recently the road officials placed buses in service as an aid to the electric line.

Book Review

Year Book American Engineering Standards Committee—1926

American Engineering Standards Committee, New York, N. Y. 75 pages.

Growth in the magnitude and savings resulting from standardization work are shown in the Year Book of the American Engineering Standards Committee just issued. More than 200 definite standardization projects are now in process or have been completed and 365 national trade associations, technical societies and government bureaus are co-operating in the work. All this has resulted in some 1,600 representatives co-operating.

For the convenience of those interested, the A.E.S.C. maintains a file of specifications, which are sold at cost. These include standards issued by all the foreign standardization bodies with which it regularly exchanges information and for those of all the national trade associations and technical societies in the United States which have issued standards and specifications. This is done as a means of co-operating in the important work represented in the National Directory of Commodity Specifications recently published by the Department of Commerce.

About 7,000 standards are available for examination and reference in the file of the A.E.S.C. This information service is of particular value to engineers in specifying various materials used. Of the projects studied during the past year, nine relate to transportation. Of these, six have been approved by the American Engineering Standards Committee.

The Year Book lists the member bodies, gives outstanding developments and work accomplished, explains the relation of the American Engineering Standards Committee to various associations and lists the individual standardization projects that are now under consideration and indicates the stage of development that has been reached. Rules of procedure for establishing American standards are given together with a list of co-operating bodies that are assisting in this standardization.

The Universal Directory of Railway Officials

The Directory Publishing Company, Ltd., London. 398 pages. $5 post free.

This is the 32d annual edition of the Universal Directory of Railway Officials, compiled from official sources under the direction of the editor of the *Railway Gazette*. The book gives, first, a list of railroad societies, associations and unions in the United Kingdom, with their officers; then tabulates the railroads themselves alphabetically under

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the various countries of the world, showing their complete organization; and lastly, an index of all the officials of the roads with cross-reference to the section in which the administration of their road is elaborated.

The Universal Directory will be found most useful in the offices of railroads having international interests, for no other publication contains a complete list of the officials of the principal roads all over the world.

McGraw-Hill Books

McGraw-Hill Book Company, Inc., New York, N. Y. 260 pages.

This is a complete catalog with a classified table of contents, authors' index and a subject index.

Blue Book of Southern Progress

Published by Manufacturers Record, Baltimore, 1926. 370 pages. Price 50 cents.

Owing to the great developments in the southern part of the United States there is a wider interest throughout the country in this section. The Blue Book of Southern Progress opens the door into realms of wonder, the work of Southern resources and Southern ingenuity. A survey of the South gives a birdseye view of the great achievements which are being performed by the people of the Southern communities. The 1926 issue of this book, largely the work of Richard H. Edmonds and Howard L. Clark, is designed to stimulate the Southern people themselves with a desire for a broader knowledge of their own region. The book is complete and more comprehensive than any other edition. A study of the development of every phase of Southern life is made. It includes such subjects as railroading in the South, agricultural development, manufacturing, building and construction, mineral expansion, with complete summaries of the country's economic progress, the South's economic progress and the economic progress of individual Southern states. Many pictures are included to enhance the interest.

Addresses by Preston S. Arkwright

Public Relations Department, Georgia Railway & Power Company, Atlanta, Ga. 386 pages.

Because his words of wisdom fell upon willing and anxious ears the addresses of Preston S. Arkwright have been put into book form as "a permanent record of his expressions upon public utility affairs." The president of the Atlanta property has been called upon on many occasions to speak before public gatherings on public utility subjects and his speeches cover a wide range. A cursory glance at the table of contents shows his versatility and adaptability, while his ideas on creating company spirit and courting public favor are worthy of the attention and assimilation of railway magnates. In publishing the book the public relations department of the Georgia Railway & Power Company hopes it will increase the employees' "pride in their vocation and stimulate greater enthusiasm in the principles of public utility service."

Personal Items

G. C. Whitney with Commission

Assistant Signal Engineer of Brooklyn Company Takes Similar Post with New York Body

Gilbert C. Whitney, formerly assistant engineer with the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., has been appointed to the newly created position of signal engineer with the State of New York Transit Commission. Mr. Whitney is personally responsible for several modern advances in the railway signaling art, among which are to be found basic studies and patents in color-light signal design; automatic track circuit control of power-operated switches which also provides positive approach and route locking independent of the switch and signal operating levers; the induction

G. C. Whitney

circuit controller for the reversible control of electric circuits without contacts; the Whitney indication system installed on the lines of the Brooklyn-Manhattan Transit Corporation, which provides continuous indication of train position, train movement and motor-operating characteristics, and also provides a continuous index as to the condition of insulated joints and detects local defects in the propulsion current return system and without contacts or moving parts, and more recently the reversible control of signal circuits without contacts or moving parts.

Mr. Whitney received his early training in the public, high and state normal schools at North Adams and the Buffalo Technical High School. After a very broad practical training in the electrical and mechanical arts, obtained in part with the General Electric and New England telephone and telegraph companies, he entered the railway signal field in 1905 at the Buffalo factory of the General Railway Signal Company and was employed on manufacture, assembly, test, field installations, estimates and engineering until 1909.

He then entered the employ of the New York Central Railroad in the electric zone and there was concerned with signal repairs, maintenance, drafting, circuit design and estimates until 1912, when he became assistant engineer with H. S. Balliet, assistant terminal manager and signal engineer. From 1917 to 1918 he was employed by J. M. Waldron, signal engineer of the Interborough Rapid Transit Company, chiefly on scientific signaling studies and circuit design. From 1918 until his recent appointment he has been assistant engineer with R. C. Johnson, signal engineer of the Brooklyn-Manhattan Transit Corporation on the development, installation and maintenance of signals on the elevated and subway lines in New York and Brooklyn. Mr. Whitney was born April 9, 1883, at North Adams, Mass.

A. J. Schulthess Superintendent at Spokane

Appointment of A. J. Schulthess as general superintendent of the Spokane United Railways, Spokane, Wash., was announced on Sept. 1 by M. W. Birkett, vice-president and general manager. Mr. Schulthess will be the operating head of the United system to replace the late R. A. Willson, assistant general manager, who died in August. He joined the staff of the Spokane Traction Company in 1904 and has been active in railway work in Spokane for 22 years. He was employed by the Washington Water Power Company in 1910 and has been assistant to Mr. Willson since that time. At the time of the consolidation of the railways in Spokane in 1922 he was made superintendent of properties and his promotion at this time includes the position of manager of Natatorium Park, owned by the United.

Frederick Krug, formerly superintendent of power production of the Porto Rico Railway, Light & Power Company, San Juan, Porto Rico, has recently been appointed assistant to C. C. Giles, who is now president of that company as well as of the Porto Rico Railways Company, Ltd., the holding company. Mr. Krug has been affiliated with the Porto Rico properties since 1922, when he became superintendent of the La Plaza hydro-electric plant of the Porto Rico Railway, Light & Power Company. He had formerly served as assistant superintendent of the electrical department of the New York-Honduras-Rosario Mining Company.

J. K. B. Hare, formerly in charge of syndicate public utility sales for the Pittsburgh district of the Westinghouse Company, has been appointed manager for the company at Columbus, Ohio. Mr. Hare has been employed with the Westinghouse Company since 1912. He first enrolled in the employ of the Westinghouse Air Brake Company as a draughtsman, and later entered the sales department, serving in the Chattanooga district.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Exports of Electrical Goods Increase in June

Exports of electrical goods from the United States during June, 1926, totaled $8,591,570, an increase of $2,650,760, or more than 44 per cent above those of June, 1925, and an increase of $1,165,670 when compared with May, 1926. It was the third highest month since May, 1921, being exceeded only by April, 1926, which reached $9,070,500, and December, 1925, which totaled $8,808,600. These figures were published by the United States Department of Commerce, Bureau of Foreign and Domestic Commerce.

Exports of electrical equipment of particular application to electric railway usage for the months of June in each year were as follows:

	June, 1925	June, 1926
Direct-current generators	46,652	102,348
Alternating - current generators	81,532	174,728
Storage batteries	198,921	278,535
Transforming or converting apparatus	310,818	290,566
Transmission and distribution apparatus	414,181	559,265
Railway motors	21,619	86,139
Electric locomotives	22,497	72,227
Railway signals, switches and attachments	77,094	32,485
Copper bare wire	114,952	294,037

Goldschmidt Thermit Receives Another Federal Decree

A final decree for an injunction has just been issued by the United States District Court for the Western District of Missouri against the Liquid Steel Welding Corporation, Anton Lucas and others of Kansas City, Mo., in a suit for infringement of patents brought by the Goldschmidt Thermit Company, a subsidiary of the Metal & Thermit Corporation of New York City. The suit involved the same three patents which were at issue in the suit of the Goldschmidt Thermit Company against the Alumino Thermic Corporation of Roselle Park, N. J., and others in which a decision was recently rendered by the U. S. District Court of New Jersey, Judge Bodine presiding, in favor of the same plaintiffs. The Liquid Steel Welding Corporation of Kansas City is reported to have ceased its operations and permanently closed its plant.

Personnel Changes in General Body Company

W. M. Peters has assumed control of the sales organization of the General Body Company of Defiance, Ohio. Richard McCrackin has been made manager of the company's plant. Manufacture will be continued of the "Miller Built" line of bus bodies and in addition the company will furnish commercial bodies and a full line of cabs.

The General Body Company is operating the plant formerly occupied by the Trumbull Wagon Works Company and has in excess of 100,000 sq.ft. of manufacturing space, of which 75,000 is in the main building. The mill room has a capacity of approximately 10,000 ft. of finished stock per day. Power is furnished from the company's own plant, which supplies both steam and electric power.

Considerable foreign business is anticipated by the company due to its long experience in building and preparing bodies and buses for foreign shipment. This will, of course, be in addition to the domestic trade. Mr. Peters, the new sales manager, was for several years with the White Company before forming his present affiliations.

Outside Exhibits Banned at Cleveland

Director of Exhibits Fred Dell, who is in charge of the big show to be staged by the American Electric Railway Association at Cleveland, Oct. 4-8, again wishes to call attention to the action of the executive committee in barring exhibits or demonstrations elsewhere than in the spaces provided for such purposes in the buildings and grounds of the convention. The text of the committee's resolution bearing on this matter was published on page 604 of the issue of ELECTRIC RAILWAY JOURNAL for April 3, 1926.

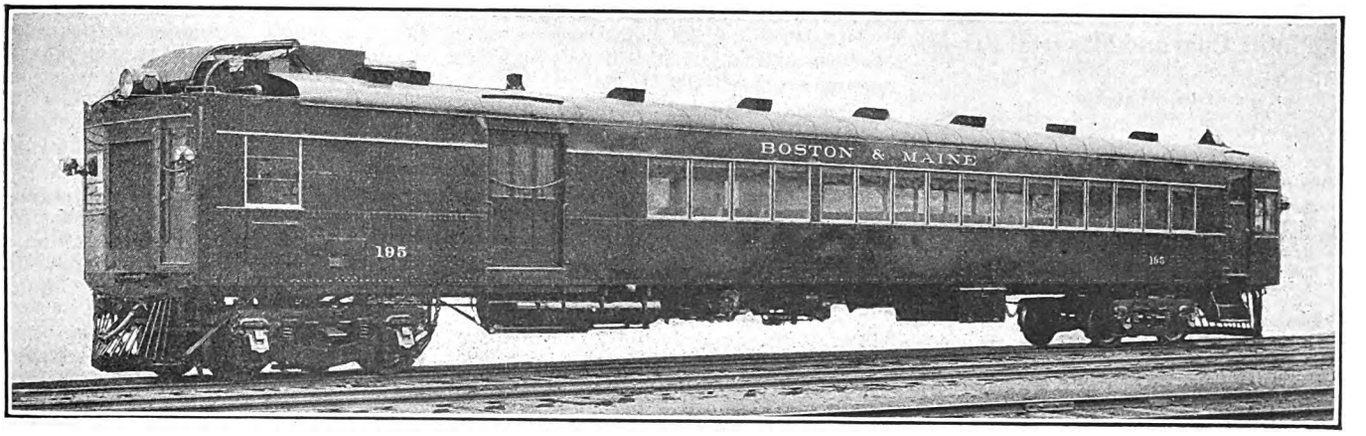
Arrange Inspection Trips After Noon, Friday, Oct. 8

All manufacturers in the Cleveland territory who are planning inspection trips to their plants and other forms of entertainment for convention delegates are asked by the executive committee to abide by the plan of scheduling all such affairs following the close of the regular convention program. By noon on Friday, Oct. 8, all meetings will be over and the inspection of exhibits terminated so that inspection trips held after that time will receive the undivided attention of delegates. In return for co-operation in this program it is planned to give full information on all scheduled inspection trips in the official program of the convention.

Rail Cars May Now Operate on Distillate

Delivery is now being made of ten additional gas-electric cars for the Boston & Maine Railroad. They are being built by the Osgood-Bradley Car Company, Worcester, Mass. The electrical equipment is furnished by the General Electric Company and the gasoline and distillate burning engine by the Winton Engine Company of Cincinnati, Ohio. These are the first rail cars in the country to employ distillate as a fuel in the prime mover. The special carburetor which makes possible the change-over from gasoline to distillate when the engine is turning over at approximately 400 r.p.m. is installed on the cars by the Electro-Motive Car Company, although it is not manufactured by that concern.

Eight of the new rail cars are to be 61 ft. in over-all length, while the remaining two will be 73 ft. long. The generator and power plant on each car are the same, being capable of 275 hp. at 1,000 r.p.m. The engine burns gasoline at low speeds and distillate at the higher speeds, the point of change-over being governed by the position of a



One of the Two 73-Ft. Rail Cars Just Delivered to the Boston & Maine Railroad

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damper in the carburetor. It is necessary only to carry 50 gal. of gasoline in a small auxiliary tank, while the main fuel tank of course contains distillate. The cars are designed to operate with an auxiliary trailer coach and will be placed in service for light traffic handling on various of the Boston & Maine lines. The railroad will have sixteen rail cars which embody the electric drive feature when all of the present order have been delivered. It is estimated that from 30 to 50 per cent saving in fuel costs will be effected with the new distillate-burning feature.

Distribution to Be Discussed at Congress of American Industry

One of the major phases of economics to be considered at the Congress of American Industry being held at Philadelphia, Sept. 7 to 24, is the distributor as a factor in American life and business.

In this connection it has been announced that Albert L. Salt, president of the Graybar Electric Company, will address the congress and describe in detail the function and significance of twentieth century distribution methods in their relation to the producer and consumer.

Chicago & Joliet Cars Built by Cummings

In a brief description of the ten new interurban cars which have been built for the Chicago & Joliet Electric Railway of Joliet, Ill., which was published on page 368 of the issue of ELECTRIC RAILWAY JOURNAL for Aug. 28, no mention was made of the fact that the cars were constructed by the Cummings Car & Coach Company. They were built in the works of that company at Paris, Ill., and embody the latest designs for interurban service. Four of the cars have a seating capacity of 48, while the remainder will accommodate 52 passengers.

New Ohio Brass Catalog

Some changes in the order of presentation have been made in the trolley materials section of the new No. 20 O-B general catalog now being distributed by the Ohio Brass Company, Mansfield, Ohio. Electric railway operators will find such products presented in a very convenient manner. Included in this grouping, as well as in the rail bond section, are a number of new products developed and offered to electric railways since the last edition of the catalog. The books are carefully indexed and cross-references are plentiful.

This book of 945 pages, exceeding the previous edition by 175 pages, includes complete listing of all O-B porcelain insulators, trolley and line materials, rail bonds, car equipment and mining materials. It is logically divided and thumb-indexed for the well-defined classes of products of this company. In addition to descriptive and listing information, there are many helpful suggestions for the man concerned with the installation work.

Metal, Coal and Material Prices

Metals—New York	Sept. 7, 1926
Copper, electrolytic, cents per lb.	14.35
Copper wire, cents per lb.	16.25
Lead, cents per lb.	8.875
Zinc, cents per lb.	7.77
Tin, Straits, cents per lb.	67.25
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.425
Somerset mine run, Boston, net tons	1.975
Pittsburgh mine run, Pittsburgh, net tons	2.00
Franklin, Ill., screenings, Chicago, net tons	1.575
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, N.Y., cents per lb.	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.8
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.25
Turpentine (bbl. lots), N. Y., per gal.	$0.96

Trim Should Have Been Haskelite

In publishing the list of principal specifications on the new street cars for the Gary Railway, Gary, Pa., which appeared in the issue of ELECTRIC RAILWAY JOURNAL for Aug. 7, an error was made in stating the specifications for interior trim. Haskelite was used for interior trim instead of the mahogany which was specified.

Track and Line

United Electric Railways, Providence, R. I., will double track the highway over the entire length of the proposed improvements being made by the city. The single track on Smith Street between Elmhurst and Oakland Avenue is being removed.

Trenton & Mercer County Traction Corporation, Trenton, N. J., will install a loop at State and Olden Avenues and lay a single track in Wilmer Alley.

Portland Electric Power Company, Portland, Ore., has asked the City Council for a franchise to construct, maintain and operate railway tracks over the new Vista Avenue viaduct, now being built. The viaduct is about two-thirds completed.

Power Houses, Shops and and Buildings

Ontario Hydro-Electric Railway, Windsor, Ont., is building a converter station at McDougall Avenue and Erie Street, Windsor. The building, which will be of brick and concrete construction, will be equipped with three 1,000-kw. converters, receiving current at 13,000 volts, a.c., and converting it to 600 volts, d.c. It will be ready for operation about Oct. 1.

Boston Elevated Railway, Boston, Mass., has sold nearly all of the land with buildings comprising the Grove Hall carhouse site of more than four acres. About one-fifth of an acre with an emergency truck garage has been retained. The garage was constructed during 1920 and 1921. There have been and are several buildings on the property. Facing on Blue Hill Avenue was formerly a large frame and brick carhouse, the frame part of which was erected in 1890 by the West End Street Railway. The brick part was a stable belonging to the Highland Street Railway. In 1922 the front area of the carhouse was reduced by nearly an acre. The property also contains substantial buildings formerly used for carhouse purposes and shops.

Trade Notes

Oakite Products, Inc., is the new name recently adopted by what was formerly the Oakley Chemical Company. The general offices are located at 22 Thames St., New York, while the factory continues as heretofore in Bush Terminal, Brooklyn, N. Y. Since 1909 the company has manufactured Oakite industrial cleaning materials. The personnel of the management and the field organization will remain the same under the new name.

American Brown Boveri Electric Corporation, New York, N. Y., announces the opening of a Boston office and the appointment of George M. Bates as district manager. The New England sales office is located at 842 Summer Street, Boston, Mass. Mr. Bates was with the New England sales force of the Westinghouse Electric & Manufacturing Company for 28 years, prior to accepting his latest appointment. He was a graduate of Tufts College in 1893, receiving the degree of B.E.E. After taking the student course with the Westinghouse company he was associated with the West End Street Railway and later the Boston Elevated in Boston, Mass. He joined the sales force of the Westinghouse Electric & Manufacturing Company in 1898.

New Advertising Literature

Roller-Smith Company, New York, N. Y., has issued bulletins 110 and 150 describing respectively its new type HTD direct-current and HTA alternating-current portable ammeters, voltmeters, volt-ammeters and single-phase wattmeters. The instruments are stated to be small enough for the pocket, tool kit or traveling bag, sufficiently accurate for all ordinary tests and light in weight.

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-394 containing information on induction motor-generator sets with capacities from 1 to 35 kw. and for use at 125 or 250 volts.

American Car & Foundry Company, New York, N. Y., has issued the first two of a series of folders disclosing the reasons which actuated the company in taking over the active production of motor bus equipment and in selecting the Hall-Scott engine and the Fageol Safety Coach to uphold its standards in this field.

Electric Service Supplies Company, Philadelphia, Pa., has issued a 200-page catalog covering a complete listing of bus equipment for the motor bus industry. The book, known as Catalog 9, contains a brief description of specialties adapted for use on buses of either the gasoline or trackless trolley type. Many diagrams and illustrations accompany the text and a list number index and material index are included to facilitate handy reference.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, September 18, 1926 *Number* 12

Chicago Gets a Transportation Proposal

THE mysterious proposal on the part of a group of New York bankers for financing Chicago's local transportation facilities on the basis of a twenty-year franchise has finally come into the light. Advertisements carried in Chicago newspapers publish in full the terms of the proposal for "Solving Chicago's transportation problem, immediately and permanently without new state legislation." The terms of the plan offered carry some unique and interesting features.

There is little beating around the bush in the proposal. The intent seems quite evident and the "teeth" of the plan are in the first paragraph:

> The new ordinance to grant a permit, good for twenty years, not only to acquire and operate street railways and to establish motor bus lines in all streets now being used for street railway purposes, but also to establish and operate motor bus lines in all other streets, in which it may be deemed advisable that motor bus lines be operated in connection with the new company's lines in streets now being used for street railway purposes; such permit to become operative Feb. 1, 1927, or as soon thereafter as such new ordinance shall be duly accepted by the new company, the time allowed for such acceptance to be fixed in the new ordinance.

It is needless to go at length here into the forms of security which it is proposed to issue. The high spots of the financial plan proposed are outlined in a news story elsewhere in this issue. The rate of fare is to be enough to pay the cost of maintaining and operating all the new company's lines efficiently and adequately; to meet the requirements of the sinking funds, renewals and depreciation fund and other funds, and deductions from gross earnings to pay the annual interest of all outstanding bonds of the new company.

To quote again:

> If on Feb. 1, 1927, the existing companies shall not have vacated the streets now occupied by their tracks and yielded possession thereof to the new company, upon the terms laid down in the new ordinance or mutually agreed upon between them and the new company, then the city shall promptly give to the existing companies notice to remove within six months all their tracks and other property from the city streets and restore the parts thereof so occupied by their tracks and other property to the same condition as the contiguous portions of such streets.

And again:

> Whenever the new company shall have acquired lawful possession of or the right to use and operate the street railway properties of the existing companies, then promptly following such acquisition the new company shall begin to operate and thereafter, so long as the new ordinance shall be in force, shall continue to operate said street railway properties and *may, if it shall so elect, discontinue the operation of motor buses in those streets in which street railways are being operated by the new company.*

Here, in brief, is the plan in some of its essential features offered Chicago. The right to operate buses on any and all streets—with the people paying the cost of this duplication of service—forms an excellent club to force existing security holders to accept terms such as the new company might elect to dictate.

It is probably a practical method of financing on a twenty-year franchise—from the bankers' viewpoint. But is it a sound basis for developing a transportation system? Is it fair to those who invested in existing street railway securities in good faith? Chicago may well afford to consider in this light some of the conditions contained in this unique proposal.

Purchasing for Actual Needs

"HAND-TO-MOUTH buying," so called, has been characterized by Eugene G. Grace, president of the Bethlehem Steel Company, as one of the greatest contributing factors toward stabilized national prosperity which has made itself felt to date. In an article which appeared in the *Saturday Evening Post* for Sept. 4 entitled "Distributed Prosperity" Mr. Grace indicates the manner in which the practice of hand-to-mouth buying has come upon us. He traces the beneficial effects which it has already exerted upon industry since it first became noticeable in 1923 as a characteristic in the national economic structure. Decried at the outset, and in many quarters even today, as a radical departure in fundamental industrial policies and as a sure indication of coming economic depression, the practice has continued to develop and gain in favor. Today, according to Mr. Grace's analysis of the situation, we may thank this one practice more than anything else for the decrease in seasonal activity in such industries as that of steel, which had always been subject to wide fluctuations throughout each year.

The whole industrial fabric of the nation is so closely knit that factors which affect one part must inevitably be felt by all. Hence the railways, electric as well as steam, should have much to gain from this same manner of buying. Too fully stocked storerooms and top-heavy inventories have come to be looked on as economic wastes. They require a large amount of tied-up capital which might better be in active use. Further, more uniform buying throughout the year tends to stabilize the industries which supply the railways with their raw materials and improves conditions of employment. At the other extreme, electric railways have in some instances been guilty of buying replacement parts in ridiculously small quantities.

Somewhat unfortunate is the term "hand-to-mouth buying." It implies lack of thrift and foresight. "Producing for consumption" was suggested by Mr. Grace as a more satisfactory term. To this might be added "buying for actual needs." These phrases cover the two sides of the question, producing and consuming.

It would, of course, be foolhardy to permit inventories

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to fall below a safe minimum. When a part is needed in repairing a car it is needed badly and must be immediately available. But all Mr. Grace would urge in this or in any other case is the striking of a common-sense medium. Much buying has been done in the past on the "fundamental principles of the old-fashioned crossroads store," whereas a little of the psychology of the chain store would now be very much in order.

Consider for a moment why it was that the crossroads store purchased, as it did, in yearly lots. Execrable transportation and slow means of communication made it necessary for the country merchant to safeguard against running short of merchandise by stocking in unduly large quantities. Today, however, he can dispatch a wire for a bill of goods and in a day or two will receive his order from a conveniently located distributing point. The wholesaler, on the other hand, watched the markets and endeavored to purchase when materials were cheapest. These factors were largely responsible for the wide fluctuations in prices which formerly marked the industrial scheme of things. There is no logic in continuing to base present-day marketing procedure on conditions no longer existent.

A Living Wage Depends on the Liver

RECENT labor discussions in Chicago, Cincinnati, Birmingham, New Orleans, Boston and Newark raise anew the question of the living wage. It is an intriguing issue, this. In some of these cities the matter of wages was settled by conciliation rather than arbitration, but the assumption seems reasonable that much the same conditions govern the economic status of the employees in the other cities mentioned as surround the Eastern Massachusetts men at Boston. If that case may be taken as typical, then things are not so bad with the employees. Mr. Wadleigh for the company made this quite plain. In fact, he appears to have made it plain beyond peradventure, but the members of the board may decide differently. Even in that event it would still remain true that the plight of the Massachusetts men is not a distressing one. Their average wage is $1,825 a year. Their average age is 46 years. Their average length of service with the company is nineteen years. Since October, 1913, wages on the Eastern Massachusetts have increased 117.9 per cent. The cost of living during the same period has increased 60.9 per cent. These and other facts make it appear that these men are well off compared with all other workers in the vicinity no more skilled than are they.

Mr. Wadleigh's comparison of their lot with that of others was not intended to be invidious, to create ill will, but the contrasts he drew were striking. This suggests again the soundness of the contention of the company that "we are paying a decent living wage." It is, of course, commendable to want to live better, but if one cannot manage well what he already has, be the amount large or small, how can he profit by having more? The workman seldom knows how to live judiciously. Often he is proportionately a bigger wastrel than is the so-called man of money. The notion is a mistaken one that ability to spend wisely goes with large earning power or the possession of means. Many men are poor on $10,000 a year. A living wage depends entirely on knowing how to live. And in the present day of inordinate prosperity the art of living seems to be languishing.

On the basis of the remarks of Mr. Vahey, acting for them, one might expect to find the Eastern Massachusetts men constantly upbraiding themselves with the question "Is Life Worth Living" and forgetting that the famous answer of *Punch* to this question was that it all depends on the liver. In the light of many of the recent wage discussions the tear glands of at least one commentator are not stimulated to the extent that there is any semblance of the saline secretions symbolic of sympathy. In other words, despite the able presentation of the cases of the men, there appears to be no need to cry one's eyes out over the plight of labor —particularly platform labor.

Fare and Assessment Fallacies Pricked in New York Bus Report

SEVERAL points made by the Board of Transportation of New York in its report on the pending bus applications are to be commended, but on the whole the report is disappointing. These points relate to the recognition by the board of the need for limiting the length of a bus ride for any given fare and to the recognition—even though stated negatively—of the fallacy of exacting a franchise rental or fee for the privilege of rendering service. The disappointment is that the existing carriers which bid for rights are given such short shrift. City-wide operation is fundamentally sound. But since there is a need for zoning, the borough as a fare unit seems logical. In fact, examination of the routes proposed indicates a probable intention to divide the system into seven physical groups, even though one company receives a city-wide franchise.

There were 106 petitions from 72 applicants. The bound volume in which the matter is reviewed weighs seven pounds and contains 1,088 pages. These figures testify to the complexity of the undertaking before the board. The finding appears to favor the Equitable Coach Company, not now a local operator, but presumably prepared to meet its obligations if the award is finally made to it. The next step to be taken is consideration of the report by the Board of Estimate to determine which, if any, of the proposals is acceptable. After that a form of contract or franchise must be adopted and advertised for fifteen days prior to a final vote by the Board of Estimate on the granting of the franchise. Even after that none of the companies can assemble any tangible assets until a franchise grant is obtained and favorable action upon it is secured by the State Transit Commission. That is the *modus operandi* that must be followed. Understanding of it is essential lest erroneous conclusions be drawn. In other words, the suggestions made are not tantamount to the letting of the grant nor the conferring of operating rights. Far from it.

It was a colossal undertaking, the passing of judgment in this instance. It is, of course, easy to damn a thing of this kind with faint praise. But as said before it is to be regretted that the existing carriers were shown such short shrift. In the best interest of the city they do not deserve it. Condemnation of them for alleged sins of the past does not come with good grace. The criticism does not hold water that the past history of the predecessors of some of the railways which sought operating rights does not inspire confidence in their financial methods. With all due respect to the presumed favorable applicant, does its guar-

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antee really mean anything? Chicanery and manipulation are things of the past—at least the presumption is reasonable that public regulation has made them so, no matter what the desire of the owners may be. If that is not so and the Transit Commission, acting in its regulatory capacity in the interest of the public, is impotent, what is the assurance that there will be no further manipulation, no matter to whom the grant is made?

It is not fair, however, hastily to weigh a matter of this kind. Even though ELECTRIC RAILWAY JOURNAL does not find itself at one with the board, it would be unfair not to acknowledge the magnitude of the task before the board or to give it credit for discerning the two important points previously mentioned. So far as the 5-cent fare is concerned, that unit appears to have been retained for its psychological effect in a city which has been educated over many years to believe that there is a relation between transportation and the 5-cent coin. The recommendations of the board do, however, recognize unquestionably the need of abandoning a 5-cent unlimited ride for buses. Five miles is indicated as the maximum length of haul for 5 cents. The wisdom of this figure itself is dependent on many factors. On some parts of Manhattan Island the density of traffic combined with short riding is sufficient to warrant it. Such a 5-mile limit may not be justified on other sections of a city-wide system where traffic density is less and the riding habit not so great.

Another significant thing, mentioned previously, is recognition of the fallacy of exacting a franchise rental or fee. The city's primary objective is and should be to insure maximum service of the best possible character at a given fare. Any assessment against a transportation agency in the form of a franchise tax limits by that amount the resources available for extension and improvement of service. In short, in this recognition and the recognition of the relation between length of haul and cost of transportation, New York is beginning to show evidence of enlightenment when dealing with a new vehicle even though in the past it has been very much in the dark when dealing with existing forms of local transportation.

Better Tax Laws to Be Sought Through Nation-Wide Effort

SURVEYS of the tax situation as it affects the electric railway industry indicate that there has been little co-ordination of thought in the formation of tax laws. Much work has been done, but generally of a local nature. One company, or at best a local group, often through a state association, has been active at different times. There is little general knowledge of tax matters and no nation-wide attempt to establish state and local taxes on a basis that would be equitable to properties with large and small net earnings alike.

In this issue the announcement appears of a practically completed adjunct to the committee on special taxes of the American Electric Railway Association, in the appointment of advisory members. One outstanding authority from each state has been selected. The list reveals the names of many prominent electric railway officials. It is the purpose of the association and the committee to create through these advisory members a nation-wide organization to promote better tax laws. It is the hope that progress may be made toward establishing not only uniformity of laws, but in eliminating such laws that cause almost a crushing burden on some properties.

As much expense as possible must be curtailed to transportation agencies because the advent of the automobile has created a competitive condition that makes impossible the collection of increased revenue beyond certain limits. Other utilities can pass increased costs on to the user much more readily than transportation companies due to the lack of competition.

There must be no tendency to dodge fair taxes, but an electric railway, faced as it is by today's conditions, can only hope to improve its net through superior service and reduced costs. If the augmented committee is successful in establishing a tax basis that will bring reduction to companies now earning little or no net, the savings will revert to the public manyfold in improved equipment and service.

Attendance at Conventions Will Bear Analysis

LAST October, at the American Electric Railway Association convention at Atlantic City, there were 3½ manufacturer representatives to every operating man. At the recent Central Electric Railway Association assemblage the proportion was three to one. Other gatherings have brought similar figures to light. Obviously the manufacturers are giving far better support to the conventions than the men who are primarily supposed to be benefited by these meetings.

Grant that the producers are actuated by self-interest in attending in such numbers, that they expect to be repaid in the opportunities which will be presented to meet prospective customers. Even so, such a preponderance of manufacturers is an economic fallacy. The cost of sending a large quota of representatives to a convention weighs as heavily upon a manufacturer as upon a railway. The manufacturers are actuated by motives of co-operation as well as profit in this regular attendance at sectional and national gatherings. They have much to give as well as much to receive.

If the railways do not give whole-hearted support to such conventions as are now held, then perhaps there are too many conventions. Better to have 100 per cent attendance at a few gatherings than 50 per cent attendance at a greater number scattered throughout the year. In a house organ of one equipment firm recently appeared this statement:

"Convention expense to the average manufacturer is a formidable item. It can only be justified by affording opportunity to the manufacturer to make contact with a large number of prospective customers. Thus one of three things must inevitably take place: There must be substantially better attendance of operating men or there must be fewer conventions, which presumably would bring larger attendance. If neither of these remedies prevails, then a diminishing support on the part of manufacturers must be expected."

Plain words. Yet they are justified. Constant pressure is brought to bear on the manufacturers to support the local and national meetings to the limit of their ability. After all, they are business institutions, just as are the railways, and convention activity must be mutually profitable to be justified. The forthcoming convention in Cleveland gives every promise of being a noteworthy success in every respect. Attendance of railway men there should help indicate to the industry the value of such meetings.

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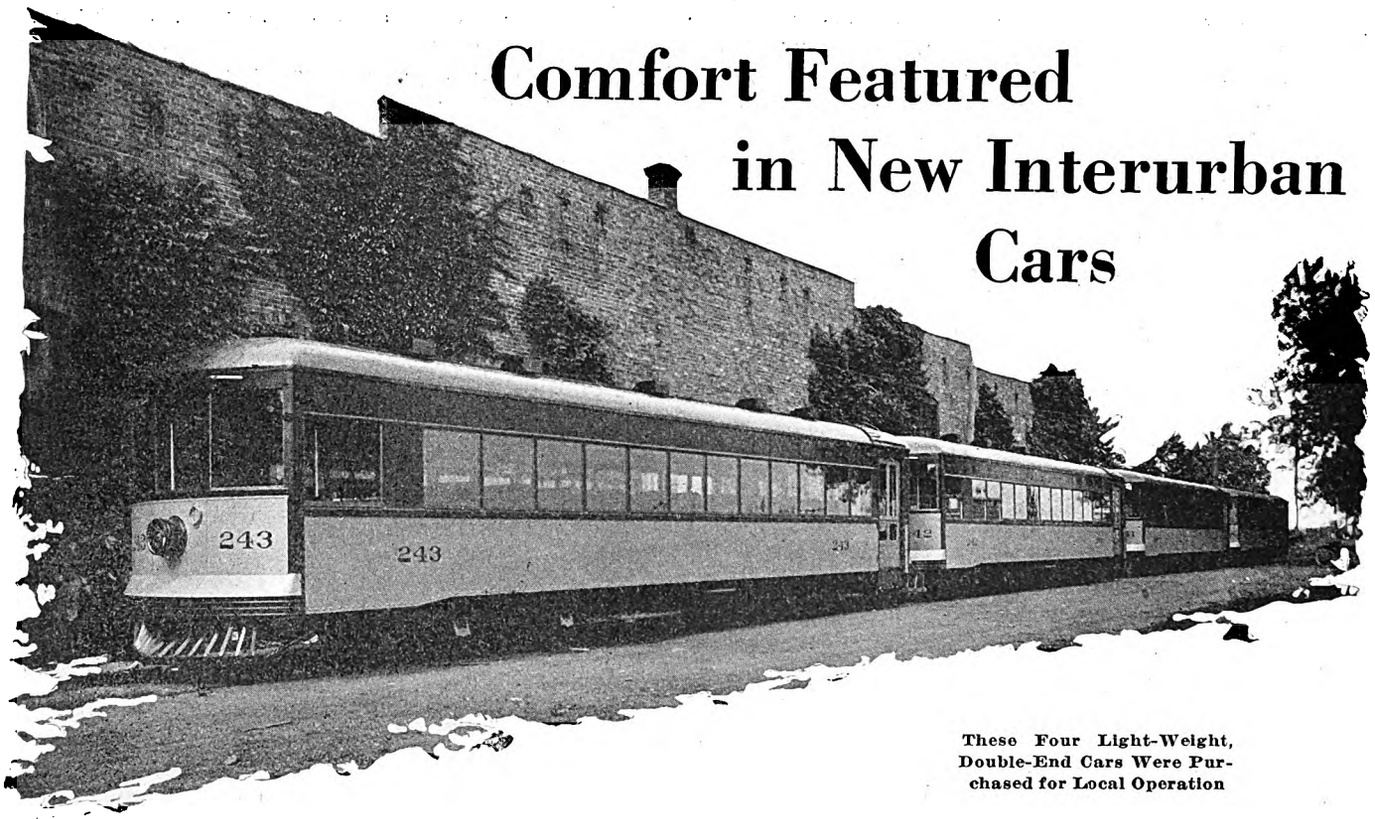
Comfort Featured in New Interurban Cars



These Four Light-Weight, Double-End Cars Were Purchased for Local Operation

Six New Cars for Chicago & Joliet Electric Railway Embody Many Unusual Elements of Design to Encourage Pleasure Riding—General Dimensions and Appearance of the Interurban Cars Are Similar to Those of Four Double-End Cars Just Received for Local Service Out of Joliet

REPLACEMENT of cars too old for economical operation was the chief reason for the purchase of ten new cars by the Chicago & Joliet Electric Railway. Of this order, six cars of the single-end type are for through interurban service between Joliet and Chicago, while four are double-ended for local service out of Chicago. The ten cars scrapped when the new ones were delivered were all over twenty-five years old. This fact, more than any other, was used by the management in advocating the purchase. Other factors given consideration were the economy of operating a car weighing 24,000 lb. less than the original equipment, or 38,000 lb.; the practicability of one-man operation with new equipment, and the possible increase in riding because of attractive appearance.

Several years ago the city lines were changed over to one-man operation. Two years ago a like change was made on the local interurban runs. The equipment used on the through service between Chicago and Joliet did not lend itself readily to one-man operation and the cost of changing over such old equipment seemed prohibitive.

With the new cars recently delivered, the entire system is now equipped for one-man operation. This is one of the factors in an anticipated operating saving of approximately $30,000 per year. The remainder will come from reduced power bills, because of lighter and more efficient equipment and lower maintenance costs. The latter item is already reflected in the reduction of shop department personnel. One-man operators are paid 5 cents per hour above the scale for conductors and motormen. The estimated saving in energy is about 40 per cent.

All regular service is now given with new cars. However, the company has retained two cars approximately fifteen years old and four cars twelve years old for tripper and extra service. Six still older cars are being retained for special service and for emergency purposes. This gives the company 22 cars of the interurban type, all equipped for one-man service.

Besides saving approximately $30,000 per year in operating costs, the company expects to attract additional patronage. It is figured that if each of the six new interurban cars will attract one round-trip fare for each trip, the increase in gross revenue for a year will amount to $10,183. This is based on an average of $1.55 for a round trip over the line. Eighteen round trips are run per day between Chicago and Joliet. It is believed that the attractiveness of the car will succeed in building up this new business.

Each of the six single-end cars cost approximately $17,000, or $102,000 for the group. The $10,000 increase in revenue anticipated will more than pay interest on the investment.

On the group of ten cars, including the four double-end cars for local service out of Chicago, the saving in operating expenses is estimated at $30,000. Therefore the return on an investment of approximately $170,000 is well worth $40,000 per year even should the four double-end cars fail to attract any additional riders in local service.

Features Which Distinguish the New Equipment

Streamline effect combined with artistic painting give the cars an attractive appearance. A wide letterboard above the single sash windows is carried from the front to the rear. Sliding doors and folding steps blend with the streamline of the panel below the windows. The

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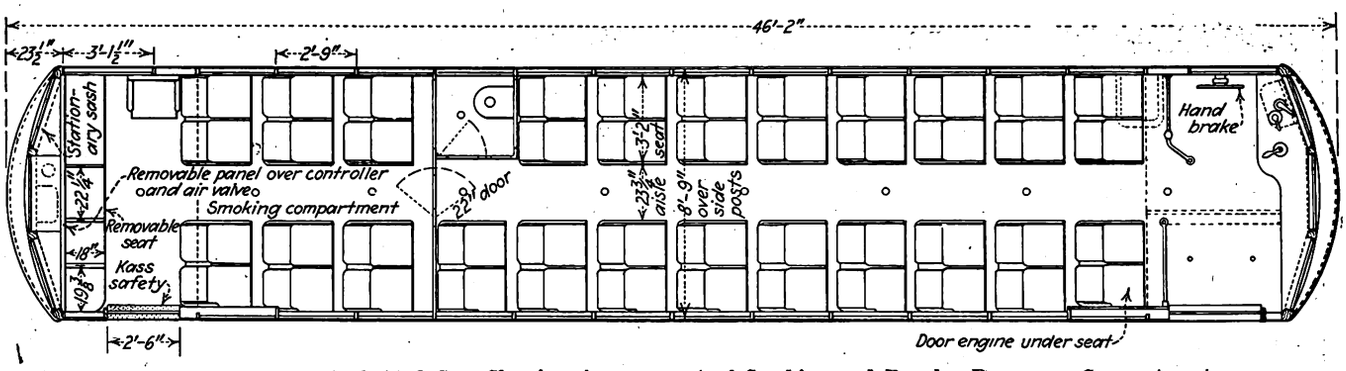


Floor Plan of the Single-End Car, Showing Arrangement of Smoking and Regular Passenger Compartments

arch roof carries ventilators on each side and trolley poles both front and rear. On the front end of the single-end cars and on both ends of the double-end cars are anti-climber bumpers and fenders. The entire appearance of the car is of extreme lowness, accentuating the length and giving the effect of Pullman car design and construction. Both local and through interurban cars were built by the Cummings Car & Coach Company of Chicago.

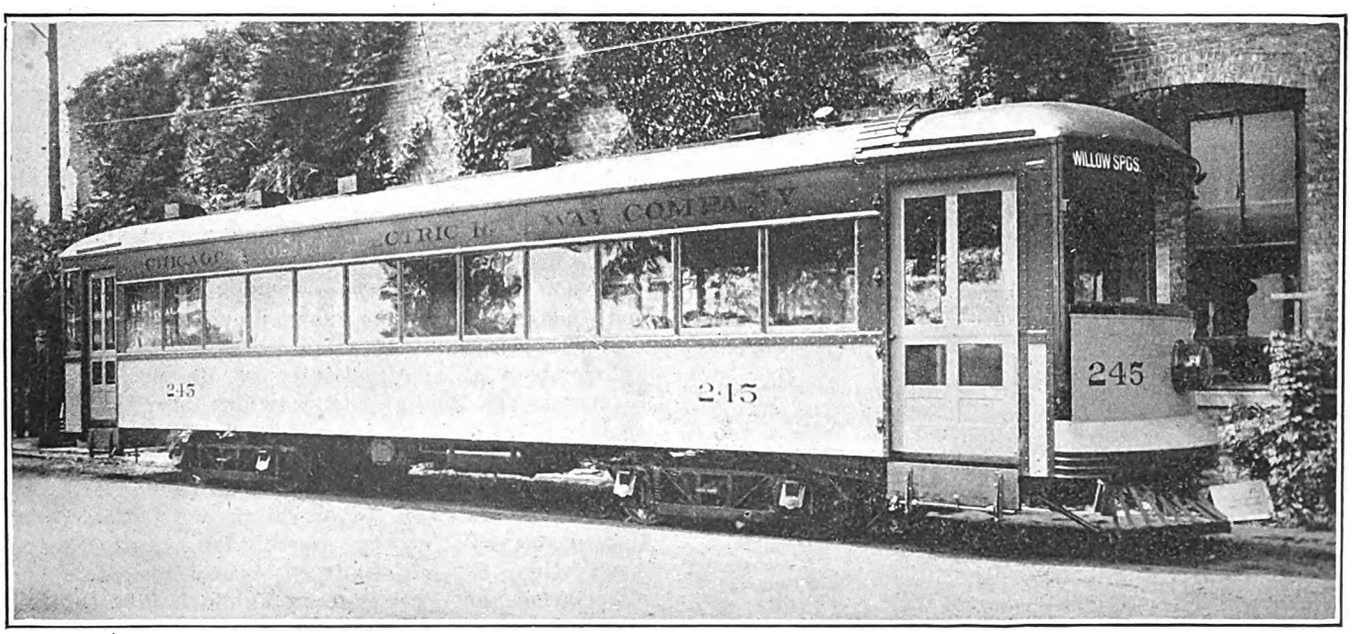
Bucket-Type Seats in Interurban Cars

In the single-end, one-man type interurban cars seats are provided for 52 passengers on double bucket-type chairs. These are the feature of the car. They are 38 in. wide, upholstered in green plush, both on the face of the back and seat, while the trimming, back and arms are in genuine green leather. At the rear of the car is a smoking compartment with accommodations for thirteen passengers on the same type of seats, upholstered entirely in leather. Five of these seats are placed across the rear, just in front of the emergency control and air brake cabinet. A cream colored headlining gives a light, clean appearance to the interior of the car, which is finished in mahogany and has green battleship linoleum on the floor. Directly over the center aisle are mounted Pullman type lighting fixtures, while the registers of the Railway Utility ventilators are arranged in staggered formation over the seats. In this car a toilet is located just ahead of the partition separating the smoking compartment from the main part of the car. Advertising racks are located above the panel over the windows. Large hat and coat hooks are placed over each window on this panel.

Control equipment and apparatus are inclosed in a cabinet in the forward end of the car. The motorman's position is at the extreme left, thus furnishing an unobstructed view forward for the passengers. A small bulkhead separates the Agasote headlining of the car proper from the aluminum headlining of the vestibule. Suitable aluminum stanchions are placed at the entrance door and just to the rear of the front vestibule to serve as a dividing partition between the vestibule and the passenger compartment. A curtain may be slid along a rod to protect the motorman from the glare of the interior light. A 38-in. air-operated sliding door is used at the forward end of the car. An emergency door at the rear on the same side of the car may be opened by an air valve in the emergency cabinet to the rear of the rear seat, or by a conductor's valve on the outside of the car.

Single-sash windows with brass sash are arranged to raise. Attached to the bottom sill of the sash are large mesh screens which raise when the windows raise. These serve as protecting guards when the windows are open, but are dropped out of view when the windows are closed. This feature allows for a clear vision through the windows and also facilitates cleaning.

Design of the double-end car is similar to that of the



One of the Single-End Interurban Cars Which Will Run Between Chicago and Joliet

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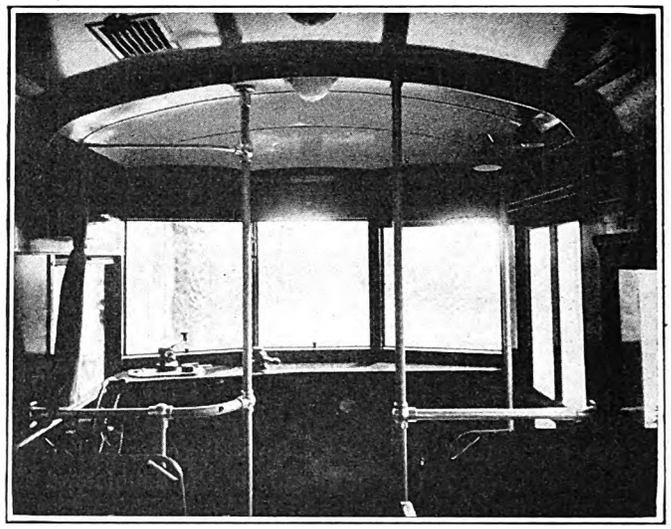
Plush-Upholstered, Twin Bucket-Type Seats Are Used in the Single-End Interurban Cars



The Operators Compartment Shown Here Is Practically Identical on Both the Single and Double End Cars

single-end, with the exception that reversible seats upholstered in green plush replace the bucket-type seats. Both sets of seats were manufactured by the Hale-Kilburn Company. No toilet or smoking compartment is provided in the double-end car. Both types of car are mounted on low-height trucks having 26-in. diameter wheels.

There are two 35-hp. No. 510 Westinghouse motors per truck. A free running speed of 40 m.p.h. and an average operating speed of 22 m.p.h. are obtained with the new units.

Before the new equipment was placed in service on Sept. 7, exhibition runs were made over the line. In addition to this, one of the new interurban cars was allowed to stand for some time in front of the company's offices in Joliet. More than a quarter of the population of that community availed itself of this opportunity to inspect the car.

In the accompanying table are given the principal specifications of the cars, both the double-end and single-end cars following the same general specifications, with the exception of the seats.

SPECIFICATIONS FOR THE CHICAGO & JOLIET CARS

Date order was placed	April, 1926
Date of delivery	August, 1926
Seating capacity	Single-end 52, double-end 48
Weight:	
Car body	19,000 lb.
Trucks	11,000 lb.
Equipment	8,100 lb.
Total	38,100 lb.
Bolster centers, length	22 ft. 6¼ in.
Length over all	46 ft. 2 in.
Truck wheelbase	5 ft. 6 in.
Width over sideposts	8 ft. 9 in.
Height, rail to top of roof	10 ft. 9½ in.
Body	All steel
Interior trim	Haskelite, mahogany
Headlining	Agasote
Roof	Haskelite, arch
Air brakes	Westinghouse Traction Brake
Armature bearings	Sleeve
Bumpers	Hedley anti-climbers
Car signal system	Faraday high-voltage
Car trimmings	Statuary bronze
Center and side bearings	Cummings Car & Coach
Control	Double end, K-35-KK
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote, doubled-faced
Destination signs	Hunter
Door-operating mechanism	National Pneumatic
Gears and pinions	Westinghouse
Hand brakes	Peacock staffless
Heater equipment	Peter Smith
Headlights	Crouse-Hinds, type D.C.F.
Lightning arresters	Westinghouse
Motors	Four Westinghouse 510-A, 35 hp., inside hung
Paint	Sherwin-Williams
Registers	Ohmer
Safety devices	Safety Car Devices Co.
Sanders	Ohio Brass
Sash fixtures	O M Edwards
Seats	Hale & Kilburn
Seating material	Single-end cars, combination plush and leather; double-end cars, plush and all leather
Slack adjuster	Anderson
Springs	Coil and elliptic
Step treads	Kass
Trolley catchers and retrievers	Knutson
Trolley base	Ohio Brass
Trolley wheels	Westinghouse
Trucks	Cummings No. 62
Ventilators	Railway Utility
Wheels	Davis Steel Co., 26 in.
Energy-saving device	Sangamo economy meter

Two University Courses Offered in Public Utilities

AT LEAST two universities are offering this year new or expanded courses in public utilities. One, a four-year course at the University of Illinois, is under the direct charge of a professor who occupies a chair in the economics of public utilities, recently endowed by the Hon. William B. McKinley. The course is open to graduates as well as to advanced undergraduates. There is also a course for graduate students only. Both lead to degrees. Credit scholarships and fellowships are available to students who give evidence of ability and promise.

In addition a series of afternoon and evening courses in public utilities is being offered this year by the Northwestern University of Chicago, emphasizing the economic, financial, legal and administrative principles in utility operation. They are given in the afternoon and evening to permit the attendance of individuals who are engaged in work during a part of the day, and it is believed that the courses will therefore appeal to many connected with the financial and executive departments of utilities. Several of these courses are given by members of the Institute for Research in Land Economics and Public Utilities, which moved to Chicago on July 1, 1925, and became affiliated with Northwestern University.

The courses in both universities are indorsed by the Joint Committee on Co-operation with Educational Institutions of the Gas Association, State Electric Association, Electric Railway Association, Telephone Association and Committee on Public Utility Information, all of Illinois. The chairman of this joint committee is Britton I. Budd.

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Many Variables Affect Energy Consumption by Electric Railways

Checks of Energy Consumption per Car Unit a Valuable Aid to Management—Only by Careful Analysis and Evaluation of the Many Variables Encountered Can the Operating Efficiency Be Adequately Checked

By J. T. Lake
Economy Electric Devices Company, Chicago

PROPER analysis of the variations in energy consumption which follow changes in operating practice on an electric railway is essential to an accurate determination of the value of any supposedly more economical method of operation. So many variable and interwoven factors enter into electric railway performance that it is difficult to set off exactly the effect produced by a change in any one of them. Schedules may be speeded up, thus making a saving in platform hours at a worth-while increase in energy and maintenance cost. When additional copper is strung to decrease line losses, the management may be disagreeably surprised to find an increase in energy used for the same car-miles operated, due to better schedule adherence.

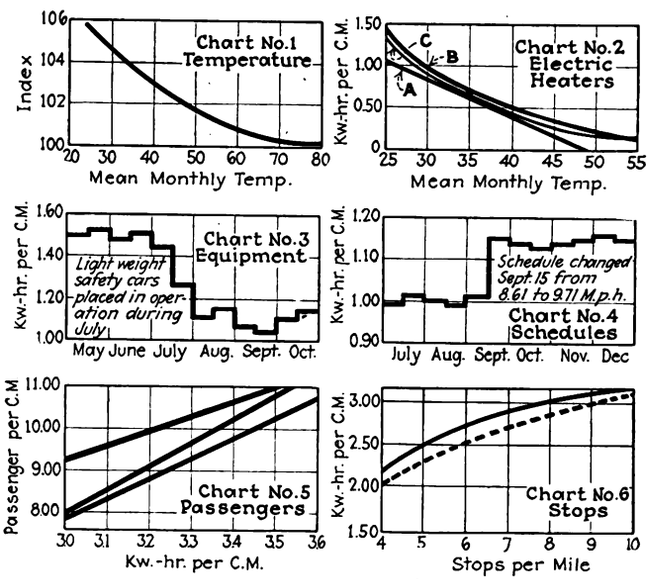
Substantial savings in energy consumption and power demand have been made on a great many properties by increasing the motorman's operating efficiency. If conditions remain the same over a period of years, these savings are evidenced by a continued decrease in the monthly power bills. On any given property, however, conditions very rarely remain the same for any length of time, and hence it is necessary to make proper allowance for the changes that occur. When facilities are available for measuring the energy consumption at the car, it is a comparatively simple process to evaluate readily the effect of the variables encountered.

The more important of the variables which affect energy consumption are as follows: Temperature, electric heaters, equipment, schedules, distribution system, miscellaneous use of power, number of passengers, number of stops, street traffic, loading of system and efficiency of operation by trainmen. The effect of most of these variables can be determined by an analysis of past traffic statistics and by applying the corrections obtained to the current figures. These corrections, together with the actual energy consumption at the cars, will supply all the data necessary to compensate properly for changes as they occur.

Temperature Affects Energy Consumption

With decreasing temperature, as in the winter months, the energy consumption per car increases. This increase is the resultant of many factors, such as changing resistivity of the electrical circuit, increased friction, bad rail conditions due to leaves, mud, ice and scum, increased length of stops caused by slower loading of passengers, etc. By plotting a curve between kilowatt-hours per car-mile and average monthly temperature, this relation can be shown graphically. Of course care must be taken that other variables, such as electric heat, schedules, passengers, etc., are eliminated. Chart No. 1 gives a typical temperature-kilowatt-hours per car-mile curve. This curve is based on five years operation on a property which has no electric heaters on its cars. Analysis of the statistics for only the non-heat months on other properties using electric heat substantiate these figures.

Chart No. 2 shows the amounts of energy consumed per car-mile for electric heat at various mean monthly temperatures. Two of these curves represent actual data, and one (C) is calculated from power statistics, corrected for the other variables which entered into the figures.



Effect of Variables on Energy Consumption by Electric Cars

In Chart No. 1 is shown the increase in energy for propulsion as the temperature decreases. In Chart No. 2 the energy used by electric heaters is plotted against outside temperature. Curves "A" and "B" are based on actual tests. Curve "C" is calculated.

Equipment and schedules have important bearing on amount of energy used. Chart No. 3 shows the result of changing from rebuilt single-truck cars to modern safety cars on one small line. Chart No. 4 illustrates effect of increasing schedule speed.

Average number of passengers per car-mile and number of stops are closely related in their effect on energy consumption. Chart No. 5 is platted between passengers per car-mile and kilowatt-hours per car-mile. Chart No. 6 shows the relation between stops and energy. The solid line was derived from speed time diagrams and the dotted line represents actual tests on approximately the same equipment.

Changes in equipment usually involve the adoption of more efficient motors and cars and the retirement of obsolete rolling stock. A theoretical figure showing the change in energy requirements can be obtained from speed-time curves, but as this method assumes a certain condition of the rolling stock, it is more or less inaccurate, particularly when used for older equipment. Where meters are available on the cars it is of course

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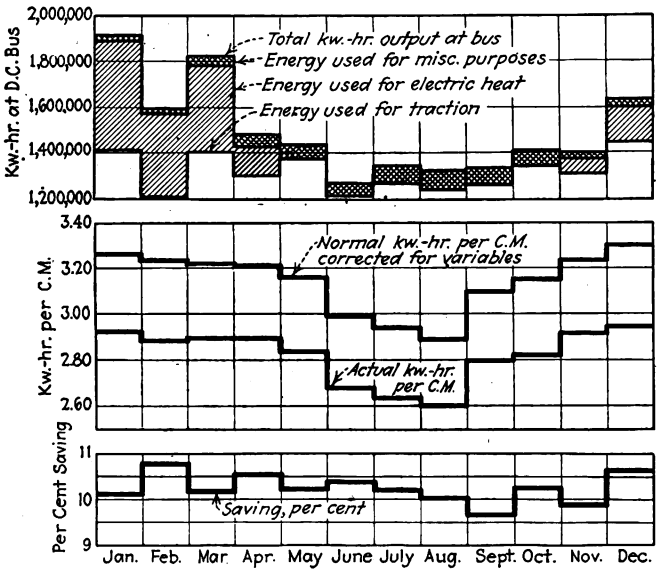
simple to obtain these figures from the actual readings of the meters taken just before and just after the change. If an entire division or line is changed over at one time, and the energy supplied to that section is metered at a substation, the change is readily noted on the substation meters. However, it is seldom that a property is fortunate enough to change over the equipment on any one division completely. An example is shown in Chart No. 3 of the effect on energy consumption of changing the equipment on one small line from single-truck rebuilt cars to modern one-man cars.

Schedules Have Important Effect on Energy

When schedules are changed the energy requirements for the line under consideration also change. Most of the schedule changes of recent years have been made to speed up the service, which naturally increases the energy required. Chart No. 4 gives an example of the effect of a change in schedule speed from 8.61 to 9.71 m.p.h.



Analysis of Energy Consumption for a Year on a Typical Electric Railway Property

Above is the monthly fluctuation in various divisions of the power bill. In the center, the importance of correcting for variables in checking energy consumption figures is illustrated. Below is the saving made by use of car meters to check trainmen.

The effect of any changes in the distribution system can be determined by a comparison of the unit energy consumption at the busbar and at the car. The ratio between the two does not necessarily indicate the true efficiency of distribution, as there may be some miscellaneous use of energy for other than car operation. However, if this does not change materially for any given period, a change in the distribution system can be checked by the ratio between the unit energy consumption at the busbar and at the car.

Most properties use a very appreciable amount of d.c. power in their shops and carhouses. Considerable amounts of power are used also for track grinders, arc welders, and other track and maintenance tools. In a great many cases all of this power is properly metered, or is accounted for by estimates based on tests and prorated according to time of operation. On some properties the amount used for these purposes is quite heavy and during the season of track construction varies considerably. It is advisable, therefore, to make proper allowance for this, both for accounting purposes on miscellaneous work and in analyzing the energy used for passenger car operation.

An increase in the density of passenger traffic, i.e., in passengers per car-mile, is usually accompanied by an increase in the unit energy consumption. This is particularly true where the traffic density is comparatively light, as additional passengers mean additional stops. Even where the traffic density is very heavy, an increase in passengers per car-mile will result in some increase in unit energy consumption, not so much in this case because of an increase in the number of stops as of increased length of stops and, to some very slight extent, the weight of passengers. This latter factor is much more noticeable where modern light-weight cars are in use because the passenger load is a greater proportion of the total weight. On Chart No. 5 are given curves from three large cities which show very clearly the effect of increased passengers per car-mile upon the kilowatt-hour per car-mile consumption. This relation, of course, will vary with local conditions.

Number of Stops Also Important

The number of stops has a very important effect on unit power consumption. This factor is influenced largely by the passenger density and is usually considered with this figure. However, knowledge of the effect of eliminating stops is often desired by managements in order to justify such reduction. These data can be obtained either through speed time curves or by actual test. Chart No. 6 shows the relation between number of stops and energy consumption for a particular class of equipment. The solid line was derived from speed time diagrams. The dotted line is based upon test on approximately the same equipment.

With the speedily increasing density of traffic on the streets, operators have found it more and more difficult to maintain their schedules, which of course means a greatly increased unit energy consumption. There seems to be a fairly uniform relation between automobile registration and energy consumption, and this is shown most clearly over a period of years by the gradual increase in energy used, even after all possible allowances have been made for other factors.

Considering the entire system of an electric railway as an electrical unit, it is obvious that load factor will play an important part in the over-all efficiency. For instance, if it is assumed that the entire feeder system is energized, but that no cars are being run, the energy used is the total standby consumption with zero car-miles as a divisor. This gives the highest (infinite) kilowatt-hours per car-mile. On the other hand, if we assume 100 per cent loading of the electrical system, with its various units, such as generators, motors, copper, etc., working at maximum efficiency, the lowest figure of kilowatt-hour per car-mile is obtained. On most properties the fluctuations from month to month, or year to year are not severe enough to cause the variations in this factor to be seriously reflected in the energy use per car-mile. But instances have arisen where, due to changing conditions, the traffic load has been considerably reduced on a property which was originally laid out for a certain density of traffic. The effect of the load factor is then quite noticeable. If the energy is metered at the cars, it is not necessary to take this factor into consideration in checking the effect of operating improvements, as the results are obtained directly at the car meters. But where it is necessary to determine the effect of changes in oper-

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ating conditions by measurement at the busbars, it is important to give this factor its due weight.

The manner in which the trainmen operate their equipment is the factor which has the greatest effect upon energy consumption of an electric railway. Reductions as high as 25 per cent have been obtained and maintained through the proper checking of their performance. The average reduction is usually well over 10 per cent, and where the conditions have remained constant, are easily discernible over a long period of years. Unfortunately, most properties have undergone more or less change in their operating conditions, and it then becomes necessary properly to interpret the effects of these changes when endeavoring properly to determine just how much energy saving has been made.

The usual practice in an Economy meter installation is to obtain an "As was" or normal figure, prior to the actual placing of the meters in service, to determine just what the entry consumption normally would be. This is most conveniently done by blindfolding the meters and taking midnight readings covering a period of a week, together with the corresponding mileage. This gives a figure for the blind or normal energy consumption for each type of equipment and each line. Then these results can be compared with the corresponding power house readings, and from these two figures a base can be derived from which to determine the future performance of trainmen. This base figure may be corrected for any changes which occur in operating conditions, as indicated in the preceding paragraphs. The difference between the actual energy used and this corrected base or blind figure gives the amount of energy which has been saved through the checking of car operators.

Rigid Frames Feature Electric Locomotives for Virginian Railway

Layout of Apparatus on These 11,000-Volt, Single-Phase Units Dictated by Adoption of Solid Framing Instead of Articulated Type—Several Extremely Heavy Pieces Had to Be Anchored to Prevent Shifting Under Severe Strains Incident to Buffing Shocks

By C. C. Whittaker
Railway Equipment Engineer Westinghouse Electric & Manufacturing Company

WHEN an electric locomotive is to have a maximum power output for minimum weight, the designer is at once confronted by a number of problems which must be solved by compromise. Heavy pieces of equipment must be located near the center of the locomotive and equally disposed about the center lines in order to minimize undesirable oscillations, either rolling or swinging, commonly called "dumbbell" effect. Current collectors must be located so as to minimize the effect of side displacement on curves. Equipment must be arranged so that minimum length of cab results and hence minimum length of cable runs and pipe. High-tension apparatus, where possible, should be inclosed in a grounded compartment as a safety measure. A minimum amount of inflammable material should be used and cable should be protected either by a flameproof braid, conduit or ducts. All equipment must be installed so as to offer the maximum facility for inspection, maintenance and removal for heavy repairs without greatly disturbing adjacent parts.

The Virginian Railway locomotives, which are used on the electrified section of that railroad between Mullens, W. Va., and Roanoke, Va., for haulage of heavy coal trains, were designed with a rigid frame or backbone steel casting which transmits all of the buffing strains, contains the bearings for the traction motor rotors, and for the jack-shafts. The supports for the electrical equipment and the cab housing this equipment are built directly upon this casting. The action in this design on the electric control apparatus had not been proved out previously by service, as former designs had the electrical apparatus mounted in a cab which was in effect spring-borne.

The arrangement in this present design is to give a massive bedplate on which the electrical equipment is supported. This large mass is not so subject to vibrations, due to inequalities of the roadbed, etc., as were the less heavy structures used previously. It does, however, take a greater share of the buffing impact, inasmuch as any bump is transmitted directly to the backbone frame or apparatus support. Earlier designs in which there are separate trucks and a cab mounted thereon by center pins have the buffing strains transmitted to the equipment in a less direct and more resilient path.

In the new design the liability of failure is transferred from a more or less continuous source of vibration to one infrequent but more severe. Realizing this, special care was taken in the manner of fastening the heavy pieces of apparatus to the locomotive frame to resist both the shear of their support and the tendency to overturn when maximum buffing strains are encountered.

The heaviest single piece of apparatus, the phase converter, weighing 30,832 lb., is held down by twelve 1½-in. bolts and in addition is keyed against a longitudinal displacement by being wedged within a depressed portion of the locomotive frame casting.

The second largest piece, the main transformer, weighing 25,000 lb., offered a new problem, inasmuch as it is of an oil-insulated, forced-cooled type. As hot oil is extremely difficult to hold by any ordinary form or riveted or calked joint, it was decided to build the

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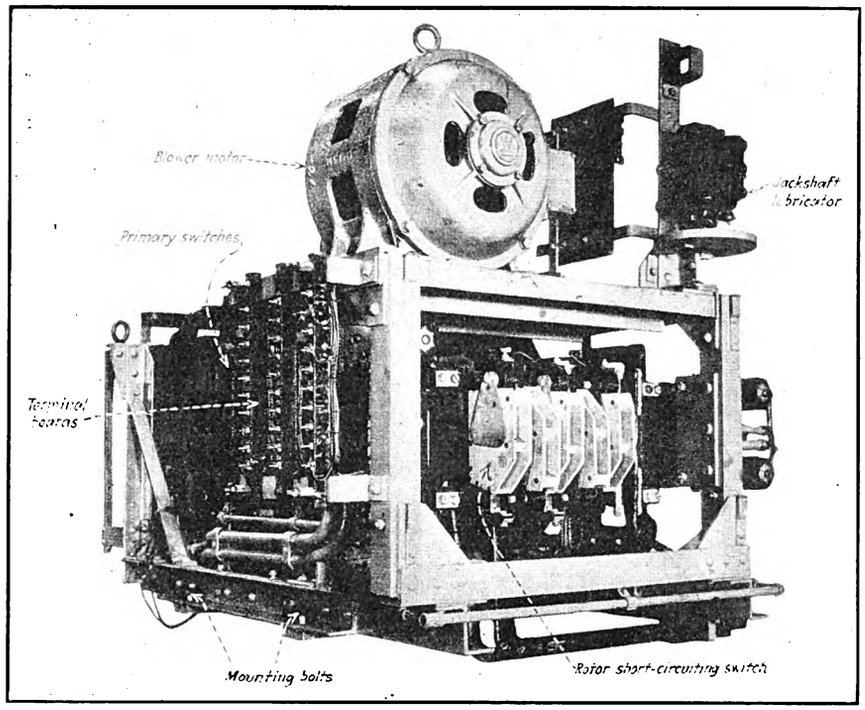


The Apparatus for the Control of One Traction Motor Is All Assembled in a Complete Unit

transformer tank as a cylinder with one triple-welded, vertical seam, and with the bottom flanged, riveted and welded to the sides. These are shown in accompanying drawings. In addition, the bottom is reinforced by I-beams, on which the weight of the transformer itself is carried. This cylindrical structure, when fastened securely at the base, has sufficient rigidity to withstand shocks met in service notwithstanding the high center of gravity of the complete transformer. It is held down by eight 1¼-in. bolts and is further wedged between fitted lugs to guard against longitudinal displacement.

The transformer projects through the roof and has its top removable for inspection. All leads, both high and low tension, are taken through special insulating bushings in the side of the tank which are properly shielded from the weather. Where the low-tension copper strap leads that are cleated to the cab structure join to the transformer terminals, flexible copper braid leads are interposed to accommodate any slight motion that may exist between cab shell and transformer tank.

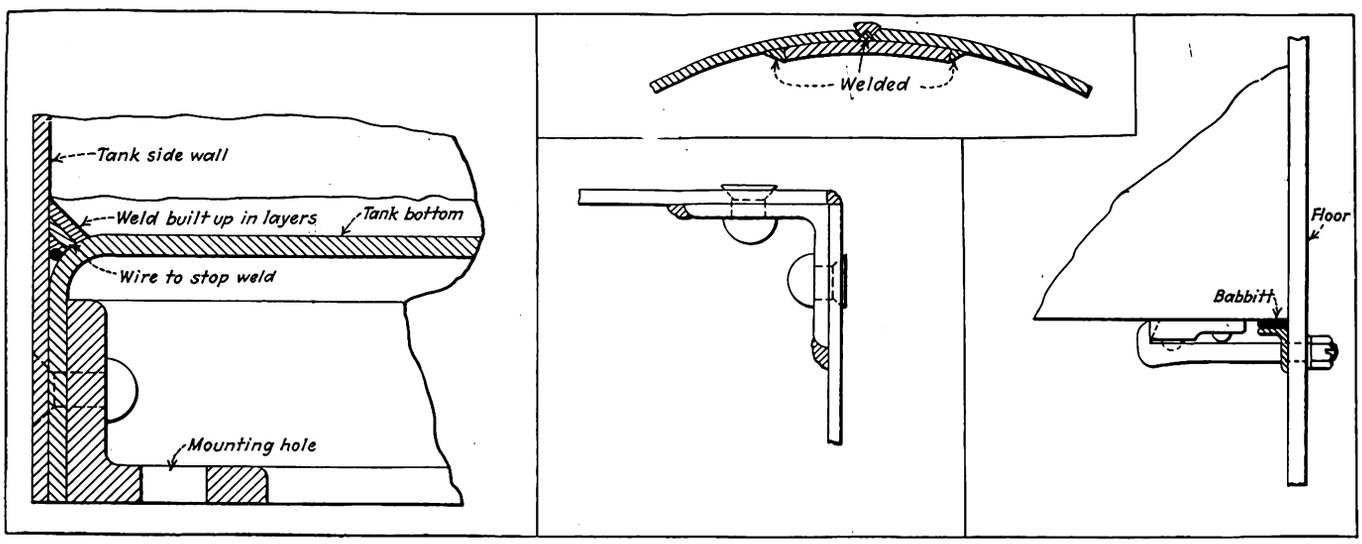
The third heaviest piece of apparatus, the liquid rheostat, weighing 21,900 lb. complete, has a relatively large base and a low center of gravity. Its tank is rectangular, with corners reinforced by inside angles riveted and triple welded. The whole tank rests on the floor of the cab and is surrounded by an angle frame riveted to the floor. The space between this angle frame and the rheostat tank is filled with babbitt. The tank is held down by "J" bolts at each end, as shown in one of the diagrams. Flexible cable is employed for leads to the rheostat.

On account of the rigidity of the rheostat and transformer tanks and the relatively flexible cab superstructure, both of these tanks, where they project through the roof, have an opening of ½ in. all around, properly shielded from rain. This allows for possible sway so that undue strains will not be imposed on the tanks by movement of the cab.

Three-inch flexible steel pipe is used to conduct the oil from the transformer to the circulating pump and radiator. The use of this type of pipe obviated the necessity of bending stiff pipe to exact shape so that when its ends were drawn tight in final position no strains would be set up. It also decreased the liability of leaks at pipe joints due to vibrational strains.

An assembly of apparatus for the control of one of the traction motors, shown in one of the illustrations, is mounted directly on the frame of one of the traction motors. It is held in place by four bolts and is interchangeable with any other similar assembly. It includes all the control items common to each traction motor, such as the blower outfit, motor primary switches, pole changeover, short-circuiting switch, terminal boards, and jackshaft lubricator.

Since these motive power units may be run singly,



Top—Section of Triple-Welded Vertical Seam Transformer Tank. Left—Method of Riveting and Welding Bottom of Transformer Tank to Sides. Center—Riveted and Triple-Welded Angles Reinforce Inside Corners of Liquid Rheostat Tank. Right—Method of Fastening Liquid Rheostat Tank to Floor of Motive Power Unit

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or in groups of three or four, special attention was given to the operation of the pantographs from the standpoint of safety. When two or three cabs are used in multiple, a bus line extends the full length of the locomotive. This bus line is energized whenever any one pantograph is against the trolley wire. Consequently, if it becomes necessary for a man to go onto the locomotive roof, his first act before ascending is to lower all pantographs and then to throw in the bus line grounding switch. This feature protects the attendant while on the roof from the accidental release of any pantograph. If for any reason a pantograph should become disabled it can be conveniently disconnected from the bus line and locked down by means of the same plug and flexible cable that is used to connect the pantograph to the bus line. When in case of an emergency condition a pantograph must be unlatched or pulled down from a position on the ground, a 15-ft. impregnated wood hook stick is provided. This stick is normally carried in a length of conduit on the side of the locomotive and is thus always dry.

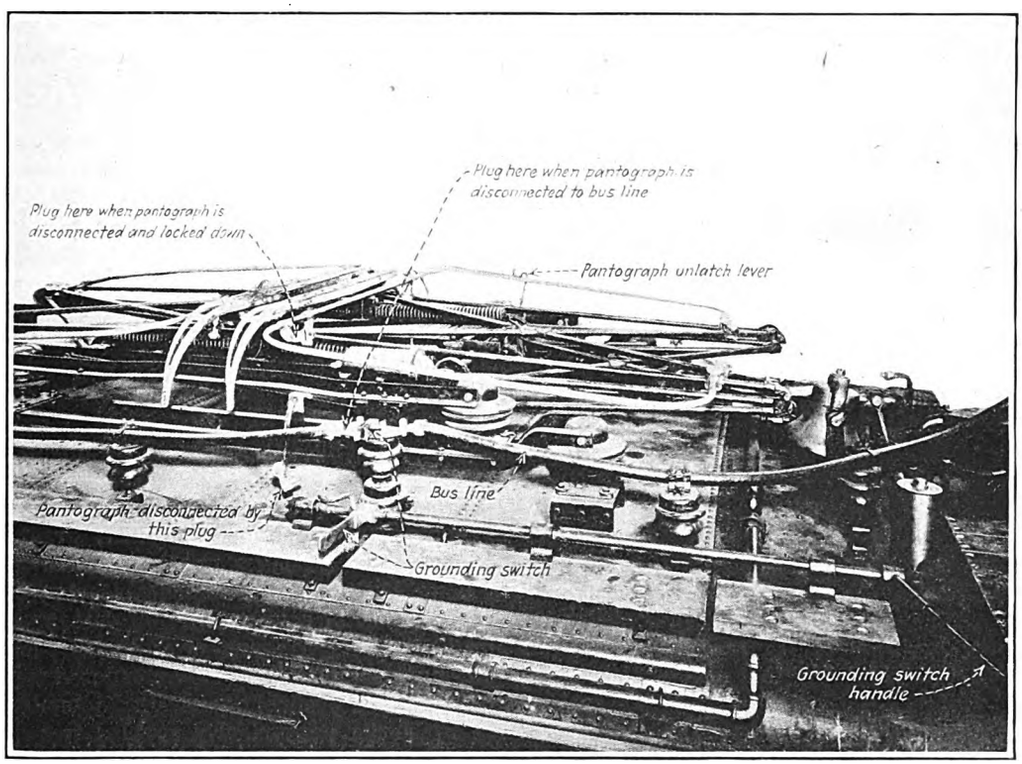
These locomotives are at present operating under an 11,000-volt trolley wire. All wiring and insulation in connection with the pantographs, however, has been laid out suitably for subsequent operation on a 22,000-volt line. Provision is also made so that a second pantograph may easily be added to those cabs operating as single units.

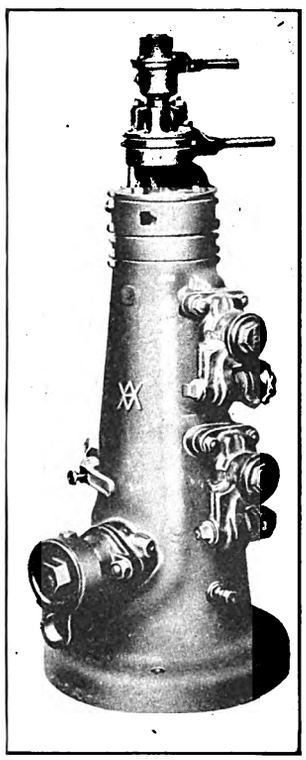
Sand boxes are filled from the outside. By this means much of the undesirable sand dust is prevented from coming in contact with the electrical equipment.

Eight ammeters are required in front of the engineer to indicate the performance of the complete locomotive when four cabs are operating in multiple. Usually, however, three units comprise a complete locomotive. These meters are of the edgewise type and are arranged in two rows of four each, one above the other. By means of these meters the engineman can tell the load on each unit, and therefore regulate the proportion of the total that each is taking. The meters also indicate when any of the units slips its drivers.

All auxiliary motors are controlled by a pneumatically operated remote-controlled cam switch group. Each individual motor is provided with a quick-break knife switch which is used merely for disconnecting. In order to guard against the improper manipulation of these switches when alive, a set of guards is provided which completely incloses each switch and its fuses, with the exception of the handle.

The air-brake piping at the engineer's stand was greatly simplified by the development of the K-14-A brake valve pedestal bracket. Ducts were cast in the walls of the pedestal to take the place of pipes which on other equipments connected to the brake valve to feed and reducing valves, brake pipe cutout cock, equalizing reservoir and other details. The space within the pedestal became the equalizing reservoir. By means of this pedestal construction a large amount of difficult and unsightly pipe fitting was made unnecessary, eliminating in all approximately 40 threaded connections and resulting in a more reliable system of air brake piping.





At Left—The Virginian Locomotive Pantograph Includes a Number of Special Features. At Right—The Air Brake Valve Pedestal Contains All Air Control Equipment

Red Coats to Protect Track Greasers

THE Wisconsin Public Service Corporation, Green Bay, Wis., has outfitted its track greasers with red coats. These coats serve to make the workmen more conspicuous and also to distinguish them from ordinary pedestrians. During dark days the track greasers also attach red lanterns to their grease pails for further protection. During several months use the coats and lanterns have proved to add largely to the track greasers' safety.

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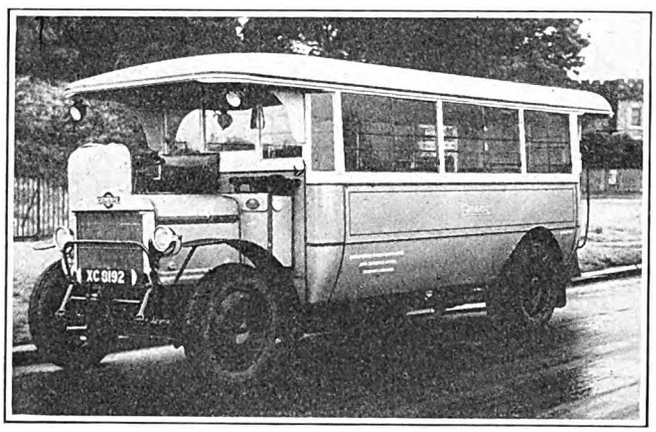
New Buses for London Feeder Service

TO ENCOURAGE traffic for the extension of the City & South London Electric Railway from Clapham to Morden, Surrey, the London General Omnibus Company has arranged to run new and luxurious single-deck buses on pneumatic tires to six districts beyond the Morden terminus. The forecourt of the station has been planned for the accommodation of buses.

The new type of bus, which is described at length in the *Tramway and Railway World* for Aug. 19, seats 22 persons, sixteen in cross seats and six in longitudinal seats at the rear end. All seats are of a new armchair pattern, assuring each passenger ample room and comfortable riding. The cushions are spring-filled, padded and upholstered in antique green leather. The center of the back has a spring squab which is separately fixed. Surrounding this is a spring roller which fits the passenger's back and prevents any tendency to side roll when the vehicle is in motion.

A semi-elliptic roof is used. All windows are of the half-sliding type and three center pivot ventilators also



Single-Deck Two-Man Bus Recently Developed by the London General Omnibus Company for Feeder Service

are provided. The interior paint work is white, the exterior being in French gray with wine color lining. A standard "K" type chassis with pneumatic tires carries the body.

Until the railway extension opens for traffic at the end of the summer eleven of the buses are working from Wimbledon station to Worcester Park station, Cheam and Burgh Heath as Routes 155, 156 and 164. Nine more of the machines are in course of construction.

The new extension will be a boon to South London and the outer suburbs, as it will serve a population of about 300,000 persons and give through service to other routes on the Underground system. The journey from Morden to Charing Cross, now occupying 50 minutes, will be made in 29 minutes, a saving of 21 minutes.

Accident Prevention Plan in Effect in Oklahoma City

A PLAN intended to reduce the number of accidents to employees and the public has been put into effect by the receivers of the Oklahoma Railway, Oklahoma City, Okla. Trainmen and bus drivers have been divided into eleven teams of eighteen men each and the team having the best safety record at the end of each month will receive $100. The trainmen decide whether the entire prize will go to the team making the best score or whether a part of the money shall be awarded to the second place team. Receivers of the Oklahoma Railway report that the employees have entered into the spirit of the contest and that the riders are showing a desire to co-operate in the accident prevention work.

Popularity Cycle of Street Car

Baltimore People Are Finding that It Pays to Ride the Cars—New Equipment, Greater Comfort and Speed Contributing Factors

REASONS why street car riding in Baltimore is increasing are set forth in an interesting statement made public by the United Railways & Electric Company, Baltimore, Md. The company says that people are finding out that it pays to "Ride the Cars." During the first six months of this year there has been an increase of nearly 4 per cent and the company has been able to furnish 9,145,832 more seat-miles from Jan. 1 to May 31 than it was able to furnish in the corresponding period of last year. Since September of last year, the company says, it has been able to drop nearly 100 more or less obsolete cars from its equipment and, as a result of an intensive car construction program, coupled with a scientific study of each of the company's 35 lines, in which running time, layovers, traffic and peak loads were thoroughly checked up, there have been many improvements. These include the adoption of a system of interline operation whereby cars assigned to one line may be put to work on another line on short notice to meet rush-hour emergencies, resulting in ability to make double use of many cars when most needed; greater frequency and less wasted car-miles, substitution on one line of cars seating 47 passengers for cars seating 36, substitution of two lines of cars seating 36 passengers for cars seating 30, doubling the number of 60-passenger trail cars on one line; completion of 26 articulated two-car trains, with six more probably ready in September, and completion of eleven permanently coupled two-car trains.

In answer to the question "Why is street car riding increasing," the company makes some pertinent comments on periods of popularity through which the various transportation agencies pass. The trolley car, having lived down the stigma of "nobody rode the street cars unless they had to," is approaching a new cycle of popularity, but from a different angle. In the good old days the electric cars were used for pleasure only and the favorite seat was right up behind the motormen, "with the breeze booming full in your face and the track through the summer countryside slipping away right in front of you beneath the rolling car." Then shortly after the automobile was heralded as the invention of the hour and was rushed into service on the slightest pretext. But now another cycle has swung around.

The statement of the company concedes the greatness of the automobile—"for benefits to mankind neither the airplane nor the radio compare with it. But people in big cities are now coming to the conclusion that they are more comfortable downtown at business if they leave the automobile at home. And so the cycle of popularity comes around again for the street car."

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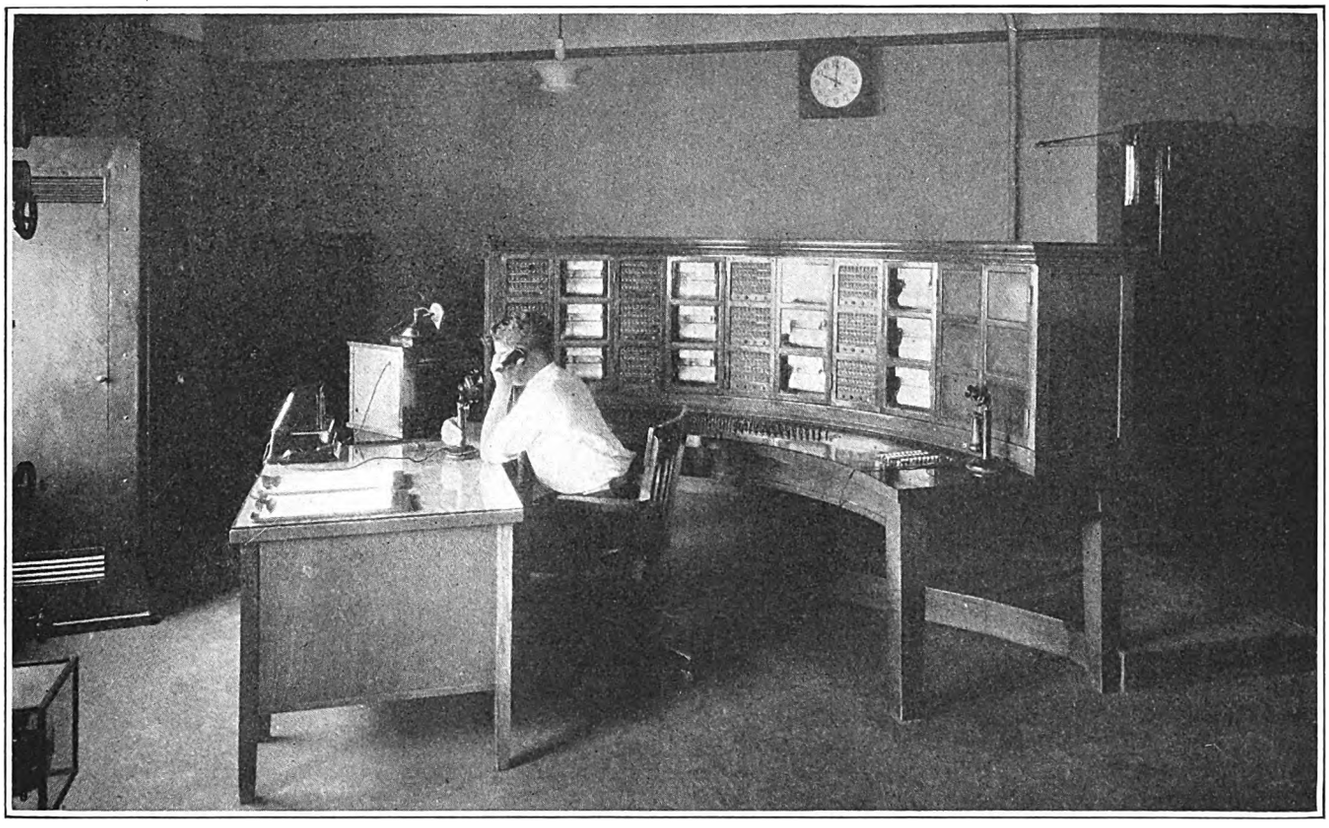
Cleveland Railway Extends the Use of Automatic Substations

THIRD ARTICLE

The Remote and Supervisory Control Systems Were Developed for Economy of Operation and Ease of Load Transfer—Entire Control Centers in Company's Main Office, Where the Load Dispatcher Is at All Times in Touch with the Whole Power Conversion System

By L. D. Bale
Superintendent of Power the Cleveland Railway



The Heart of the Supervisory Control System
At this desk the load dispatcher is in communication with all the substations and has before him complete knowledge of what is taking place

MOST important among considerations leading up to the development of the remote control and supervisory system as used on the Cleveland Railway were (1) the necessity for correlating the operation of automatic substations one with another and with those manually operated so that the most economical operation of individual stations would result; (2) to insure the ability to shift or transfer load at will in the event of station or system trouble; (3) control the direct-current feeders in the automatic substations and facilitate the clearing of grounds wherever possible by the "burning-off" process. It is only by the use of such a scheme that the demand of the management for maximum insurance against service interruptions involving either individual feeder sections, local areas or the system as a whole could be met.

As a rule the dispatching of load on a system depends on the dispatcher being in immediate touch with the operatives of the various substations under his control. In this manner he is in a position to issue instructions to them, based upon knowledge of the condition of the system, and is able to handle emergencies fairly well.

With the advent of the automatically controlled substation the dispatcher would have neither the necessary information relative to the operating conditions of the stations or system nor means at his command for changing them. The scheme of remote and supervisory control places the dispatcher in a position where he is at all times fully informed as to the condition of the system and the occurrence of any trouble, such as with a.c. and d.c. feeders and converters. He has at his command facilities whereby, at a moment's

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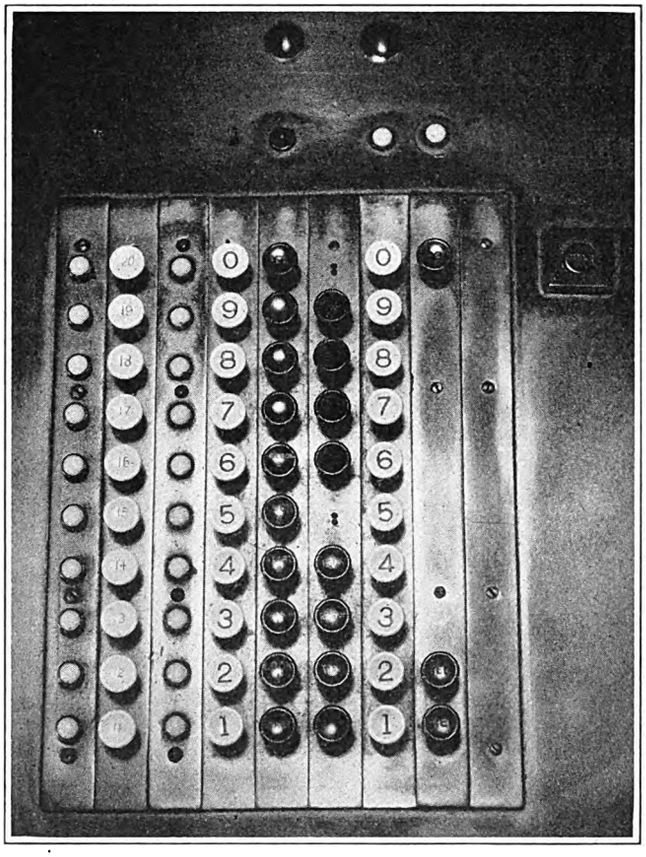


Remote Control Key Plate

Through this device the load dispatcher can operate the mechanism in the various controlled substations

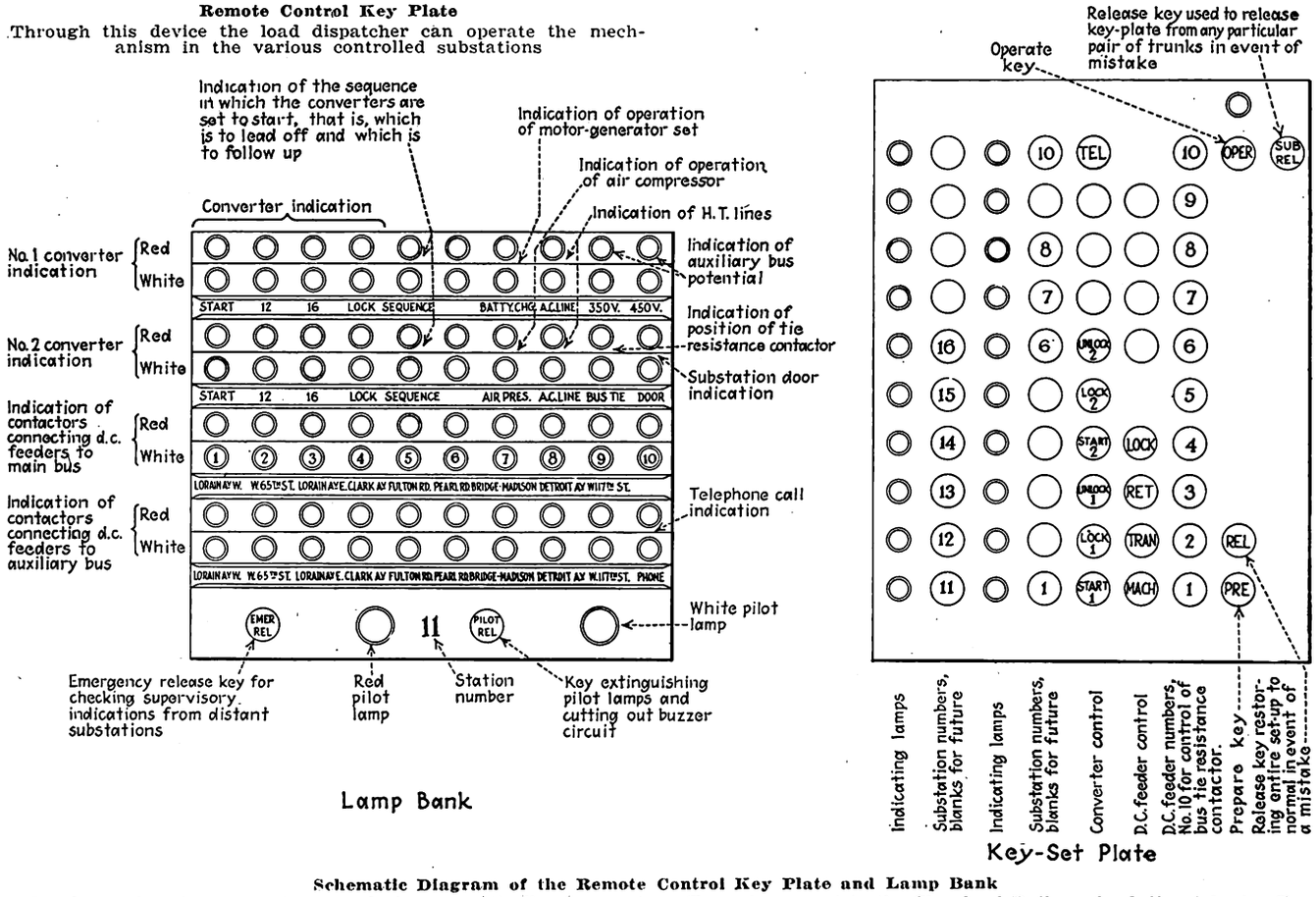
notice, he can bring about changes in the operation of any station, stations or equipment necessary to rectify conditions which may exist.

Control Centered in Executive Offices

The dispatching center is located in the executive offices of the company, which are situated at the approximate geographical center of the system. The dispatcher's desk as now installed provides facilities for the control and supervision of fifteen automatic substations. Its compactness may be seen from the illustration. A duplicate of the present desk will be installed for proposed stations.

The cordless telephone board, seen at the left of the control board, enables the dispatcher to communicate directly with the operators of the manual stations. Connection from the dispatching center to each automatic substation is obtained through two leased pairs of underground telephone conductors. One pair of these wires is used for remote metering and also acts as a common side for the control and supervisory system, the other for the opposite sides of the signal and control circuits. Telephone communication is had through condensers and repeating coils over the two wires of the latter pair. The single-line diagram illustrates the relays and the principal elements comprising this system.

The turret or vertical portion of the desk is sectionalized so that each substation is represented by a group of red and white lamps and a graphic ammeter. A



Schematic Diagram of the Remote Control Key Plate and Lamp Bank

By depressing the proper key a code is automatically set up at the relays in the load dispatcher's office, which is in turn automatically forwarded over two of the four control wires to the proper substation. This view indicates the diagrammatic plan of the lamp bank on which the various functions are indicated in the load dispatcher's office. One of these lamp banks is used for each substation automatically controlled from the load dispatcher's office. At present in the Cleveland Railway load dispatcher's office there are ten of these lamp banks on the vertical portion of the board. When a converter is started the operator may observe from the flashing of the lamps the sequence of the operations as they are performed. Adjoining each of these light panels is an indicating and recording ammeter which shows the total load on each automatic substation.

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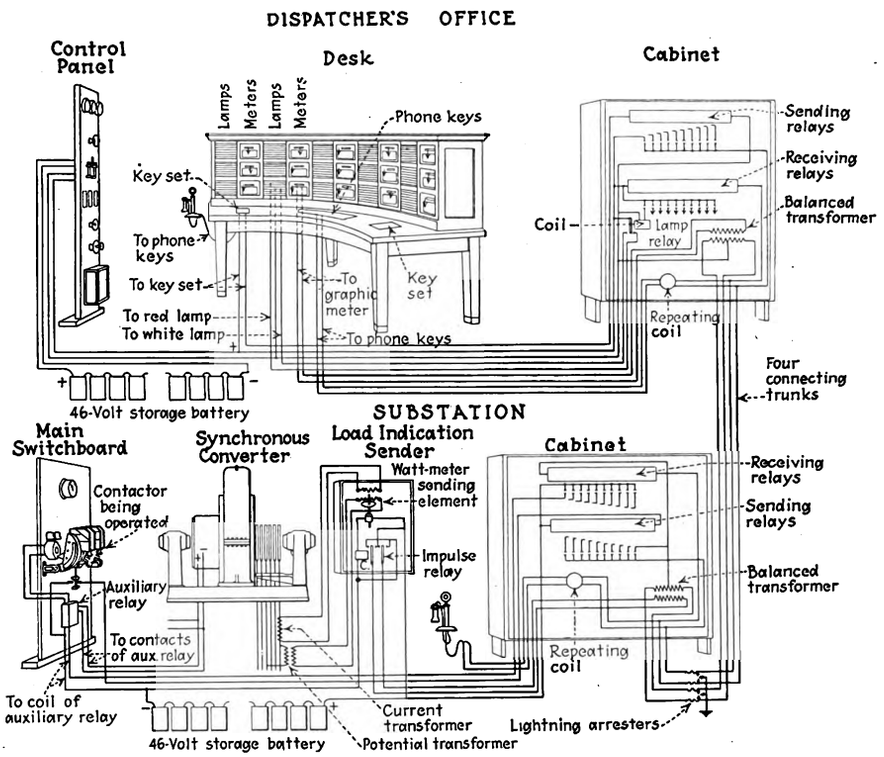
sender, consisting of automatic telephone-type relays located in the control cabinet at the substation, automatically sends impulses or code over the trunks to the office on the operation of power control or conversion apparatus in the distant substation. A corresponding chain of relays at the office receives this code, setting up a selection which operates a relay controlling the lamp circuits of certain red or white lights indicating the operation which has taken place at the substation.

As the code is received at the office and preceding the change in the lamps which indicate the functioning of equipment a buzzer sounds and a red or white pilot lamp, connected with the substation group of lamps, lights. The red pilot lamp indicates that the closing of a contactor or a starting operation is taking place, while the white lamp denotes the reverse. The object of these pilot lamps is to call the dispatcher's attention to the substation in which a change is to take place.

The supervisory mechanism is so arranged that after one code set up by the operation of power equipment is completely sent to the office it is ready to respond to the operation of any other power equipment which has operated in the meantime. In other words, if several pieces of substation equipment operate simultaneously, the corresponding codes are stored up in the substation cabinet and are sent to the office, one after the other, with the highest code number having preference.

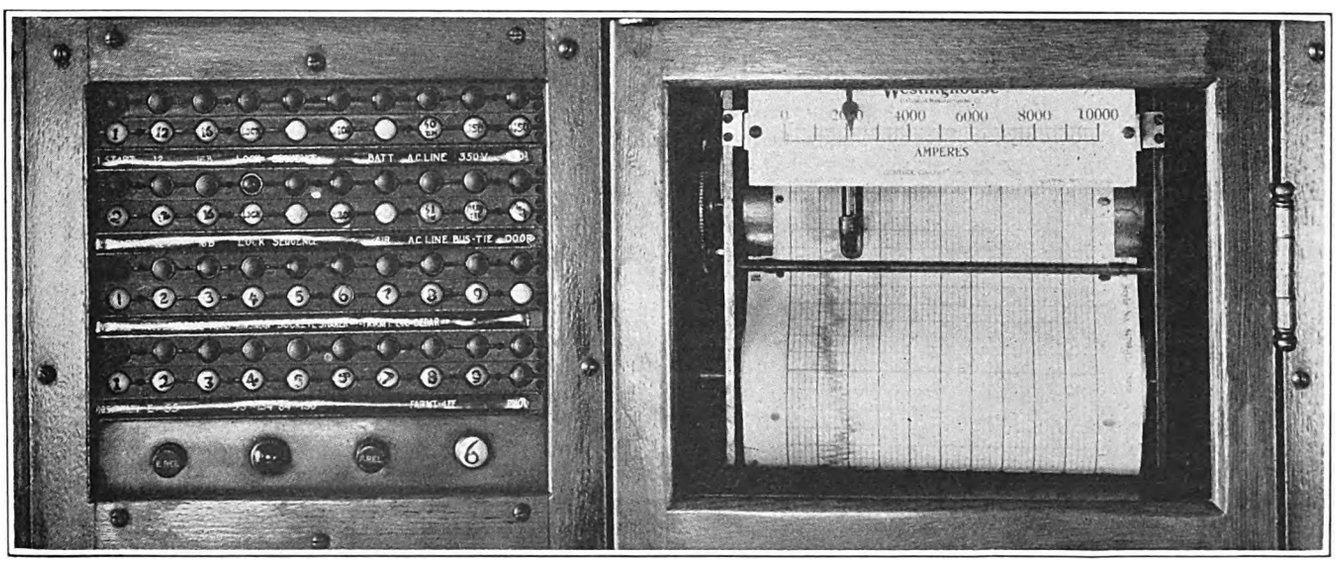


Simplified Single-Line Diagram Showing Connections between the Load Dispatcher's Desk in the Hanna Building of the Cleveland Railway and a Typical Substation Several Miles Away

The load dispatcher's office equipment is indicated at the top of the diagram and shows the load dispatcher's desk, as at present erected for fifteen substations. When more than fifteen automatic substations are in service a second unit, completing a semicircle, will be added. In the cabinet at the right are the banks of relays that automatically send the code to the corresponding cabinet in the substation. If two signals are by chance given simultaneously, the cabinet stores one of them while the other one goes through, when the second will automatically follow as soon as the circuit is clear. The cabinets at both the sending and receiving ends are either for sending or receiving codes. Only four wires connect any one substation with the load dispatcher's office, two being used for the operating code and two for the recording meter connection.

METHOD OF ACTUATING CONTROL FROM OFFICE

A set of 36 keys of adding machine type is located on the dispatcher's desk. Each of these keys is inscribed with the insignia denoting its function. It will be noted in the drawing that each automatic station is represented by a key in the first or second rows on the left side of the key plate; the next row is for converter operations; the fourth row for d.c. feeder operations, and the fifth, d.c. feeder numbers. If the dispatcher wishes an operation in a certain station to take place he depresses the key corresponding to the number of that station. By so doing one relay-type sender of the key set is connected to the trunks of the



Supervisory Lamp Bank and Remote Load Indicator for One Substation

This is the upper left hand section of the vertical control board, showing the appearance of the equipment whose connections are given in the line drawing. Space is provided for fifteen of these sections

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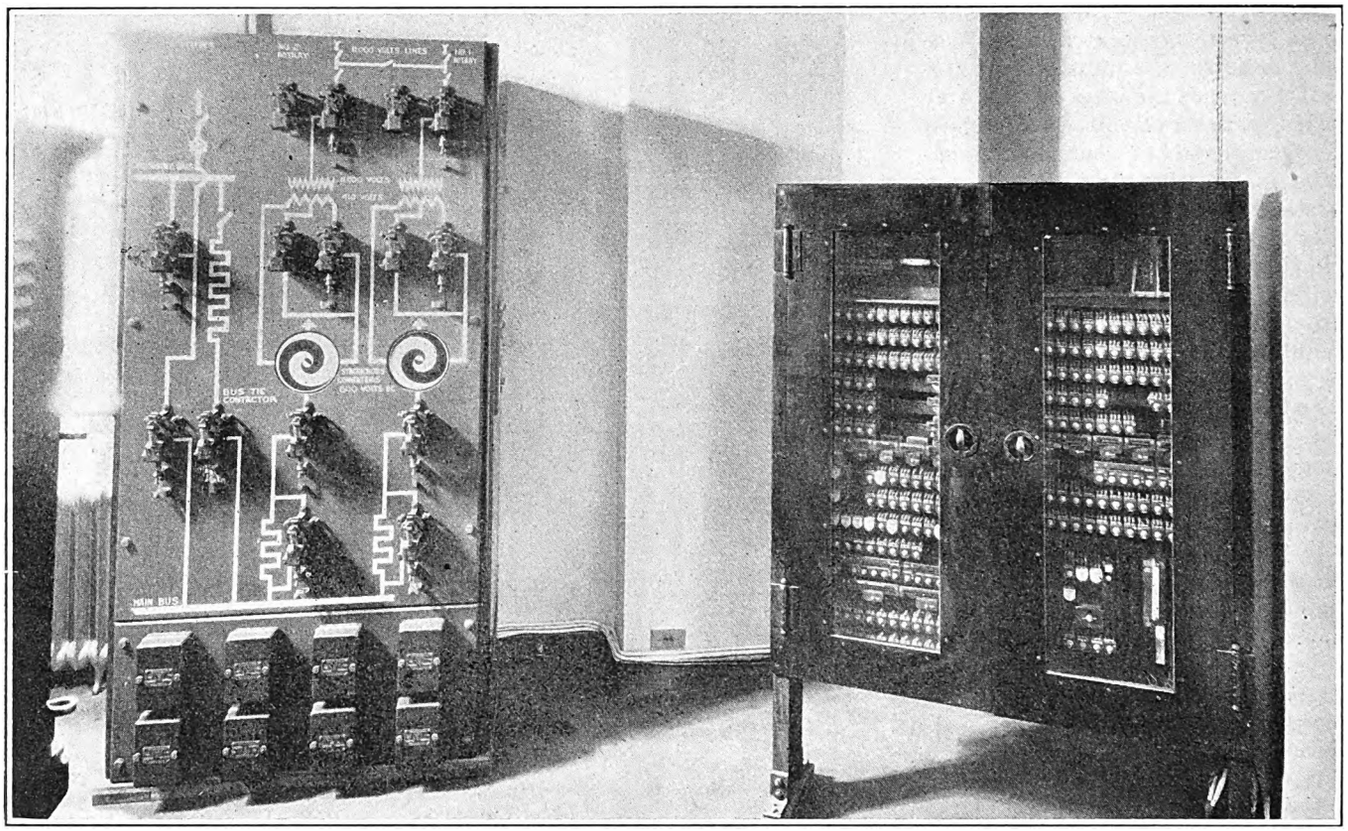

A Model Automatic Substation and Its Remote and Supervisory Control Cabinet Are Set Up in the Dispatcher's Office for Demonstration Purposes

automatic station in which he desires to bring about a change. He next depresses the key or keys bearing the designation of the operation he wishes to perform. Then the key marked "prepare" is depressed, after which the relay sends impulses corresponding to the code set up by the depressed keys. The code is received at the substation by a chain of receiving relays and energizes the selection relays, which lock in a closed position. The selection automatically imposes potential on the auxiliary switch of the power apparatus which the dispatcher wishes to operate. A code is sent back to the office, changing individual lamps so as to indicate to the dispatcher whether the circuit which has been set up will, when energized, operate the particular piece of equipment as contemplated. If the check-back is satisfactory the dispatcher depresses the "operate" key, which momentarily changes the lamps to the former condition and then operates the equipment. The code is again sent to the office, changing the lamps so that they indicate the operated or final condition of the power apparatus.

If the check-back is not satisfactory the dispatcher depresses the "release" key which restores the supervisory relay equipment at office and substation to normal without operating any power equipment. This phase of the control is an exceedingly valuable adjunct as it enables the dispatcher to check the correctness of his operation and that of the equipment, thereby insuring freedom from false operations.

Telephone communication is had between the dispatching center and the automatic substations over the connecting trunks. No interference is experienced between the control and supervisory codes and telephone communication.

The equipment of each automatic substation includes a device known as a load indication sender. This consists of a watt-hour meter, the elements of which are energized from transformers in the converter circuits. A relay energized through the commutator of this meter imposes impulses on one pair of the trunks connected to the office. The frequency of these impulses varies with the speed of the meter; that is, with the load of the station.

The impulses received at the office are translated through a polarized relay in conjunction with a special meter, so as to cause the movement of a pen, producing an indication of current values on the continuous strip chart. The meter is also provided with a scale and pointer from which the dispatcher can read the load at all times.

A summation of the operations controlled in the distant substations from the dispatcher's desk are as follows:

Either or both converters can be started, stopped or locked out; outgoing d.c. feeders may be transferred from main bus to auxiliary bus, retransferred or locked out; i.e., disconnected from both buses; the contactor controlling the current-limiting resistance between the main and auxiliary buses may be opened or closed.

The dispatcher may observe from the lamps on the substation panels of his desk:

(1) The initial starting operation of converters.

(2) The closing of the first d.c. contactor which connects the converter to the load through the entire bank of current-limiting resistance, and the operation of the final converter contactor shunting out the last step of resistance.

(3) Indication of the positions of all the outgoing d.c. feeder contactors, whether connected to main or auxiliary bus or locked out.

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(4) The position of the contactor controlling the current-limiting resistance between buses.

(5) Whether or not the alternating-current supply lines are energized.

(6) A voltage indication, in two steps, of the auxiliary bus, thus acquainting the dispatcher with the progress being made during the burning off of grounds.

(7) An indication (in the case of the seven new stations) as to the operation of the motor-generator set used in connection with the control battery.

(8) A similar indication of the operation of the main air compressor.

(9) The opening and closing of the substation entrance door is called to the dispatcher's attention.

This last feature, in conjunction with the telephone, enables the dispatcher to keep in close touch with the maintenance men as they move about the system from station to station.

The system of remote control and supervision, as installed, does not supersede the functioning of the automatically controlled substation, but is merely superimposed or added to the automatic equipment. In the event of open or short-circuited cable pairs or trunks the control equipment is automatically disconnected from the substation through a system of trunk guard relays. The station then reverts to full automatic operation without the supervision of the dispatcher.

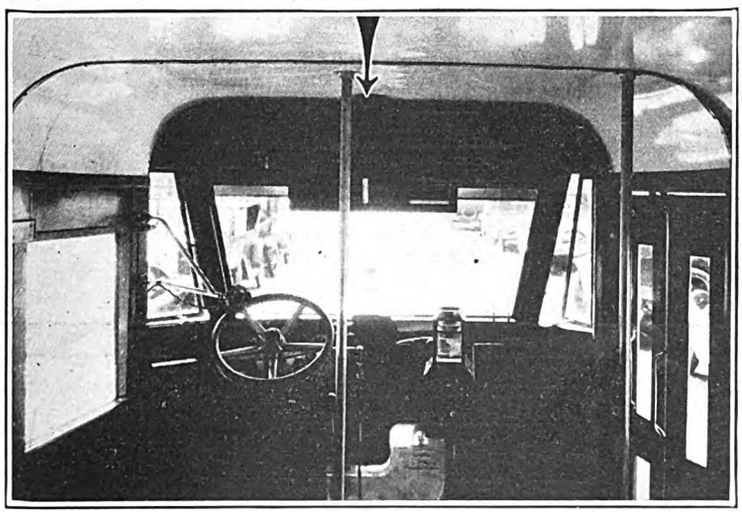
The "lock-out" feature mentioned in conjunction with the control and supervision of converters has been found desirable on this system. This is because the resistance between stations over the distribution system is low, which results in all converters on the system attempting to share a proportional part of the total system load at any given time. It can be realized that with this condition existing the converters in automatic substations would start automatically before they were required and likewise operate for too long a period, with the accompanying detrimental effect to the over-all substation efficiency. The dispatcher, to overcome this phase, holds off or locks out equipment which is not necessary for the available load.

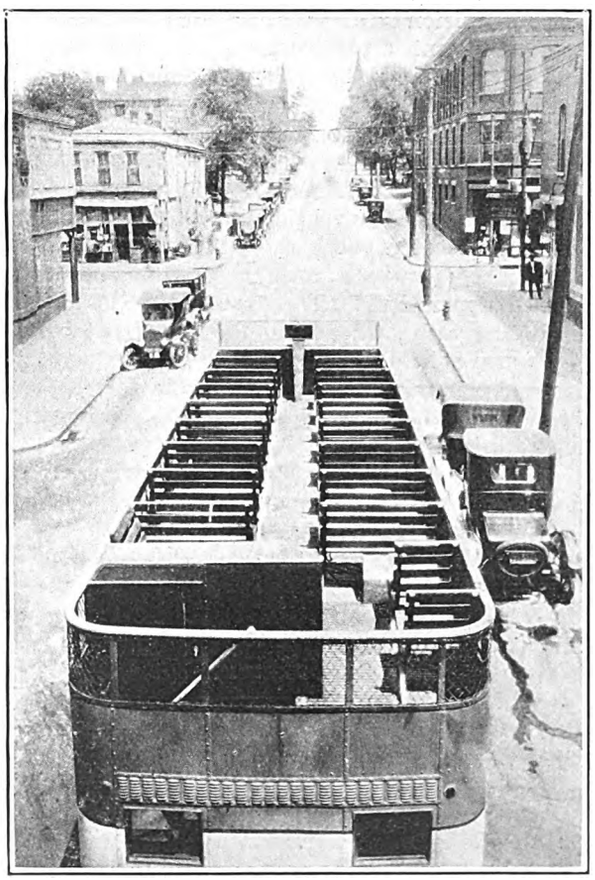
The "lock-out" position in connection with the d.c. feeders is provided to enable disconnecting of the feeders from both main and auxiliary buses in the event of a condition existing, such as a conflagration, on thoroughfares over which the feeders may extend.

Periscopes and Loud Speakers for Double-Deck Buses

Desiring to Operate Double-Deck Buses Under One-Man Control the Kansas City Railways Developed Special Equipment to Facilitate This

ONE-MAN operation of double-deck buses by the Kansas City Railways, Kansas City, Mo., has been made possible through the development of special periscopes and loud speakers with which to observe and direct passengers on the upper decks. When the buses were built in 1925 the plans called for both of these items of equipment, but apparently no periscope suit-





This Special Equipment for Viewing the Upper Deck Was Developed by the Kansas City Railways

At top, left—The top of the periscope is inconspicuous and does not interfere with the view of the passengers sitting on the upper deck.

Bottom, left—Arrow indicates the location of the periscope mirror into which the operator looks. At the left may be seen the loud speaker transmitter in the "on" position.

At right—Top view of a bus showing the periscope on the front railing.

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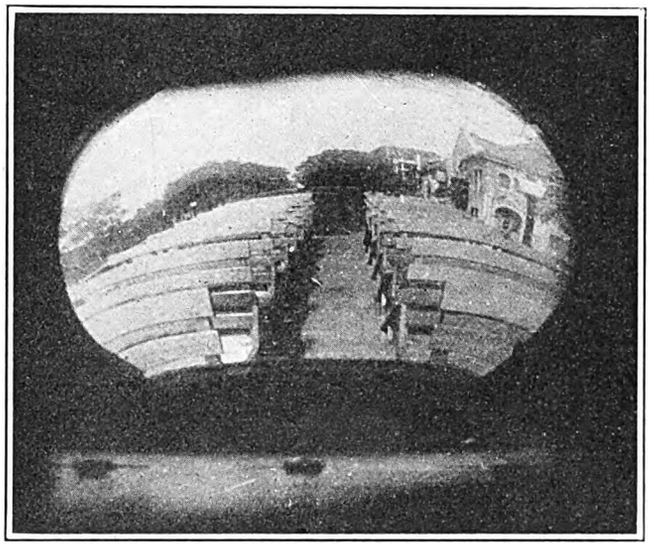
able for this type of service was available at that time. Those on the market were so designed that the view given to the operator was too small and required his entire attention in order to obtain even a distorted view of the upper deck.

It was desired to obtain a periscope which would make it possible for the operator to observe the upper deck without having to move his body or distract his attention from the road for more than a second. Under the supervision of R. W. Bailey, superintendent of power and equipment, a periscope was designed and perfected in the shops of the railway, and just recently the finished product has been installed on all of the eighteen double-deck buses operated.



What the Operator Sees When He Looks in the Periscope Mirror. The Picture Is Somewhat Blurred Because of Difficulties Encountered in Photographing a Triple-Reflected Image

No unusual features mark the loud speakers, which have been installed simultaneously with the periscopes. They are of the conventional radio amplifier type, with the horn located under the left front seat. From this point the operator's voice is plainly audible over the entire upper deck. The transmitter is located on a swinging arm attached to the left front corner post. This arm is held in two positions: "On," as is shown in an accompanying illustration, ready for the operator's use, and "Off," when swung out of the way next to the operator's door.

When in the "Off" position the switch controlling the loud speaker circuit is open in order to prevent needless consumption of energy. Moved over to the steering wheel in the "On" position the switch contact is made and the loud speaker is ready for use of the operator in calling the streets and making any other announcements necessary to passengers on the upper deck.

One energetic bus operator of the company recently saw in this new equipment an opportunity to render to his patrons a modicum of extra service not prescribed in the rule book. Fresh air fans crowded the upper deck of a Linwood-Benton bus as it rolled along Linwood Boulevard one hot night not long ago. Not a passenger sat below and a glance at the periscope convinced Vayne E. Lumpkin, the driver, that all was quiet and peaceful above him.

Suddenly, and apparently from out of the stillness of the night, came the announcement in a pleasant tenor voice, "Station BUS broadcasting."

Conversation halted. "Here," thought the passengers, "is something new in the way of bus service."

"When did they equip the buses with radios?" one asked of his neighbor.

Then came a few bars of a song familiar to all listeners-in—

"I'm sitting on top of the world,
Just rolling along, just rolling along."

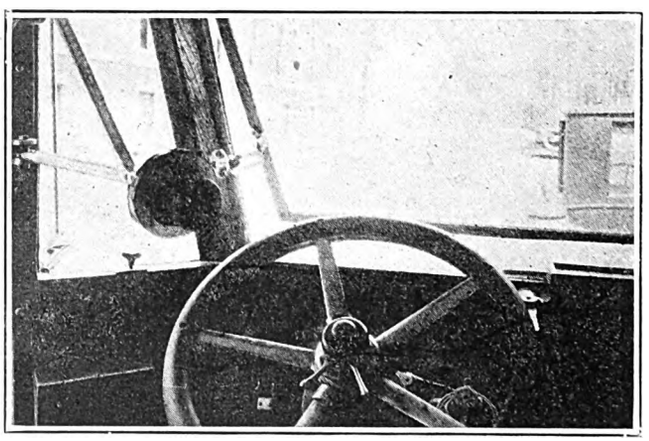
With this song and others were the passengers entertained. Soon most of them were convinced that there actually was a radio receiving set on the bus and that the periscope, staring vacantly at them from the front of the upper deck, was serving to carry the sound up to them.

Down on the driver's seat Vayne Lumpkin, with his eyes and mind on the road ahead, was singing softly into the mouthpiece of the announcing device, as much to himself as to his bewildered passengers.

The program continued, static-like sounds filling in between numbers and announcements being made in real radio fashion. One by one the passengers left the bus, few of them ever realizing that they had not been listening to a real radio program.

All of this was of course somewhat of a departure from usual procedure in bus operation and Mr. Lumpkin's example could scarcely be followed universally by bus operators with the same gratifying results. Of course a new school of training for embryonic singers might be established, making one's vocal attributes a factor in considering him for a driver's position.

The lower extremity of the periscope is practically unnoticeable from the viewpoint of the passengers on the lower deck, located as it is right at the ceiling line at the front of the bus. Yet its location is such that the operator in his seat need but glance upward at about a 45-deg. angle until his eyes focus on the lower mirror, the dimensions of which are 4 in. x 6 in.



Close-Up of the Loud Speaker Transmitter in the "On" Position, Ready for the Operator's Use

No more movement of the body is required to look into this plain flat mirror of the periscope than to glance into the rear vision mirror above the windshield. Neither does the height of the operator have to be taken into account in locating the periscope.

The periscope housing, or tube, extends up through the ceiling and front upper deck floor and is anchored to the upper arm rail, as shown in an accompanying illustration. It will be noted that the periscope is located in the center of the aisle (facing the rear), commands a clear view of the entire upper deck and yet does not obstruct the view of the passengers.

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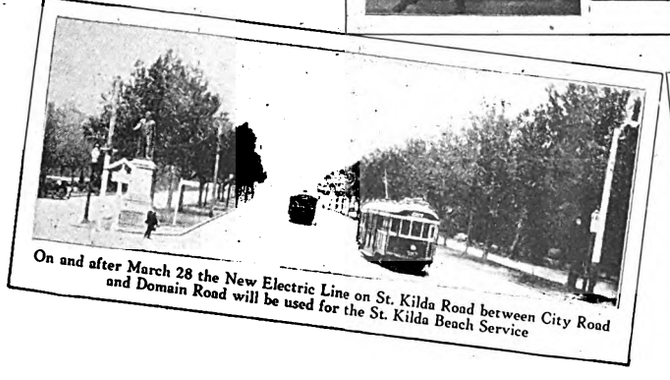
Selling Rides in Melbourne Through Car-Window Posters

REFERENCE was made editorially in the Aug. 14 issue of ELECTRIC RAILWAY JOURNAL to the use of radio broadcasting every Friday night by the Melbourne & Metropolitan Tramways Board, Melbourne, Australia, to secure publicity for week-end pleasure objectives via car or bus. Aside from this, the management has made excellent use of car-window dodgers which manage to combine an alluring picture with necessary text within areas from 8½ in. square to 12 in. x 18 in. The cost of an edition of 2,000 varies from £5 to £10, according to size and quality of the placard.

Like the New Yorker who has never climbed the Statue of Liberty or the San Franciscan who has never seen the Golden Gate at sunset, many a Melbourne resident needs to be reminded occasionally that he is living in and near scenes of great beauty. Such a reminder, for example, is furnished by the placard on Wattle Park. This park is a 137-acre reserve, the property of the Tramway Board, in which have been preserved many trees typical of the Australian "bush," such as the gum, blackwood, wattle and acacia. Its attractiveness has been enhanced by its establishment as a bird and game sanctuary. This park is within 7 miles of Melbourne and is reached for a trolley fare of 5½d. (11 cents) on weekdays and 6d. (12 cents) on Sundays. Two other recent dodgers show "A Quiet Corner at the Zoo" and the lake at Queen's Park.

The Australian's love for outdoor sports is catered to by one dodger showing a stirring football scene to accompany a schedule of six games on one day, while another advertises the "Melbourne Cup" in connection with "the sport of kings." Another dodger, announcing the opening of the electrified St. Kilda Road, gives a good idea of the side-door car now standard on the tramway lines in Melbourne.



Posters Are Used Effectively in the Cars at Melbourne, Australia

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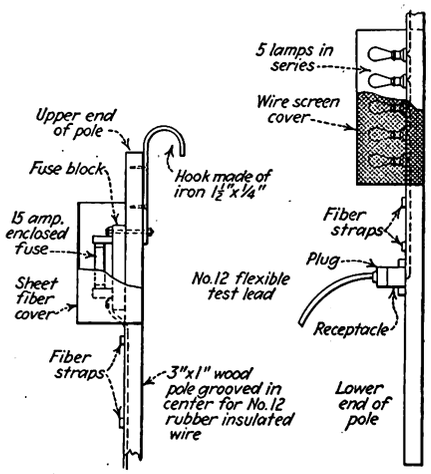
Maintenance Notes

Handy Testing Pole

WHEN testing out railway motors for short circuits and grounds and also for testing the car wiring in case of trouble it is quite common practice for the electric railway repairmen to use line potential with either a resistance or bank of lamps in series with the test lead. In many cases this test circuit can be attached directly to the car lighting circuit, but sometimes it happens that the ground or short circuit necessitates keeping the trolley from the wire. In that case it is convenient to have a pole-testing outfit which can be hooked over the trolley wire or attached to some other terminal with line potential.



Car Equipment Test Pole

The upper end of the pole shown at the left has a metal hook for making contact with the trolley wire and a fuse with sheet fiber cover. The lower end of the pole shown at the right contains a bank of five lamps and a receptacle for plugging in the test lead.

The accompanying illustration shows the details of a pole-testing outfit which has been found of particular convenience on a large Eastern railway system. The pole itself is 12 ft. long and is made of 1½-in. by ¼-in. stock. A flat iron hook 1½ in. wide by ¼ in. thick is attached to one end and a bolt at the lower end of this hook passes through the pole and makes connection with one of the terminals of a 15-amp. fuse block. An inclosed fuse of 15-amp. capacity is used in the circuit. The fuse block and fuse are covered with sheet fiber, the cover being open at both top and bottom. From the lower terminal of the fuse block a lead of No. 12 rubber-covered wire runs down the pole, which is grooved so that the wire is imbedded in the pole. Fiber straps 1 in. wide hold the wire in position. These are spaced 15 in. apart.

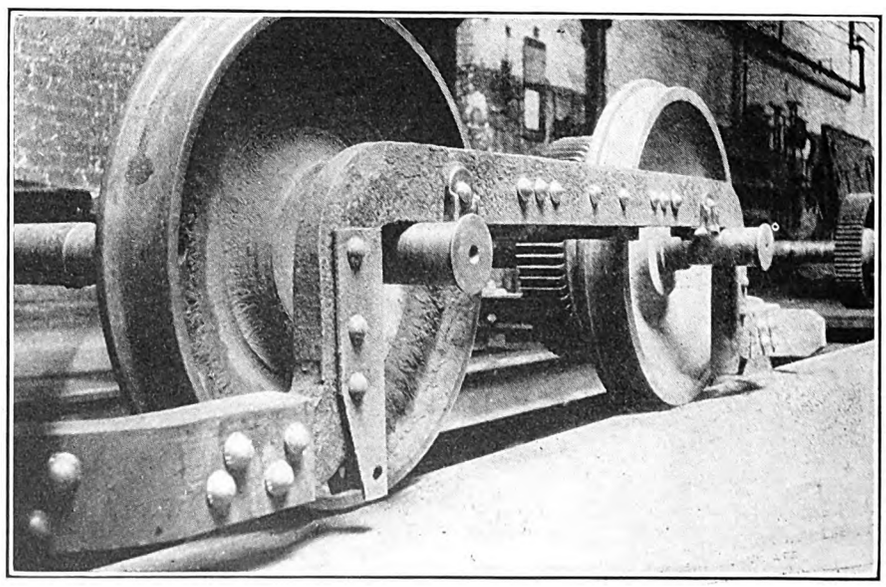
The lower end of the pole has rounded corners for convenience in handling and a bank of five lamps is installed along the pole, and just below this a standard receptacle so that the test lead can be plugged in. A wire screen hinged cover is installed over the lamps. This protects the lamps from injury and the hinged construction allows removal and replacement of lamps quickly. The plug and receptacle with a separate test lead has been found particularly convenient, since if the lead is attached permanently to the pole it is usually left loose and so is dragged along the floor, or if looped up it becomes injured quickly. This construction also makes it much easier for storage of test poles, since they can be placed in a rack without any loose dangling wires.

A test of car equipment frequently requires a current greater than will pass through five lamps in series. In such cases metal washers are placed in some of the lamp receptacles so as to short circuit them, and where equipment is being tested on the line side frequently all of the lamps are short circuited. This is the reason for using a fuse of such large capacity, as a smaller fuse would be sufficient if the lamps were always in the test circuit.

Rebuilding Trucks with Rivets Rather than Bolts

WITH the present-day development of cutting torches it is far more economical to cut off the heads of bolts rather than laboriously to unscrew nuts which have become rusted tight. Therefore, when the Berkshire Street Railway, Pittsfield, Mass., wishes to rebuild the trucks of its cars it has adopted the policy of cutting the old bolts out with torches and replacing them with rivets, which later may be removed in similar fashion. The rivets cannot become loosened and thus are not subjected to the battering which a loosened bolt must suffer from weaving structural parts.

The accompanying illustration shows a typical job of riveting which has been done on one of the company's trucks. It was stated that the time required for removing the old bolts by the cutting process is practically negligible, it being possible to remove a group of five bolts or rivets in from three to five min-



A Truck Frame Which Has Been Completely Riveted in Rebuilding

(Note—The wheels and axles shown are being used simply to support the truck frame.)

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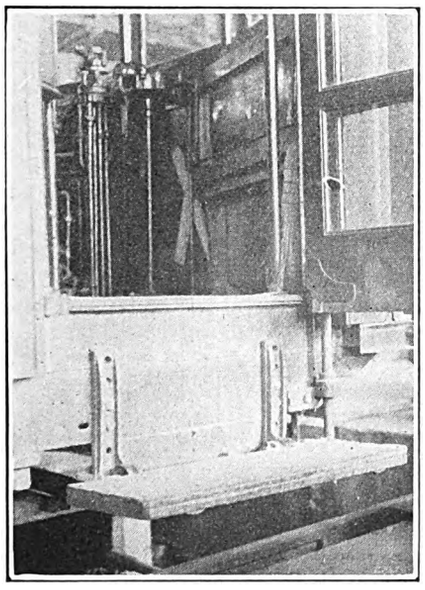
utes. Incidentally it is much easier to rivet structural parts which are difficult of access than to insert bolts and tighten nuts to the necessary degree.

Rubber-Covered Steps Prevent Accidents

RUBBER covering for steps is in quite common use in the industrial field, but for street cars it is somewhat of a novelty. It is being tried on one of the cars of the Levis



Rubber Covering Is Being Tried on the Steps of This Levis Tramways Car to Prevent Slipping

Tramways by H. E. Weyman, general manager, as a means to prevent step accidents due to slipping. Corrugated rubber of the type used for floor mats has been attached to the folding steps of the car. It is inconspicuous and does not interfere with the action of the mechanism. It does, however, provide a much surer footing, particularly in wet weather. While it has not seen service in the winter, it is felt that snow and ice will not cling to the rubber so tightly as they do to wood, and that there will be considerable cleaning action when the steps are opened and closed.

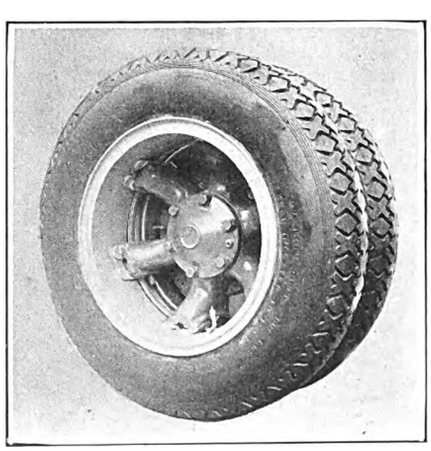
Preventing Leaks Around Car Sash

ONE of the questions discussed at the semi-annual meeting of the Electric Railway Association of Equipment Men, Southern Properties, was practical methods which have been used to prevent leaks around the sash of high-speed cars. The discussion showed that several companies have used channel rubber, others commercial putty or felt. One company is using a stationary vestibule sash. It was the consensus of opinion that felt or rubber used had not proved entirely satisfactory and that railways which had tried it were again using putty. The Texas Electric Railway, Dallas, Tex., has overcome leakage by putting a flanged piece of metal onto the sash and arranging it so that it comes up high enough to clear the sash, leaving a projection of ½ in. to ⅝ in., and by cutting off the beads usually found on the sash, a piece of metal being substituted for this. The steel used is No. 24 gage.

New Equipment Available

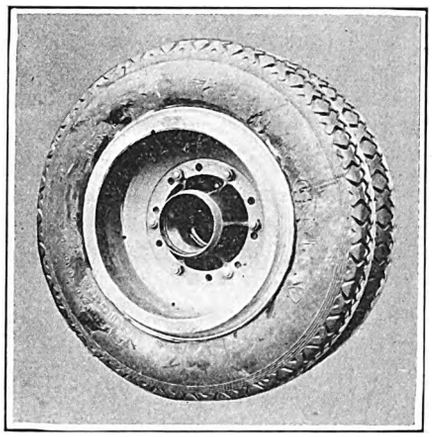
Cool Tires Feature New Wheel Design

AMONG the causes contributing to tire trouble and expense are unsprung weight and heating of the tires from the action of the brakes. To offset these difficulties, the Steel Wheels, Incorporated, of Newark, N. J., has just placed upon the market a new type of light-weight self-cooled automotive wheel suitable for buses and pneumatic-tired trucks. These wheels have been designed by Charles G. Keller, an experienced automotive engineer, and they embody patented features which render them unique in several respects. There is a system of ventilation or circulation of air, and as tests have shown the temperature of tires on the wheels so ventilated is considerably lower than on any standard type of wheel which had been formerly employed.



Outside View of Rear Dual Wheel

The Vulcan steel wheel, as this new wheel is known, consists of a cast-steel spider, integral with the hub and possessing a U-shaped hollow spoke with beveled spoke ends. It has no felloe, but is arranged



Inside View of Wheel Showing Intake for Cooling Air

so that the rims on which the tires are mounted are directly applied and locked upon the spoke ends. Any of several standard rims may be employed as well as a special rim manufactured by this company. The special rim contains the locking bolts that are integral with the rim and that are expanded or contracted in order to secure the rim or to loosen it from the spoke ends. When the fastening lugs are loose the rim with tire is turned until the fastening lugs are disengaged from the spoke ends. This allows the rim with tire to be removed easily in a bayonet lock action. The unsprung weight of this wheel is from 25 to 30 per cent less than that of a corresponding disk wheel of the same size, while the manufacturers say the price will not be appreciably more.

When standard rims, such as Firestone or Goodyear types, are used, the locking screw is applied to the end of the spoke instead of the rim. The expansion of the locking screw against the bevel surfaces of the spoke ends, however, holds the rim in place against stops which are integral with the spoke ends.

This method of securing and loosening the rim has no loose parts. The locking bolts are a permanent part of the wheel construction. Another feature of this locking device, when applied to dual tires, is that either the inside or the outside tire may be independently loosened or tightened with the wrench.

The spoke and the hub form a cast-steel spider provided with ribs which cause air to circulate through

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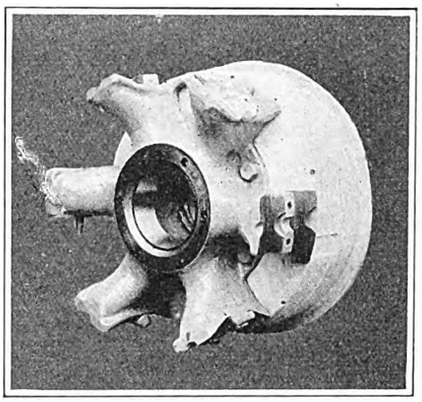
the hollow spokes from the hub to the rim. The circulating air then passes out over the outer circumference of the brake drum. A continuous flow is thus provided which has a cooling effect and prevents the tire from exceeding a temperature which might prove injurious to the fabric or rubber.

A recent scientific test has been made with a standard bus, on a long mountain road, in Pennsylvania.



Rear Dual Wheel Showing Hub Spider with Brake Drum but Without Rims

Vulcan wheels were applied to a bus weighing approximately 17,000 lb. and operated down a 2½-mile grade averaging about 10 per cent with air brakes applied. The tire temperature was then taken and compared with the temperature of tires run, under exactly the same conditions, upon standard makes of wheels. The temperature of tires upon the Vulcan wheels proved appreciably lower in each instance.

In addition to the test on the hill, a traffic test was made which consisted in subjecting the bus to 100 stops per hour for four hours continuously. At the end of each hour the temperatures of the tires and various parts of the wheel were read. In this case the Vulcan wheels showed appreciably less heat transmitted to the tires than in the case of standard wheels.

Large Capacity Oil Circuit Breakers

DESIGNED for either indoor or outdoor service, the General Electric Company announces a line of oil circuit breakers available in sizes of 400, 600, 800 and 1,200 amp. and voltages of from 15,000 to 88,000 inclusive. They bear the General Electric designations FK-236 and FHK-236.

The breakers rated at 73 kv. or less may be used up to altitudes of 10,000 ft. The 88-kv. breakers are equipped with "high altitude" bushings when used above 4,000 ft. The range of interrupting capacities for the FK-236 breakers is from 2,000 to 7,000 amp., and from 3,300 to 14,000 amp. for the FHK-236 type of breakers.

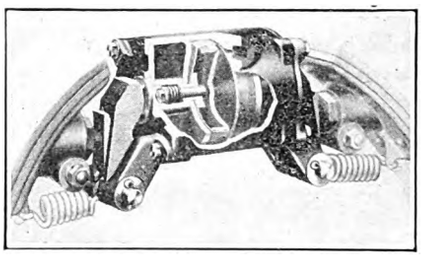
Each triple-pole breaker is made up of three single-pole, single-throw units operated by a single mechanism. This mechanism may be manually operated or electrically operated by either a solenoid or a motor.

Unit mechanisms are totally inclosed within the breaker frame and are, therefore, freed of any tendency to reclose under the action of unbalanced internal pressures which may be set up when opening under abnormal conditions. A larger air space is thus also provided, with consequent increase of interrupting capacity.

Of the two forms, the type FK-236 uses finger and blade contacts, while the type FHK-236 is equipped with plunger or rod type contacts and explosion chambers. With explosion chambers higher interrupting capacities are obtained, although both types are adequate for the service for which they are rated.

Brake Cylinder Leaks Overcome

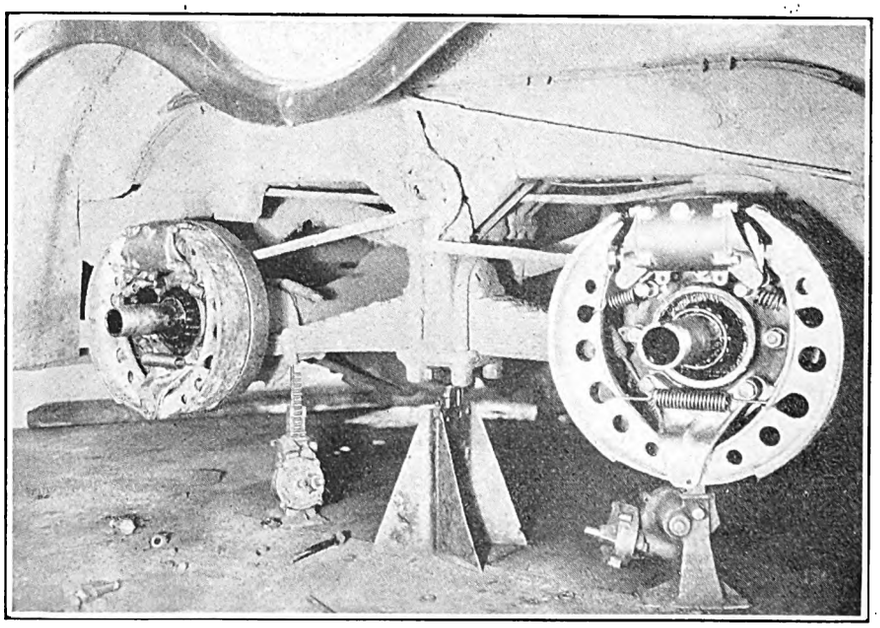
COMPARATIVELY short life of piston packing as compared with other parts of the air brake system for buses led the Christensen Air



Brake Cylinder Cut Away, Showing Sealtite All-Metal Piston Installed

proof and is unaffected by oil vapor which comes over from the compressor in the air line.

The Sealtite piston consists essentially of a thin, flexible alloy cup. Inside the cup is an expander ring having on its inner circumference a ball seat. The face of the piston is a valve plate which seats on the expander ring. It is held in position by a coil spring and nut. The coil spring exerts a sufficient pressure to keep the face plate firmly seated and the metal cup expanded against the cylinder wall. When air is admitted to the cylinder the pressure exerted on the face plate of the piston causes it to seat more firmly against the cylinder wall. Thus, the seal is tightened as the air pressure increases. To give rigidity to the complete piston assembly, a strong steel follower plate is fastened behind the cup.



Rigid Shoe Construction and All-Metal Sealtite Piston on New Cleveland Six-Wheeler

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Association News & Discussions

C.E.R.A. Master Mechanics Discuss Ways of Modernizing Equipment

REVIEW of the work accomplished toward improved car construction, efficient shop methods and high-class maintenance was the principal business of the experience meeting of the Central Electric Railway Master Mechanics Association, held at Sandusky, Ohio, Sept. 9. Thirty-five master mechanics and their guests attended the meeting.

In opening the discussion, Pierre V. C. See, president of the association, described briefly some of the work which the Northern Ohio Power & Light Company has been doing in Akron, Ohio. A new bus has been designed and built in the railway shops, the body being built by the G. C. Kuhlman Car Company, Cleveland, Ohio. The bus seats 29 passengers, has a 234-in. wheelbase, an over-all length of chassis of 320 in. and a frame height at the driver's position of 27 in. The bus, bearing the nameplate "Northern Ohio," will be exhibited at the October convention of the American Electric Railway Association. Its axle has the extremely high road clearance of 9 in. and is geared 6 to 1 so as to give extra power for hill climbing without undue engine speed. There are many severe hills around Akron. The railway has experienced considerable trouble from broken frames in the fleet of buses which it now operates, and in the new design considerable care has been devoted to this portion of the chassis. A 9¾-in. pressed channel frame was selected, which is tied together with members partly tubular and partly channel. Exceptionally large gussets were installed so as to prevent the possibility of any loosening at the joints.

The front springs have a novel method of mounting. Instead of the spring being dead-ended at the front of the chassis, it is anchored at the rear with the flexible shackle connecting with the shock absorber in the front.

In addition to building this new bus, the Northern Ohio Power & Light Company has remodeled 41 steel cars of old design for one-man operation. One car used in city service, which originally had end doors and platforms, has had a center door added and 3 ft. has been cut off the back end. This is a single-end car. Particular attention has been given to the method of painting to make this car attractive and also to seat upholstering, so as to provide an easy ride for passengers. In addition the company has also remodeled one interurban car. Among other improvements in maintenance methods which have proved of particular value Mr. See mentioned the silk screen and squeegee method of painting roller destination signs and the oil reclaiming methods used by the company.

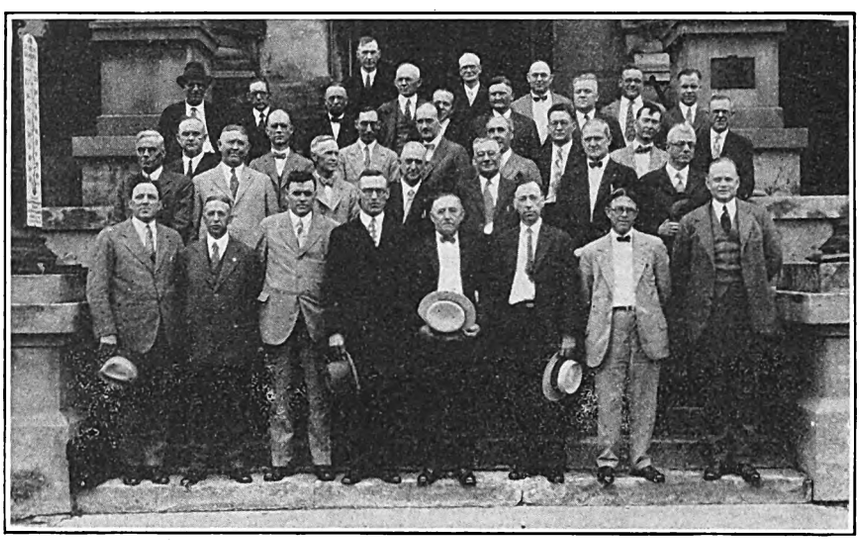
Several improvements in supporting and connecting foundation brake rigging on the cars of the Lake Shore Electric Railway were described by A. Brownworts of that company. Heat-treated bushings are used at all connections and fulcrums of brake levers and improved methods of connecting have reduced maintenance troubles. A J. Challeen, superintendent of equipment and shops, Detroit United Railway, described the lubrication schedule which he is using for the oiling and packing of bearings. An inspection card index system is used with this work.

J. B. Corderman, master mechanic Lima-Toledo Railroad, told of rebuilding some cars and the improvements made. Methods of applying oil and preparing waste for packing have also been improved, so that the lubrication cost is but 20 cents per thousand car-miles, including all waste, car oil, compressor oil and gear grease. The method used for saturating waste is to cook it in hot oil. Mr. Corderman also referred to wear caused by the end thrust of helical gearing. In order to take up this wear he uses the Westinghouse method of inserting ⅛-in. shims between the armature and thrust collars.

Use of solid bronze bearings has produced gratifying results for the Cleveland-Southwestern Railway & Light Company. The methods used were described by J. W. Osborn, superintendent of rolling stock. All bearings are fitted to the axles or shafts on which they are used. Axle bearings are marked with their position in the car, so that in overhauling they are returned to the original location. A clearance of 0.012 in. over the shaft diameter is used for armature bearings after they are pressed in to housings. Mr. Osborn also referred to economies in painting. His company uses the enamel system and applies one coat of clear enamel over the colored enamel, instead of using a clear varnish. This lasts longer and produces a pleasing appearance.

In addition to purchasing eight new cars, several others have been remodeled in the shops of the Steubenville, East Liverpool & Beaver Valley Traction Company. This work was described by R. E. Twiggs. In the remodeling, vestibule partitions were removed, the trucks were remodeled and top brake-hanger castings were standardized. Brake levers have also been standardized on city cars. The motors used under these remodeled cars have been completely revamped, and as a result of decreased maintenance, four less men are used on inspection and other work has been cut down nearly one-half. Improvements in lighting have been incorporated through the use of twenty low-voltage lamps in series. Trials have also been made of internally frosted bulbs.

George R. Green, superintendent of equipment Southern Michigan Railway, South Bend, Ind., described the vehicle collision light which his company has installed on the corners of cars in addition to headlights. This has an amber colored lens and its use has



Master Mechanics of the Central Electric Railway Association on the Court House Steps in Sandusky, Ohio

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reduced accidents considerably. These corner lights are being added to cars as fast as they go to the shops for overhauling. His company has also remodeled some cars into a parlor car type. These are particularly attractive to car riders, and the receipts have increased considerably. Mr. Green also spoke of the value of the work being done by the Central Electric Railway Master Mechanics Association and the benefit derived from such meetings as the present one.

Through the purchase of new cars the Union Traction Company of Indiana has been able to retire some of its old cars. The best of the old motors have been overhauled and are used under freight cars in place of some still older equipment. This work was described by Thomas H. Nicholl, superintendent of motive power.

A. A. Crawford, superintendent of motive power Youngstown & Ohio River Railroad, said that he had now had one year's experience with the thirty-in-series type of lamp. He had found it particularly easy to change over from the five-circuit arrangement in cars to the single-circuit arrangement, and during the year had lost but twelve lamps due to failure, while there had been no loss by theft whatever. At the time these new type lamps were installed a bulletin was issued to the motormen and conductors which stated that these lamps could not be used for house lighting. Mr. Crawford also told of a method used to increase the speed of his cars. Funds were not available for changing the gear ratio, and so $\frac{1}{16}$ in. was taken off of the pole faces of the motors. This increased air gap increased the speed approximately 10 per cent. No commutator or brush trouble has been experienced.

Six-Motor Freight Car Developed

The new six-motor freight car of the Western Ohio Railway was described by E. B. Gunn, superintendent of transportation and equipment for that railway. This has three motors per truck, and the car is now used in a six-car train hauling five trailers, where previously but three trailers were hauled. The energy consumption is but slightly greater than the four-motor equipment, even when hauling the increased load. Tests showed an energy consumption of 5.3 kw.-hr. per car-mile as compared with 4.9 for the four-motor equipment. Mr. Gunn also brought up the subject of breakage of triple valve stems and slide valves. This is to be investigated by experts from the Westinghouse Traction Brake Company and a report will be made at the next meeting.

H. G. Arthur, G. C. Kuhlman Car Company, described what has been accomplished through the standard design of freight car as adopted by the Central Electric Railway Master Mechanics Association. His company has now built 70 and has fifteen more on order. The American Car & Foundry Company has also built quite a number of cars of this type.

Improved results from acetylene welding were described by W. J. Fox of the Interstate Public Service Company. This work has included the welding of body castings, the building up of the faces of coupler knuckles and repairs to axle housings. Body castings with cracks about one-half way through have been repaired at an average cost of $11.48 for labor and material. This cost includes 15 per cent added for overhead. Building up of the faces of knuckles averages $6.01, and welding of axle housings is done for $17.83. A considerable saving has been accomplished through the standardization of steps on various types of cars, so that there are no rights and lefts.

Terence Scullen, master mechanic the Cleveland Railway, told of the aluminum car which his company is building. A weight reduction to about half that of an ordinary car of similar size has been accomplished. The car, however, is only in the construction stage now. Mr. Scullen also suggested that it would be desirable for an association to take up the distribution of labor and material in the various classification of accounts. He said his company is now operating 50 trucks, whose maintenance was charged to equipment. Also, such track equipment as welders, grinders, etc., are charged to maintenance. This, of course, makes comparison of maintenance costs with other railways out of the question.

Standardization to Meet I.C.C. Rules

At the afternoon session Thomas H. Nicholl reported for the standardization committee. He took up the Interstate Commerce Commission's rules for the testing and inspection of locomotives other than steam. The committee has drafted a new set of rules embodying features of the I.C.C. rules which are suitable, and adding its own rules to this. This was gone over and discussed in considerable detail by the members present, and it was decided that this should be submitted to the executive committee of the Central Electric Railway Association for use in connection with any recommendations to be made. Reports were made by the committees on subjects, uniform charges and arbitration.

The next meeting of the association will be held in Toledo next February. After the meeting adjourned an inspection tour was made to the shop of the Lake Shore Electric Railway in Sandusky.

COMING MEETINGS OF *Electric Railway and Allied Associations*

***Oct. 1*—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.**

***Oct. 4-8*—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.**

***Oct. 10-15*—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.**

***Oct. 25-29*—Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.**

***Nov. 16-18*—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

***November 16-19*—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.**

Electric Railways at National Safety Congress

MORE than 200 speakers will address the fifteenth annual congress of the National Safety Council, which will be held in Detroit Oct. 25-29. There will be 100 separate meetings covering a wide range of industries.

Arrangements for the sessions of the Electric Railway Section are being rapidly completed. Among the speakers scheduled are:

James P. Barnes, president Louisville Railway, "Accident Prevention—Why and How, from the Standpoint of the Executive."

R. W. Emerson, general manager Cleveland Railway, leader of round-table discussion on "No-Report Claims and What Is Being Done to Reduce Them and the Standing of the Safety Department in the Organization."

M. J. Feron, general superintendent of transportation Chicago Rapid Transit Company, appearing as chairman of "Board of Inquiry."

T. G. Hamilton, general superintendent Gary Street Railway, "Harmonious Relations Between Employees and Management and Their Effect on Accident Prevention."

R. H. Horton, president Philadelphia Rural Transit Company, "Bus Operation."

G. B. Powell, superintendent of transportation Louisville Railway, "Accident Classifications and Statistics."

American Association News

Red Special—Blue Special

DE LUXE trains to the 45th annual convention of the A.E.R.A. have been arranged for by the transportation committee. Both trains will leave from New York on the evening of Saturday, Oct. 2, arriving in Cleveland Sunday morning.

The Red Special via the Pennsylvania Railroad, for delegates from New York, Newark, Trenton, Philadelphia, Baltimore, Washington, York, Harrisburg and connecting points, will leave the Pennsylvania Station, New York City, Oct. 2 at 6:50 p.m., Eastern standard time. It is due to arrive in Cleveland at 8:50 Sunday morning.

The Blue Special, via the New York Central Railroad, for delegates from New York, New England, Albany, Utica and Syracuse, will leave Grand Central Terminal, New York City, Oct. 2 at 6.30 p.m. Eastern standard time. It is due to arrive in Cleveland at 8:30 Sunday morning.

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Applications for reservations on these trains should be made with the following members of the committee:

New York, Newark and vicinity, C. H. Beck, Room 2300, 150 Broadway, New York City.

Trenton and Philadelphia, Thomas Cooper, Westinghouse Electric & Manufacturing Company, Philadelphia, Pa.

Baltimore and Washington, J. H. Hanna, president the Capitol Traction Company, Washington, D. C.

York and Harrisburg, C. F. Crane, Harrisburg Railways, Harrisburg, Pa.

Boston, Providence and down Maine, Edward Dana, general manager Boston Elevated Railway, Boston, Mass.

Springfield, Worcester, Pittsfield, Chatham and New Haven, C. V. Wood, president Springfield Street Railway, Springfield, Mass.

Albany, Utica and Syracuse, E. H. Murphy, general manager United Traction Company, Albany, N. Y.

Reservations for those who cannot leave until Sunday may be made on similar trains on each railroad leaving on the same schedule. All requests for reservations should be accompanied by remittances to cover cost of accommodations desired.

Added Entertainment at Cleveland

SPECIAL late supper will be provided in the Rainbow Room of the Hotel Winton during the Cleveland convention week, following the regular convention entertainment program. Arrangements for this have been made by the entertainment committee. A cover charge will be made by the management and service will be à la carte.

Wednesday, Oct. 6, will be special A.E.R.A. night and admission will be limited to wearers of the official badge. The program on that night will start at 11 p.m., for which the regular cover charge will be made. As a heavy attendance is expected for the feature program, the entertainment committee suggests that those wishing to be sure of having tables make reservations in advance with W. S. Koones, manager Hotel Winton, Cleveland.

Progress on Convention Building

SINCE the new building which was put up as an annex to the public auditorium in Cleveland was turned over to the convention committee on Sept. 4, the work of preparation has continued with unabated speed. After the finishing touches were put on by the Cleveland Railway forces it was necessary to clean up the débris which had accumulated during construction and to prepare the interior for receiving the exhibit. This has been done and the wiring, piping, etc., within the building have been installed.

The space between the two buildings which formerly was used for automobile parking has been cleared and tracks for outdoor exhibits have been laid. Between the new building and the auditorium there will be a walkway 50 ft. wide covered by a canopy. In this space will be placed working exhibits of track appliances such as grinders, tampers, etc.

Figures are not available for comparison of the total space which this exhibit will occupy with exhibits of other associations, since the track space is figured on a linear basis rather than a square foot basis. Were the entire exhibit figured on a square foot basis it would undoubtedly prove the largest exhibition of the kind ever held in this country.

Special Tax Committee Expanded

SOME time ago it was decided to appoint advisory members to the committee on special taxes of the American Electric Railway Association. One outstanding authority has been selected from each state to act in this capacity. Acceptances have been received from all but thirteen states. Those remaining have very limited electric railway operations. The first duty of these advisers was to furnish the association with a digest of the tax laws of each state that relate to electric railways. The association will analyze these digests and prepare a report to be read before the meeting of the special tax committee at the Cleveland convention on Oct. 7.

At this meeting it is expected that a program will be decided upon to promote this work during the year. While the work will be included in the activities of the special tax committee much of the detail will be handled by the association direct. Lucius S. Storrs, acting in co-operation with Alfred T. Davidson, chairman of the committee on special taxes, issued the invitations and will be sponsor for the work done by the advisory members. The details will be handled by Leslie Vickers, economist of the A.E.R.A.

The list of appointees who have accepted follows:

California—W. V. Hill, manager California Electric Railway Association, San Francisco.

Colorado—Ernest Stenger, president the Denver Tramway Corporation, Denver.

Connecticut—W. J. Flickinger, vice-president the Connecticut Company, New Haven.

Delaware—T. W. Wilson, vice-president and general manager Wilmington & Philadelphia Traction Company, Wilmington.

Florida—J. P. Ingle, manager Jacksonville Traction Company, Jacksonville.

Georgia — P. S. Arkwright, president Georgia Railway & Power Company, Atlanta.

Illinois—D. W. Synder, Jr., vice-president Illinois Traction System, Springfield.

Indiana—A. W. Brady, receiver Union Traction Company of Indiana, Anderson.

Kentucky—J. P. Pope, vice-president and general manager Kentucky Traction & Terminal Company, Lexington.

Louisiana—H. B. Hearn, president Shreveport Railways, Shreveport.

Maine—Alfred Sweeney, general manager Androscoggin & Kennebec Railway, Lewiston.

Maryland — C. D. Emmons, president United Railways & Electric Company, Baltimore.

Massachusetts—L. D. Pellissier, president Holyoke Street Railway, Holyoke.

Michigan—Alfred Fischer, director Michigan Committee on Public Utility Information, Ann Arbor.

Minnesota—A. M. Robertson, president the Duluth Street Railway, Minneapolis.

Mississippi—C. P. Couch, vice-president Mississippi Power & Light Company, Jackson.

Missouri—A. T. Perkins, manager for receiver United Railways of St. Louis, St. Louis.

Nebraska—R. A. Leussler, vice-president Omaha & Council Bluffs Street Railway, Omaha.

New Hampshire—J. Brodie Smith, general manager Manchester Street Railway, Manchester.

New Jersey—E. W. Wakelee, vice-president Public Service Railway, Newark.

New York — E. M. Walker, president Schenectady Railway, Schenectady.

North Carolina—W. L. Currie, claims attorney Carolina Power & Light Company, Raleigh.

Ohio—W. A. Draper, president Cincinnati Street Railway, Cincinnati.

Oregon — W. H. Lines, vice-president Portland Electric Power Company, Portland.

Pensylvania—A W. Robertson, president Philadelphia Company, Pittsburgh.

Rhode Island — E. J. Dickson, vice-president United Electric Railways, Providence.

South Carolina — Stuart Cooper, vice-president and manager Charleston Consolidated Railway & Lighting Company, Charleston.

Tennessee — T. H. Tutwiler, president Memphis Power & Light Company, Memphis.

Texas — Richard Meriwether, vice-president and general manager Dallas Railway, Dallas.

Utah—E. A. West, general manager Utah Light & Traction Company, Salt Lake City.

Virginia—T. Justin Moore, general counsel Virginia Electric & Power Company, Richmond.

Washington—Hance H. Cleland, attorney, Cleland & Clifford, Olympia.

West Virginia—J. D. Whittemore, vice-president Monongahela-West Penn Public Service Company, Fairmont.

Wisconsin—H. L. Geisse, general manager Wisconsin Valley Electric Company, Wausau.

District of Columbia—William F. Ham, president Washington Railway & Electric Company, Washington.

Metropolitan Section Meets Oct. 1

OPENING the 1926-27 season, the Metropolitan Section of the A.E.R.A. will meet Oct. 1 at the Engineering Societies Building, 33 West 39th Street, New York City, beginning at 8 p.m. The subjects committee has prepared a full program. There will be an address by President F. R. Coates on "Recent Developments in the Electric Railway Industry." W. R. Webster, vice-president Bridgeport Brass Company, will give an illustrated talk on the "Copper and Brass Industry and Its Relation to Transportation." Entertainment will be provided through the courtesy of Eddie Wager and his troupe.

There will be a Dutch treat dinner at Friedlander's restaurant, 56 West 39th Street, beginning at 6 o'clock the evening of the meeting.

Engineering Standards

VARIOUS recommendations of the committees of the Engineering Association were passed on by the committee on standards at a meeting held at association headquarters, New York City, on Sept. 14. In general these recommendations were concurred in subject to final approval on the floor of the convention. In a few instances action was deferred awaiting further explanation from the committees presenting the proposed standards.

Members present were Charles Rufus Harte, chairman; H. A. Johnson, C. G. Keen, John Lindall, N. W. Storer, F. W. Peters representing H. L. Andrews, J. A. Brooks, J. M. Waldron, C. C. Beck, J. J. Sinclair and M. B. Rosevear.

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The News of the Industry

Ten-Cent Fare Asked in Buffalo

President of International Railway Says Service Cannot Continue to Be Rendered at Less than Cost

The International Railway, Buffalo, has applied to the New York Public Service Commission for permission to increase its fare in Buffalo from 7½ to 10 cents and proportionate increases on all its interurban divisions. It is proposed to put the new fares into effect on Oct. 16. Inability of the company to provide funds for repaving and track improvements and create a replacement fund of $1,016,000 annually as authorized by the state commission in 1920 are given by Bernard J. Yungbluth, president of the International, as reasons for the higher fare.

In the city of Buffalo the International Railway asks for a 10-cent fare with free transfers in place of the present 8-cent fare or two tokens for 15 cents. The local fares in Niagara Falls, Lockport, Lancaster and LaSalle would be increased to 8 cents or two tokens for 15 cents in place of the present 5 and 6-cent fares. Children under five years would ride free and children between the ages of five and twelve years would be required to pay a 5-cent fare in place of the present 3-cent charge.

Interurban rates will be on the 3-cents-a-mile basis, with a minimum cash fare of 10 cents. The Buffalo to Niagara Falls fare would be 70 cents; Buffalo to Lockport, 75 cents; Buffalo to Olcott, $1.15; Buffalo to Depew or Lancaster, 25 cents; Buffalo-Englewood commutation, $5 a month; Buffalo to Depew or Lancaster commutation, $7.50 a month. Tolls across the upper steel arch bridge at Niagara Falls and the Niagara River Bridge at Lewiston will be 10 cents one way or 15 cents round trip for pedestrians, instead of the 10-cent round-trip charge as at present: automobile with driver 25 cents and additional passengers 10 cents each.

Mr. Yungbluth said:

Buffalo's transportation system must be financially sound and its credit good before it can extend and improve. The International has been losing money since 1918. Its stockholders have received no dividends since 1918 but have contributed $4,140,445 to the company. Based on a formula adopted by the Public Service Commission in 1920, the company should have set aside $1,016,000 annually to pay for renewals, replacements, etc., but the International has not earned this money.

There is an increasing demand in each of the municipalities served by the International for street repaving and track reconstruction. This cost in Buffalo alone would exceed $2,000,000. The Public Service Commission has ordered this work done in Grant Street and Walden Avenue, but the commission did not provide for this cost in the present fares, which makes an increased fare now necessary.

Street car riders in New York State are required to build roads for automobiles, motor trucks and other traffic. This paving is not used by the street cars. The paving charge, relic of horse-car days, is a far greater load on the car rider today than originally. The car rider is still required to pay the cost.

No business can long continue if its product is sold at a loss. The product of the International is transportation, which has a cost just as definite as that of any manufactured article. The cost is higher than the selling price represented by the fare. Transportation cannot be given unless its cost is met.

In 1920 the International Railway was authorized to abandon the 5-cent fare in Buffalo and to charge 7 cents with four tokens for 25 cents. In February, 1925, the fare again was increased to the present rate of 8 cents with two tokens for 15 cents. Last year the company applied for a rehearing and a higher fare. The rehearing was held by the state utilities board but the higher fare was denied. On that occasion the commission by a divided vote set the company's valuation in Buffalo at $22,000,000 for fare basis, and the company's claim of a valuation of $96,000,000 was rejected.

New Proposal Presented in Chicago

Lisman & Company Behind Syndicate Which Would Take Over Surface Lines on Twenty-Year Franchise—Special Committee Will Work Out Tentative Grant

STATEMENTS recently attributed to Charles E. Mitchell, president of the National City Bank, New York, that "New York bankers will not mix in Chicago politics to straighten Chicago's traction tangle" to the contrary notwithstanding, Frederick J. Lisman, president of Lisman & Company, and Judge John M. Harlan, New York, representing a group of New York and Chicago bankers, personally appeared before the local transportation committee of the Chicago City Council on Sept. 13 to present a plan for the solution of the city's transportation problems. Still silent as to the identity of their clients, both men declared the plan to be "the finest traction offer ever made to this or any other city."

Briefly, the representatives of the syndicate proposed, first, that they shall receive a twenty-year franchise. Then they will form a new company to take over the properties of the Chicago Surface Lines at the present capitalization of $163,000,000. To pay for these they will issue new bonds running for 50 years in two series. First mortgage bonds will be awarded to present holders of first mortgage bonds of more than $90,000,000 and general mortgage bonds to present holders of junior securities of about $60,000,000. The syndicate obligates itself to supply an aggregate of $50,000,000 for extensions, new equipment and other improvements. These obligations will be an equal lien with the first mortgage bonds, but will run for only twenty years. All the securities would bear 5 per cent interest.

The plan provides that this $50,000,000 shall be amortized in twenty years and a sinking fund will be created to amortize the present capitalization in 50 years. Fares would be based on cost of service, but the present 7-cent rate would prevail at the outset. Whenever the franchise expires and is not renewed the 50-year bonds become due and payable, but if the company continues to get franchises for a total of 50 years the entire system becomes the property of the city without charge. The city would also be given the right to purchase the system at any time at a price agreed upon in the proposed franchise.

In addition to operating the Surface Lines, the bankers ask the right to operate buses, agree to operate the subways when built and agree to operate the elevated lines when they are made a part of the new company. They also offer to build the subway at cost, plus a reasonable construction profit, or build them for a sum fixed in advance. Mr. Lisman announced that the syndicate had already retained the firm of Parsons, Klapp, Brinckerhoff & Douglas as engineers to have charge of subway construction.

Local bankers and traction officials, invited by the City Council to attend the conference, discussed the new proposal freely. John E. Blunt, vice-president of the Illinois Merchants' Bank, pointed out that the proposal gives priority in payment to the proposed $50,000,000 to be invested in the next twenty years over the $100,000,000 invested in extensions, improvements and rehabilitation in the last twenty years. "That is unfair to the present bondholders," he declared.

Mr. Lisman and Judge Harlan, however, insisted that they would give present security holders a better bond than they now hold, because there would be a sinking fund to amortize part of the bonds under the new plan. "Under present conditions," Mr. Lisman said, "when the franchise expires next February, the security holders have no assurance of being paid. We offer a plan which insures them payment and a better market value than ever."

Leonard A. Busby, president of the Chicago City Railway, told the committee that he believed such a scheme could be financed in Chicago or any other large city within 30 days on the same terms proposed by the syndicate.

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"Instead of $50,000,000 being needed for extensions, etc., however, something like $275,000,000 will be required in the next twenty years." he explained.

At the conclusion of the presentation, the Aldermen decided to create a special committee to confer with the Eastern bankers to work out a tentative ordinance along the lines suggested.

So favorably impressed with the new proposal were a number of the Aldermen that they succeeded in temporarily postponing negotiations with Chicago bankers and traction executives.

At the last conference between the City Council and the local traction interests on Sept. 10, Melvin A. Traylor, president of the First National Bank of Chicago, warned the city that unless the companies are given a franchise that will permit them to make money, they cannot extend their lines or improve service.

"The people of Chicago are getting good telephone, light and gas service," he asserted, "because those companies are making good money. Don't think you are going to get traction service below cost; it can't be done."

Declaring that street car riders in Chicago had paid $5,061,372 in the year ended Jan. 31 last and $52,805,573—or three-fifths of 1 cent on every fare collected—in the last twelve years for expenses other than the cost of transportation, Leonard A. Busby, president of the Chicago City Railway, vigorously denounced the practice of burdening the Surface Lines with paving and street cleaning costs. The figures he submitted showed that car riders have paid in the last twelve years $7,052,158 for cleaning and sprinkling of streets and removal of snow and ice, $4,265,077 for the maintenance of pavements, $7,066,492 for new pavements and renewals, $427,656 for moving of tracks because of sewers, $1,280,491 for moving of tracks because of street widenings, $1,635,000 for the board of supervising engineers, $23,441,379 as compensation to the city, and another item of $7,637,320 as interest on paving costs placed in the railway capital account.

The net result of Mr. Busby's eloquence in behalf of the unduly burdened car rider was the adoption of a motion by the committee declaring it the future policy to prevent any charges against operation not transportation costs.

The Aldermen did not immediately decide, however, just what items should be eliminated from the carfare or what part of each item. When they do, it is probable they will specify that the capital account shall be decreasd by the amount of the additional net revenue rather than permit this estimated $5,000,000 to be used for the payment of dividends.

New Toledo Grant Introduced

Toledo's new street railway and bus franchise ordinance amending and extending the Milner service-at-cost plan has been completed and turned over to the City Council. It was drawn up through co-operation of Frank M. Dotson, city law director, and Dewey C. Bailey, counsel for Henry L. Doherty & Company, with the advice and aid of Prof. Henry E. Riggs for engineering counsel and Newton D. Baker, Cleveland, for legal opinion. In Council the grant was immediately referred to the rules, by-laws and ordinances committee, which has called the first hearing for Sept. 22.

The ordinance is the outgrowth of a survey made by Professor Riggs a year ago following an open meeting of citizens at which remedies which would secure lower fares, extensions of lines and better service were demanded.

Wages Unchanged in New Jersey

The new three-year agreement covering the wages of the operating forces of Public Service Railway, Public Service Railroad and Public Service Transportation Company was signed on Sept. 13 by President Thomas N. McCarter on behalf of the companies and by the presidents of the nine locals of the Amalgamated Association on behalf of the men.

The agreement provides a wage scale of 65 cents an hour for all operators in service a year or more, the rate now prevailing, for classification and uniform wage scale for employees other than trainmen and makes several modifications in working conditions asked for by the men.

The terms of the agreement were reached after long negotiations which culminated during the week ended Sept. 11 in a two days conference between the officers of the companies and the state conference board of the Amalgamated Association, assisted by Vice-President William B. Fitzgerald and John H. Reardon, member general executive board. The conditions that were fixed were ratified by a two to one vote in a referendum of the employees, members of the association, held on Sept. 11.

$700,000 for Service Improvements in Milwaukee

Following closely on the heels of the Railroad Commission's order permitting the installation of one-man cars on the Wells-Downer line by the Milwaukee Electric Railway & Light Company commencing Oct. 1, came the application of the company for permission to use one-man cars on its Oakland-Delaware line. Like the Wells-Downer line, only partial use will be made of the one-man car on the Oakland-Delaware line in order to provide the additional service ordered by the commission. In the case of all lines where the service is not up to commission standards, it is expected that the company will ask that such additional service be provided by the installation of one-man cars. The number of cars the company will add to the present Oakland-Delaware schedule was not made known. This line is one of a number of lines in Milwaukee for which the commission recommended increased service in its survey. Should the commission approve the installation of one-man cars on the Oakland-Delaware line, there will be seven one-man car lines in Milwaukee, with four of them passing through the downtown section.

Another important development is the order of the commission directing the company to purchase 40 new cars. Arrangements have already been made by the company for cars identical with those now in service on the recently installed one-man lines, except that there will be some improvements in equipment as well as four additional upholstered seats. The cost of these new cars approximates $700,000, including increased power capacity and car station facilities. In its general survey the commission recommended the addition of 70 new cars, but the company complained that with this and certain rail extensions believed by it to be unnecessary the cost would be $1,971,000, which would reduce the company's net income to 3.6 per cent.

The commission's order provides that these additional 40 cars shall be in service by Dec. 1, 1927, but President S. B. Way has promised delivery and installation of fifteen cars by Dec. 1, the second lot by Dec. 20 and the remaining ten the first week of the new year, fully a year in advance of the time set by the commission. Mr. Way believes that as the result of improving scheduling and methods of operation he has ample cars to comply with commission standards.

$40,000,000 Subway Planned for Cleveland

Don Rennels, in a copyright article in the Cleveland *Press*, says that incorporation papers will soon be issued to the Cleveland Subway Company. Some of the facts given by the *Press* are:

That a subway for the west and southwest sections of the city is contemplated as well as for the east and southeast.

That the plans call for a subway that will cost considerably less than $4,000,000 a mile.

That a New York bank has agreed to finance the proposition to the extent of $30,000,000, even $40,000,000 if necessary.

That the Rockefellers, Sr. and Jr., are interested in the proposed new plan.

That the Cleveland Railway looks with favor on the plan and has indicated it would lease and operate the subway after it has been built.

That the franchise and charter ordinances now are being prepared and will be presented to City Council at the earliest possible moment.

Mr. Rennels said that it was understood that the bank behind the project was the Equitable Trust Company. Officials of the Equitable Trust Company at New York stated that they have been negotiating with Cleveland interests for financing the construction of a subway system in that city, but that there is nothing definite to announce at this time and no financing is in sight just now.

Theater in Portland Carries People Free

The management of the Broadway Theater, Portland, Ore., celebrated the opening of its $1,000,000 theater recently by giving free rides for one hour one evening on street cars and buses. For this purpose the theater company took over all the street cars and buses of the Portland Electric Power Company between 6:30 and 7:30 p.m., no fares on any line being collected during that time. A 50 per cent addition to the regular equipment of the P. E. P. company was necessary, this being practically equal to rush hour facilities. The service applied to incoming cars and buses only. A street carnival and general festival activities were participated in by the public as guests of the theater company.

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How Madison Determined the Proportion of Multi-Riders

Reference was made in the ELECTRIC RAILWAY JOURNAL for Aug. 14 to what was termed a "weekly pass" trial at Madison, Wis., on the system of the Madison Railways. Additional facts show that this was not a pass installation of the usual type, but was a four weeks trial to determine how many persons could be classified as multi-riders, viz., agents, solicitors, delivery boys, etc. This test was made by charging an unusually high price for the pass and by limiting its use to the person whose name was signed thereon.

With regard to price, it should be stated that while the cash fare at Madison is 8 cents, about 60 per cent of the patrons ride on tokens, sold seventeen for $1. At $1.25 the pass cost 21¼ fares of the type that would be paid by a fairly regular user of the cars. A further limitation was that the pass was not valid on the company's buses, while tokens (without transfer privilege) are.

During the four weeks in August that the plan was effective the management gave ample publicity thereto and stimulated its platform men to sell the pass by offering a week's vacation with pay to the top man. Despite this wholehearted effort, the largest number of passes sold in any one week did not exceed 250. The average sale was 210. On the whole, the pass with the test limitations imposed appealed to only 2 per cent of the company's patrons.

Surface Lines Seek Insurance Benefits

Indication that the trainmen and shopmen of the Chicago Surface Lines would ask their employers for a weekly sick benefit, the maintenance of a substantial death benefit fund and other concessions similar to those recently awarded employees of the Chicago Rapid Transit Company after prolonged arbitration was made during the week ended Sept. 11, by William Quinlan, president of the Chicago local of electric railway conductors and motormen. Since a board of mediation rejected on Sept. 4 the elevated men's demands for a wage increase of 5 cents an hour representatives of the surface lines employees have shown no disposition to press their demand for a similar increase in pay.

Joplin Returns to Five-Cent Fare

Almost a 6 to 1 majority in favor of the proposal of the Southwest Missouri Railroad for exclusive handling of Joplin's public ransportation by street car with a return to the 5-cent fare was given by the voters of that city in a special election recently. A counter proposal to return to buses was defeated by equally as substantial vote.

The street car proposal received 3,174 favorable votes and 636 unfavorable. On the jitney proposal, 577 voted yes and 3,009 voted no.

The return to the 5-cent fare was made effective at once.

While a return to the 5-cent fare is made in Joplin the railroad has not considered a reduction of the intercity rate. The intercity rate increase was obtained solely because of the 8-cent fare in the Joplin city zone.

Michigan Monorail Plan Revived

Thirteen men, appointed by the City Commission at Port Huron, Mich., will investigate in conjunction with the commission and report on the proposed construction through Port Huron of a monorail railway system. F. J. Potter, consulting engineer of the Rapid Transit Corporation of America, a Delaware concern, addressed the commission recently in an effort to obtain the sanction of the city for a right-of-way through the city. The company has ambitious plans to construct a belt line monorail system connecting Port Huron with Detroit, Lansing, Saginaw, Bay City, Grand Rapids and other Michigan cities with Chicago and Toledo.

Ancient Franchise Clause Stirs Up Trouble in Sedalia

The future of the railway in Sedalia, Mo., is very uncertain. There is talk of abandonment and bus substitution, but no definite plan of procedure has been announced by the City Light & Traction Company. The present state of affairs is in the nature of a controversy between the company and the city over paving obligations and franchise requirements.

Recently the company was called upon to comply with the terms of its franchise when the city took the preliminary steps to pave West Sixteenth Street for a distance of seven blocks, the street being one traversed by the company's Sixteenth Street car line. This franchise provision states that when the City Council declares it essential to pave a street occupied by car tracks the company must at the same time pave with like material the space between its rails and 1 ft. on the outside of each rail. If the company should fail to comply with such paving ordinance the city reserves the right to remove the car tracks and proceed with the paving of such street as though no tracks existed therein.

The company did not feel justified in making the expenditure for the west Sixteenth Street work and invited the city to avail itself of the provision of the franchise to remove the tracks. This opened the subject for constructive public discussion and investigation, with the result that the Mayor, Council and many people reached the conclusion that the removal of the railway and the substitution of bus service therefor in a town the size of Sedalia (25,000 people) would be a step forward and in keeping with the present trend. A semblance of an agreement was reached between the city and the company and later seven blocks of track on Sixteenth Street were removed by the city.

The company, however, has not obligated itself to supply bus service when the railway lines are removed, and as yet no other responsible interest has come forth with a proposal to do so. The entire issue is proceeding constructively as between the company and the city authorities, but it is not clear what will be the future action with respect to other lines.

Salt Lake Road Not Entitled to Share Freight Agreement

The Salt Lake & Utah Railroad, Salt Lake City, Utah, was denied the privilege of sharing in a freight agreement, or being an intermediate participating carrier in the routing of westbound traffic, by a decision of the Interstate Commerce Commission. The commission's decision terminated an arrangement begun in July, 1919, when the Salt Lake & Utah became a participating carrier in transcontinental traffic, under freight rate authority of the director-general of railroads. Transcontinental rail carriers having lines which traverse the same territory told the commission that delays had been encountered constantly in moving traffic over the line of the Salt Lake & Utah. Where the line acted as an intermediate carrier of westbound transcontinental freight, steam roads accorded it 10 per cent of the proportion of the through rate, applicable west of the Missouri River, on business originating west of that line. The Sale Lake & Utah sought the same divisions on eastbound through traffic.

New Rates on South Shore Line

Through commutation rates between downtown Chicago and points on the Chicago, South Shore & South Bend Railroad were put into effect on Sept. 16. Included in the new fares are ten and 25-ride bearer tickets, 54-ride individual monthly tickets and 500 and 1,000-mile mileage books. The mileage books and the ten and 25 ride bearer tickets are good for use within one year from date of purchase.

The new passenger tariffs, which will provide greater convenience in commuting from Hammond, East Chicago, Gary, Michigan City and South Bend to Chicago, are made possible through an operating agreement with the Illinois Central Railroad, over the tracks of which company South Shore line trains now operate electrically from Kensington to Randolph Street, Chicago, a distance of 15 miles.

Attitude of Employees Studied on Chicago "L"

With the information obtained from its house-to-house survey and analysis of the public reaction toward the company, the second step by the Chicago Rapid Transit Company was to obtain definite information on how the employees handled customers. To accomplish this a force of investigators rode around on trains and asked them many questions. The correctness of the information given was noted, the manner in which it was given, the appearance of the employee and other points. When all the data were compiled and analyzed, groups of employees were called together and the results of the investigation shown them. The response was immediate and gratifying. They entered into the spirit of the "Service Improvement Program" and offered many valuable suggestions. They showed a willingness to co-operate with the management in giving customers the best service possible. The result of this work, still being carried on, is reflected in better service to "L" riders.

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Weekly Pass in Des Moines

Institution of a weekly pass to sell at $1.25 and good for any number of rides during the seven-day period following its purchase was announced by F. C. Chambers, president of the Des Moines City Railway, Des Moines, Iowa, effective Sept. 20. The passes will be sold by conductors on the cars. They can be used by any number of persons for successive trips. In other words, as President Chambers pointed out, a pass will take its bearer anywhere on any line on the system as long as he presents it within the prescribed time limit.

The weekly pass will be quite similar to the Sunday pass, which was instituted several weeks ago, and was recently extended to include holidays. Mr. Chambers stated that the company's favorable experience with the 25-cent Sunday pass prompted the proposed trial of the weekly pass.

Announcement of the pass has met with wide favor among regular street car patrons and from occasional riders. It was emphasized that persons who ride the cars twice daily six days a week at 10 cents a trip can for 5 cents additional secure unlimited transportation all over the city.

Mr. Chambers hopes that use of the weekly pass will stimulate passenger traffic in the "lean" hours and result in more continuous use of the company's facilities. The moving picture houses are already showing slides urging patrons to use the passes to visit the film shows.

New Proposition Made to Chautauqua Residents

The Chautauqua Traction Company, Jamestown, N. Y., and allied railway lines have submitted a proposal to Dr. Arthur E. Bestor, president of Chautauqua Institution, and Alfred C. Davis of the West Lake Association offering to sell the Chautauqua station for $25,000 and to lease all stations, tracks and overhead structures of the abandoned Chautauqua Traction line for the nominal sum of $1 a year to any corporation which the institution and the residents of the west side of the lake may organize.

The plan suggested by the traction company is that the organization formed by the institution and the west side residents construct a link between the old Chautauqua line and the company's Jamestown and Westfield lines. The cost of this link is estimated at $15,000. Also that either that organization should operate the cars or the Jamestown, Westfield & Northwestern Railway, one of the allied companies, would undertake to operate them for it.

Dr. Bestor said it seemed to him that the offer was no different from the one submitted last winter which was rejected by Chautauqua and property owners along the west side of the lake. He said that the institution was not interested in any proposition that involved a revival of the Chautauqua Traction line as a separate corporation, and that a line on the west side of the lake could not be operated without a loss unless tied up with the management of the Jamestown, Westfield & Northwestern Railway.

Early this year the Public Service Commission approved the petition of the Chautauqua Traction Company for permission to abandon its trackage between Mayville and Ashville.

Fares Reduced for Trial Period

A trial reduction of fare from 7 cents to 5 cents in local zones was put into effect on Sept. 1 by the Webster, Monessen, Belle Vernon & Fayette City Street Railway operating between Charleroi and Ellsworth and Charleroi, Monessen and Belle Vernon. Books of 100 tickets were sold for $5 and may be used by any member of the holder's family. The special rate will be tried during a period of 60 days, and will be made permanent if increased revenues justify the reduction.

Course in Accident Prevention at New York University

The first collegiate course in accident prevention will be offered this month at New York University, according to an announcement by Arthur Williams, president of the American Museum of Safety, which will also co-operate with the university. Because of the increase in the number of industrial and public accidents, and in response to the demand from all parts of the country for trained leaders in safety work, this university is planning to train many women for leadership in accident prevention. Mr. Williams said that the need now was for men and women with the qualities of leaders and organizers and with the training of safety engineers and public safety directors, such as would be offered by the New York University.

The course will be given under the direction of C. W. Price, vice-president of the Elliott Service Company, formerly general manager of the National Safety Council and director of safety International Harvester Company.

The subject matter is divided broadly into industrial safety and public safety.

Reconstruction Activities Continue at San Diego

The San Diego Electric Railway, San Diego, Cal., continues to express its faith in the future of electric railway transportation in San Diego by continuing reconstruction and rehabilitation of existing rail facilities and providing for extensions.

The Woolman Avenue extension has just been completed at a cost of nearly $70,000, adding about 1 mile of new track in paved streets. The company's standard type of construction in pavement, consisting of steel ties, concrete ballast, drain tile and heavy steel, was used on this work.

The company is now undertaking the reconstruction of the Imperial Avenue line, comprising 2,446 ft. of double track and totaling approximately 5,234 ft. of equivalent single track, including 146 ft. of crossovers and 196 ft. of branchoffs. Steel tie construction is also planned for this work, which is made particularly intricate on account of necessity of providing for considerable special work leading from the main line to the carhouse. This work is estimated to cost $75,000.

Report Against $2,000,000 Subway for Cincinnati

A report from Colonel Sherill, City Manager, recommending the city not to undertake construction of a subway for street cars under Broadway and East Fifth Street, as proposed last spring, has been referred by the City Council to its finance committee.

Colonel Sherill said in his report that the building of the subway from the Gilbert Avenue viaduct to Government Square had been investigated from three angles, an estimate of cost made by the Foundation Company, New York, a survey of its value as a traffic time saver by the railway and city street and traffic officials, and a research into the legal phases of the scheme.

The report on the cost placed it at $1,968,000. Colonel Sherill said that this amount showed that the subway would cost far more than its actual value to the city warranted. He said that the experts of the Cincinnati Street Railway estimated that the subway would save only four minutes in running time for street cars traveling from the Gilbert Avenue Viaduct to Government Square. It also was pointed out that the four lanes of traffic on the Gilbert Avenue Viaduct, even now a "bottle neck," would be reduced to two through the building of the street car entrances to the subway.

The running time for street cars over the route is from nine to thirteen minutes.

News Notes

Service Resumed in Walla Walla.— Following closely upon the discontinuation of the bus service by the Walla Walla Transit Company, Walla Walla, Wash., comes the announcement that the company will resume operation with small vehicles to replace the large buses which were put on the run last January. Lack of patronage was given as the reason for discontinuance of service. The Walla Walla Transit Company succeeded the Walla Walla Valley Railway early this year. The railway company was served with official notice on Sept. 3 that it would he held responsible for carrying out the terms of its franchise to the extent of removing or paving over the rails, which it has recently abandoned. The railway's franchise was not canceled by the city, officials stated; the city permitted it to be transferred to the Walla Walla Transit Company, which operated buses in the city. The situation in Walla Walla has been the subject of review previously in the ELECTRIC RAILWAY JOURNAL.

Rerouting Speeds Service. — Faster service was put in operation on Sept. 13 by the Minneapolis & St. Paul Suburban Railroad, Twin Cities, Minn., between St. Paul and Stillwater. This general speeding up was accomplished by rerouting in the St. Paul loop and installation of a siding in North St. Paul. Except from 4 to 6 p.m. the time will be shortened six minutes. This is a single-track line with passing tracks from the St. Paul limits eastward.

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More One-Man Cars in Service.—The Western Avenue line at Toledo, Ohio, has been equipped with one-man cars remodeled in the shops of the Community Traction Company. Operation started on Sept. 15. It is estimated there will be an operating saving of about $12,000 a year under the new plan. This is the fifth Toledo line to be put on the one-man plan.

Subway Strikers Affiliate with Amalgamated.—Edward P. Lavin, leader of the recent strike of motormen and trackmen on the subway division of the Interborough Rapid Transit Company, New York, has announced that the Consolidated Railway Workers, as the strikers' organization was called, had become a branch of the Amalgamated Association, affiliated with the American Federation of Labor. One charter from the Amalgamated will be held to cover the entire Interborough system.

Fares Reduced in Texarkana.—The Southwestern Gas & Electric Company, Texarkana, Ark., is selling tickets at four for 25 cents for adults and children's tickets at three for 10 cents. This is a substantial reduction in the former rates when tickets for adults were 7 cents and those for children 4 cents.

Public Utility Course Open.—Under the terms of the will of the late George H. Leatherbee the course in public utility management at the Harvard Business School will be open without charge to properly qualified business men. The course, which will meet from 12 to 1 o'clock three times each week, will deal with the complex legal, economic and financial phases of public utility management. A study will be made of court and commission decisions showing the extent and method of public utility regulation, and later cases will be considered illustrating methods of marketing operation, finance and customer relations. Applications should be made in writing to the office of the school, 17 University Hall, Cambridge, Mass.

"Don't Get Hurt" Campaign.—The Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., is now conducting a "don't get hurt" campaign which is distinctly educational. The object is to spur the patrons of the road as well as the conductors and motormen to exercise such care as is necessary to prevent accidents. It is said that no other railway in the state has a more careful group of conductors and motormen than the company which serves the Lower Peninsula. However, the people at large are urged to learn the great lesson of self-reliance as a prerequisite to self-protection, and that is the lesson which the promoters of the "don't get hurt" campaign hope to teach to the patrons and operators.

New Fare in Effect.—The Binghamton Railway, Binghamton, N. Y., put into effect on Sept. 15 a readjustment of its fare zones, which means a reduction in fares between Binghamton and Endicott. The new schedule extends the present westbound zone from Binghamton to the Erie underpass at Westover, on which the fare will be 7 cents. The present western limit of that zone is Riverside Drive, Johnson City. By the change passengers will be able to ride from any point in Binghamton, Port Dickinson or Hillcrest to the Erie underpass for 7 cents. At the present time it costs 14 cents. The Endicott zone will extend from Floral Avenue to West Endicott and a cash fare of 7 cents will be charged. The return trip ticket now costing 15 cents will be abolished. At present it costs 29 cents to ride to Binghamton and return to Endicott. The Public Service Commission will call a hearing on the proposed new schedule.

Foreign News

Brisbane Has Deficit After Fixed Charges

The Municipal Tramways of Brisbane, Queensland, reports a net revenue from operation during 1925 of £142,926. After the amounts required for interest (£80,514), sinking fund (£15,358), depreciation (£59,439), and amortization (£14,000) are deducted from the net revenue, the debit balance for the year is £26,395. Operating revenues and expenses for the last three years are given in Table I.

The property was taken over from the Brisbane Tramways, Ltd., on Dec. 31, 1922, for £1,400,000. Since that time the Court of Industrial Arbitration has increased the wages and holidays and reduced the working hours of the staff to the equivalent of and addition of £40,000 per annum. More service has been installed, but there has been no increase in fare for six years and then only the establishment of a minimum 2d. fare on Sundays and holidays. Table II shows a comparison of capital spent and net earnings in Brisbane and other cities in Australia, as given in the Brisbane report. This report says that after provision for sinking fund, depreciation account, etc., is made, each of the four other cities shown in the table would have reported a larger deficit than Brisbane.

During the year 26 new cars were added. The present standard is center entrance car, somewhat like the "California" type, with a closed compartment at each end and open compartment with six stationary benches in the center. These benches are arranged in groups of two, back to back. This car seats 64 passengers and weighs 507 lb. per seat. Steel tired wheels are now used exclusively. At the end of 1925, the system comprised 85.5 miles of track and 50.3 miles of route. The tramways still have to do a large amount of paving, although they have no income tax to pay.

Considerable space is given in the report just issued to the motor bus situation in Brisbane. During the year 11 buses were purchased. In addition, at the end of the year, 40 private buses were operating in Brisbane. In an appendix to the report G. R. Steer, general manager tramways department, discusses at length the relative merits of buses and trams in city service.

In this statement Mr. Steer quotes various authorities, including articles in the ELECTRIC RAILWAY JOURNAL, on the place of the bus in city transportation service. He also gives figures on the cost of bus operation from Melbourne and Adelaide, the only other cities in Australia where buses are operated by the tramway authorities and operating reports are available. In Melbourne, 44 buses for the year ended June 30, 1925, showed a profit of £3,224 without any charges for interest and depreciation. In Adelaide, with 40 buses, the loss from March 25, 1925, to Jan. 31, 1926, was £8,820, including all charges. The conclusion of Mr. Steer is that for the present at least "neither trackless trams nor motor buses can cope with the growing traffic of Brisbane as well as large electric tramcars of modern design."

TABLE I—OPERATING REVENUES AND EXPENSES 1923-1925

	1923	1924	1925
Operating revenues	£628,841	£663,747	£706,520
Operating expenses	£443,885	£536,989	£563,604
Net revenue	£184,956	£126,758	£142,916
Operating ratio, per cent	70.59	80.90	79.77
Passengers carried	74,721,594	78,367,194	82,514,979
Car-miles run	5,212,971	5,457,800	5,915,844

TABLE II—INVESTMENT, NET REVENUE AND THEIR RATIO, VARIOUS AUSTRALIAN CITIES

	Capital Spent	Revenue Net	Ratio Net Revenue to Capital*, per Cent
Brisbane	£1,690,130	£142,916	8.46
Sydney	7,713,143	506,843	6.57
Melbourne (electric)	3,242,485	106,519	3.29
Adelaide	2,563,568	164,688	6.42
Perth	932,317	45,604	4.89

*Before deduction of interest on investment, sinking fund payments or depreciation.

TABLE III—TRAFFIC STATISTICS, VARIOUS AUSTRALIAN CITIES

	Per Car-Mile				Operating Ratio, Per Cent
	Operating Revenue d.	Operating Expenses d.	Net Revenue d.	Passengers Carried	
Brisbane	27.52	22.86	4.66	13.95	79.77
Sydney	26.45	21.87	4.58	10.40	82.66
Melbourne (electric)	21.36	18.50	2.86	9.54	85.91
Adelaide	20.77	15.12	5.65	8.78	71.71
Perth	22.23	18.63	3.60	9.50	83.81

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Recent Bus Developments

Additional Buses Acquired by San Diego Electric Railway

Due to increasing traffic on existing bus lines and contemplated extension of one such line into outlying residential districts, together with recent inauguration of feeder service on another rail line, the San Diego Electric Railway, San Diego, Cal., has found it necessary to add to its bus equipment and has just received three new Fageol Safety Coaches, making a total of thirteen Fageols and two Dodge-Grahams in the city fleet.

The company now operates one route completely by bus, with terminus in the downtown business district, with transfer privileges to the rail lines, and in addition maintains three feeder lines to rail lines and one line serving new territory, but connecting with three converging rail lines about midway to the business district. All of the bus operations are conducted as a part of the rail system, at identical rates of fare, with transfer privileges. The fares, however, are based on the zone system, so that in some instances bus extensions automatically create another fare zone, bringing in more revenue in addition to increasing the business to the existing rail lines.

New Minneapolis Bus Service Starts Oct. 1

Due to delay in getting electric equipment for the gas-electric buses which it is to put into service in Minneapolis, Minn., the Twin City Rapid Transit Company will postpone operation of these buses until Oct. 1. The chassis are being made in Chicago and the bodies in Minneapolis. The new line will cover the territory from Bridge Square to Hennepin Avenue and 36th Street. Supervision of the other proposed routes is a duty of the park board, which has not yet acted upon the application for extension of this line over parkways. Other buses will be put in operation in the fall to Bryn Mawr, on 38th Street and Lowry Avenue, as extensions or connections of existing electric lines.

Further Entanglements in Buffalo Bus War

Municipal bus lines of Buffalo, N. Y., are operating at a daily deficit, according to a report submitted to the City Council. The original appropriation of $10,000 has been exhausted, and while there was $2,315 in the treasury on Sept. 15, bills aggregating more than $4,000 remained unpaid, for which Mayor Frank X. Schwab, sponsor of the municiapl buses, said he would ask the City Council for another appropriation. From July 12, when the first buses were placed in service, until Sept. 13 total receipts aggregated $8,494. On the basis of the 8-cent fare, this indicates that upward of 10,000 persons were carried on the lines.

Other members of the Buffalo City Council, indicating their opposition to Mayor Schwab's plan of municipal buses, said they would refuse to approve another appropriation because they claim the operation of municipal buses is illegal and they feared the expenditure of public funds for an illegal enterprise would result in prosecution and the added probability that they would be called upon personally to repay this money into the city treasury.

The bills submitted to the City Council revealed for the first time that Mayor Schwab has a contract with John C. Montana, who operates interurban and sightseeing buses from Buffalo, to pay him $50 per day per bus. The White Motor Company presented a bill for $4,354. The Ohmer Fare Register Company was paid $380 for fare-recording machines.

When Mayor Schwab found that other members of the City Council opposed continuation of the service, which is in direct competition with that furnished by the International Bus Corporation, a subsidiary of the International Railway, he called a conference in his office in the City Hall of individuals who might be interested in organizing a new bus company to take over the management of the city-operated machines. A few responded and the Mayor said a company is soon to be incorporated to operate single-deck buses over several routes providing the necessary consents can be obtained. The Mayor assured the prospective investors that he would see that they received a franchise from the city.

City-Wide Bus Proposals Favored in New York

Board of Transportation Files Sixth Report on 106 Petitions from 72 Applicants—Only Four Bidders Would Cover Metropolis with Lines—Street Railways Severely Criticised

THE Board of Transportation submitted a 1,088-page report to a special meeting of the Board of Estimate of New York on Sept. 15 on the proposal to award bus operation franchises to private corporations. The report makes only two definite recommendations of prime importance. They are, first, that the franchise be awarded only to a corporation of great financing ability and for city-wide operation only, and, second, that there be strict adherence to the 5-cent fare principle, with a possible charge of 2 cents for transfers.

On the basis of the present bids the Board of Transportation indicated that the offer of the Equitable Coach Company was the most favorable in that it is the only one that comes anywhere near meeting the rigid conditions, but the way is left wide open for further negotiation with other concerns eager to enter the bus transportation field.

The report was presented by Commissioner Ryan. It was referred to the committee of the whole without comment. The next step to be taken in the consideration of the report by the Board of Estimate and Apportionment will be to determine which, if any, of the proposals is acceptable, then adopt a form of contract or franchise and advertise it for fifteen days prior to a date for a final vote by the Board of Estimate on the granting of the franchise.

CONCERNING THE FARE

Regarding the 5-cent fare a summary of the report said:

After reviewing all the proposals made and analyzing them minutely, the board concludes that bus operation can be maintained on a 5-cent fare. This conclusion is sustained by the fact that the Fifth Avenue Coach Company, the New York Railways and the Third Avenue Railway system, through their subsidiaries, have recently amended their original 10-cent fare proposals and now seek franchises to operate at a 5-cent fare.

Only four concerns applied for franchises to operate in all boroughs except Richmond. They were the Equitable Coach Company, the Union Bus Corporation, the Borough Motorbus Company, Inc., and the Service Bus Corporation. In its comment on the Equitable bid the commission said in part:

The two essential requisites of financial responsibility and practical experience appear to be combined in support of this application.

The initial rate of fare is universally 5 cents on all routes in the four boroughs. The proposal to divide ten long routes into 5-cent zones, out of 67 routes in the four boroughs, is superior in this respect to the proposals of existing transportation corporations.

The proposal to charge 2 cents for transfers will affect one-tenth of the passengers, if the experience of street railroad operation is duplicated on bus routes.

The possession of a fleet of 895 double-deck and single-deck buses will permit flexibility of operation and the adjustment of service according to necessity in rush hours.

The supervision and regulation of service would be simplified by having only one company to regulate.

Unity of ownership and management at the beginning of extensive bus operation in this city will avoid the baffling problem of ultimate unification which has for several years been the objective of state laws and state regulatory agencies in respect to other forms of city passenger transportation facilities.

The possibility of a repetition of the financial manipulation of city franchises by means of mergers and purchase of stock control of transportation companies, attended in the past by corruption and scandal, and by loss in investors, will be minimized if only one franchise is granted and there are not several bus companies to merge.

The recapture of one city-wide franchise and operating equipment will be much simpler and more satisfactory than the acquisition of a number of enterprises and a dissimilar variety of equipment, if or when the city should find it in the public interest to terminate private operation or to consolidate surface and rapid transit facilities.

With one franchise holder operating in several boroughs the ability to provide interborough operation across the bridges

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connecting the boroughs will be increased with resultant possibility, if deemed advisable, to connect traffic centers of different boroughs.

Taking up the various proffers of borough-wide, or less than city-wide operation, the report says of the bid of the Manhattan Surface Coach Company, affiliated with the New York Railways, the corporation operating the greater part of the surface railway lines in Manhattan:

1. The combination of the New York Railways and the Fifth Avenue Coach Company assures adequate financial resources for installation of bus operation.
2. Experienced operators of transportation facilities would be in charge of operation.
3. Two transfer points of limited usefulness would be added to the bus system.
4. Unnecessary and duplicate street car transfer points are included, many of which would be detrimental to service and would promote traffic delay on overcrowded avenues, which would probably result in the discontinuance of such transferring after the franchise is granted.
5. Bus routes are excessively zoned, thus nullifying much of the benefit of an initial 5-cent fare. The zoning plan is less advantageous than proposed by other applicants.
6. The amount of compensation offered to the city is the lowest offered by any applicant.
7. The limitation upon the right of the city to recapture is unacceptable.
8. The complication of the affairs of this bus system with the transportation affairs of Chicago and St. Louis is not desirable.
9. The remoteness of financial responsibility, extending through four intermediate holding companies to a fifth holding company incorporated in Delaware and located in Chicago, suggests a possible recurrence of the financial manipulation that has heretofore resulted in federal receiverships.
10. The history of the New York Railways and its predecessors does not inspire confidence in its financial methods, and the recent acquisition of its capital stock by a subsidiary of the Omnibus Company of Chicago resembles the manner in which the previous combinations of street railroads were organized in this city, all of which have failed with disastrous results to investors and the traveling public.
11. The lesson from past experience indicates that the city should discourage and not sanction a further duplication of transportation holding companies, and should endeavor to secure the cancellation of existing perpetual franchises in return for new limited franchises.
12. This proposal is important, but is not the best of those now pending before the board for the operation of the new bus system. The change from street cars to buses as equipment for Sixth, Seventh, Columbus and Lenox Avenues may be consummated without involving the new bus system with the tangled affairs of the street railways, and as a separate matter deserves its serious consideration.

Fare Raise Again Opposed

Concerning the request of the New York City Omnibus Corporation, which also involves a combination of the Fifth Avenue Coach Company with the New York Railways, the Board of Transportation declares:

Desirable as it is to bring about the cancellation of perpetual franchises and the removal of street car tracks from some of the central avenues of Manhattan, the proposal of the applicant to impose all the debt of outworn and unprofitable street car lines upon the new bus system, and to charge a double rate of fare merely for the purpose of supporting this excess burden is not deemed to be in the public interest.

To the extent that the application proposes the installation of buses, the plan of routes would provide a well-articulated bus service, which could only be instituted with the consent of the street railroad corporation that holds franchises on the avenues included.

Examination of the fare and transfer proposals will demonstrate that passengers on the new bus lines will gain nothing. A substantial financial gain would probably be realized by both the corporate partners, (a) by preserving to the Fifth Avenue Coach Company all of its existing lines operated under temporary permits and thus maintaining the present value and profits of its existing 10-cent fare perpetual bus franchises; (b) by providing for full payment of outstanding indebtedness of street car lines that are not profitable, and enhancing the value of other perpetual street railroad franchises owned by the New York Railways.

This applicant offers to pay the city 2 per cent of its gross revenues from new bus lines.

Right of recapture by the city is to be for municipal operation only.

There are more advantageous proposals pending before the Board of Estimate and Apportionment.

An individual bid made by the Fifth Avenue Coach Company for Manhattan service is condemned in these words:

The rate of fare is higher, the cost of transfers is greater, and the compensation offered to the city is less than other responsible applicants offer, and, therefore, the proposal is deemed to be unacceptable.

Of the Manhattan service bid put forward by the Surface Transportation Company, a subsidiary of the Third Avenue Railway, the board recorded this verdict:

The scheme proposed by this applicant does not conform in any way with the city plan for a co-ordinated system of bus routes that would be a substantially extensive and useful addition to existing transit facilities, for which proposals to operate were invited.

Not being in accord with the city plan, and not being an alternative that would increase transit facilities where and as they should be increased, this proposal is inferior to any other that accepts the city plan.

This company has been particularly active in agitation, and its recent letters stating that the convenience of the people would be best served by its proposal of a 10-cent fare and transfer to street cars are more extensively discussed in the analysis of its application for a franchise in the Borough of the Bronx which it has most strenuously agitated in behalf of the 10-cent fare policy.

Of the Bronx offer filed by the Surface Transportation Corporation, the report says:

1. Excessive and unnecessary zoning of routes No. 3, No. 4, No. 9 and perhaps No. 6 and No. 11 is suggested as an alternative to the original proposal to charge a 10-cent fare on these routes.
2. Curtailment of route No. 11 at the Bronx side of the Harlem River will be detrimental to the service which this route could afford if extended over 181st Street Bridge to the vicinity of 181st Street rapid transit station and business locality.
3. The amendment to the original application, except as to excessive zoning, has made this proposal one of the best as to Bronx operation only.
4. Indefinite and uncertain statements about zoning and transfers are not convincing when offered by experienced street car operators, particularly when all other applicants and investigators can readily determine suitable points of zoning. The evasion of the inquiry on these points does not inspire confidence that applicant will grant any privileges that it can avoid.
5. The argument that a 10-cent fare is more beneficial to the traveling public than a 5-cent fare cannot be sustained.
6. The contention that any benefit will accrue to the general public by the so-called co-ordinated system of street cars and buses is contrary to the fact unless a 5-cent fare is established on buses and free transfers issued to and from buses and street car lines.
7. Two-thirds of all pasengers on street cars in the Bronx do not transfer, but the applicant contends that it is beneficial to the public to charge double fare to two-thirds of passengers so that one-third can get free transfers.
8. The persistent effort to maintain a predominance of its railroad interests does not encourage belief or confidence that it would develop bus service to its full capacity or usefulness, and is an indication that an independent bus service would be more beneficial to the traveling public if adequately financed.

In its survey of proposals for Brooklyn operations the board made some drastic observations upon the application filed by the Coney Island & Gravesend Bus Corporation, the bus subsidiary of the Brooklyn-Manhattan Transit Corporation. It said:

The plan of routes proposed by this applicant is not in accord with the plan adopted by the Board of Estimate and Apportionment for a co-ordinated bus system, but as designed will not only dismember the city system into disconnected parts, but will also effectually prevent the establishment of any future bus system, there being no other available streets that are not covered by street car franchises.

The transfer privileges are so restricted as to be only equivalent to the bus transfers eliminated, and the traveling public gains nothing by a so-called co-ordination of street car lines and bus routes.

The threat of the applicant to legally contest the right of the city to grant bus franchises on streets where there are no car lines, and continue such bus routes to appropriate terminals at points of concentration of traffic, will, if carried into effect, determine whether the railroad corporations own all the public streets, settle many disputable questions about the alleged rights of public utility corporations, and prepare the way for legislation to relieve the city of any disabilities that may be revealed by such litigation. For example, if the law requiring that a certificate of convenience and necessity be obtained from state authorities as a prerequisite to the validity of a franchise grant can be construed as a prohibition against the establishment of additional service to the public on streets not named in existing franchises, the knowledge of such a condition will arouse public sentiment to demand the repeal of such a law.

The history of organization, merger, consolidation, and management of Brooklyn street railroads is a record of financial manipulation, receiverships, reorganizations and more receiverships, possible only by the possession of a multitude of perpetual franchises. It seems essential that the new method of bus transportation should be organized in such a manner that independent operation will be at all times possible, and that by issuance of short-term franchises any attempt to involve the new grants in another manipulation of securities will be discouraged.

Insists on Unified Operation

In presenting in the report arguments favoring comprehensive, city-wide and unified operation over four boroughs, the Board of Transportation declares that:

This latest investigation has strengthened the opinion previously expressed in omnibus reports that segregated operation of single routes is less advantageous to the public than more comprehensive operation, and to grant franchises for detached routes would be to dislocate the plan for co-ordinated service, result in a multitude of franchises and preclude the establishment of a comprehensive service.

A summary of the arguments favoring unified city-wide operation in four of the five boroughs is as follows:

1. One company could more effectively utilize a large number of omnibuses and provide a more comprehensive and adaptable service than a number of small units, because the inclusion of all routes in one franchise would enable the operation of equipment wherever and whenever and in the quantity that traffic necessity requires.
2. The largest amount of traffic moves from the outlying residential districts toward the terminal districts between the hours of 7 and 9 in the morning and in the opposite directions between 5 and 7 in the afternoon. During the intervening hours the heaviest traffic occurs in the terminal districts. On Saturday afternoons, Sundays, holidays, and during evening hours, the business districts are practically deserted, and the greatest amount of traffic moves toward places of recreation.
3. One company could mass the bulk of its equipment of 900 motor buses anywhere, but the limited equipment of each of several units would be restricted to operation within its local territory.
4. The four boroughs of Manhattan, Bronx, Brooklyn and Queens, being linked together by bridges, are in reality homogeneous territory for vehicular traffic and all passenger transportation service.
5. The pooling of the revenue of the most desirable and the less desirable routes will be beneficial to outlying sections of the city by making possible better service

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than those sparsely settled localities could otherwise obtain.

6. One company would be under better control by regulatory authority than would several companies, because larger resources in the form of equipment would make the adjustment of service to traffic necessities much less difficult than such adjustment of small units by several owners.

7. The subdivision of the city into several franchise territories would create legal obstacles to future routing of additional service lines over important highways leading to terminal districts, similar to those which the city now encounters by reason of the existence of numerous street car franchises. The future re-location of lines of service so as to best adapt them to traffic needs will be much easier to accomplish under one franchise.

8. By the grant of one franchise the expansion of service according to the development of growing communities could be attained without conflict over franchise routes and at least expenditures for additional equipment.

9. The grant of franchises to several companies will result immediately in the creation of an incentive toward consolidation and the manipulation of stock and bond issues that have attended all previous consolidations and reorganizations of transportation companies in this city.

10. The overhead expense of one company must necessarily be lower than the combined overhead of several companies each with its officers, directors, attorneys, etc., and quantity purchase of equipment and supply will reduce overhead as well as operating expense.

11. It will be simpler and easier for the city to recapture or terminate one franchise than several franchises, if municipal operation or unification of transit facilities becomes desirable.

In the certificate of incorporation of the Equitable Coach Company, which was filed with the Secretary of State Nov. 19, 1925, the name and residence of each incorporator and the number of shares each had agreed to take were stated as follows:

Percival E. Cowan, 157 West 105th Street, one share; Oswald L. Johnston, 506 West 111th Street, one share; Fifield Workum, 59 East 82d Street, one share; Harrison S. Dimmidd, 229 Waverly Place, one share, and Ralph E. Stone, 538 West 114th Street, one share.

The incorporators were named as the directors for the first year. Percival E. Cowan, as president, signed the certificate of incorporation and Mr. Dimmidd attested the instrument as secretary.

The J. G. White Management Corportion is prepared, it is understood, to finance the Equitable if that corporation should be successful in obtaining a city-wide bus franchise.

A summary of the extent of the bus routes recommended by the Board of Transportation covered in the bids on which the Board of Transportation reported is as follows:

MANHATTAN	
Total mileage all routes	52.9
Average mileage all routes	4.4
BRONX	
Total mileage all routes	57.4
Average mileage all routes	4.4
BROOKLYN	
Total mileage all routes	81.9
Average mileage all routes	4.4
QUEENS	
Total mileage all routes	95.4
Average mileage all routes	4.1

Comptroller Charles W. Berry declared on Sept. 16 that he was not committed to a city-wide system. Although he said he had not taken any position in favor of awarding franchises by boroughs, his remarks indicated that he considered this still a possibility, despite the Board of Transportation's report. The report is understood to be satisfactory to Mayor Walker, who has been inclined all along to favor a city-wide system, but there is great doubt that a majority of the other members of the Board of Estimate agree with him. Mr. Berry said:

I am not going to let the Board of Transportation do my thinking for me. A thousand-page report on applications for bus franchises was laid before the Board of Estimate at its meeting Wednesday, and surely no one can expect me to have read it, much less studied it, by this time. But I see by the newspapers that the report favors the city-wide bus franchise petition of a certain company, but the report says nothing, I understand, of the persons who are behind that particular application. I am not committed to the city-wide proposition, nor have I yet taken a stand as to a separate bus system in each of the five boroughs of the city. No doubt good arguments can be made for both these plans.

Mr. Berry indicated that he believed some of the proposed routes, as laid out by the Board of Transportation, might lead to litigation by surface line companies on the ground that they would compete with existing surface lines. He expressed surprise that the B.-M. T. offer to establish a bus system in Brooklyn had not received more consideration, and said he would stick to his demand for a seat for every passenger, which he expressed several weeks ago.

Another Bus Line for Oakland

Plans for a bus line between downtown Oakland and the Berkeley boundary to supplement the Telegraph and Shattuck Avenue railway service, submitted by the Key System Transit Company, have been accepted by the Oakland City Council.

The Council authorized the company to commence the service immediately for a six months experiment. At the end of this period the bus line may be withdrawn at the option of the company.

By restricting railway stops in a zone between Alcatraz Avenue and Twentieth Street, the company has promised to cut several minutes from the running time between Berkeley and Oakland. The buses will run on a regular stop schedule from Eleventh and Broadway to Alcatraz and Telegraph Avenues.

The plan just approved is identical with one submitted to the City Council several months ago. At that time it was held to be in conflict with the city ordinance permitting bus lines to be operated only as feeder or extensions to car lines.

Decision Rendered in Yonkers

The application of the Yonkers Railroad for an injunction pending trial restraining the city of Yonkers, N. Y., from selling fifteen bus routes at auction was denied on Sept. 13 by Supreme Court Justice George H. Taylor, Jr.

The railway contended that the proposed sale was illegal and prejudicial to its rights in Yonkers. It also alleged that the auction had been so arranged as to prevent the Yonkers Railroad from bidding for the proposed routes, some of which, it was contended, create illegal competition by paralleling the trolley routes.

The court held that all the objections were insufficient to warrant injunctive relief.

On Sept. 15 the court as a further move in the matter denied the application of the Yonkers Railroad for a stay to prevent the Yonkers Aldermen from awarding to the highest bidder franchises to operate fifteen bus routes in that city. Alfred T. Davison, counsel for the corporation, made the application because, he said, the company was going to appeal to the Appellate Division from the decision of Justice Taylor. The company has announced it will fight to the highest court against outsiders getting the bus franchises.

Union Station in Prospect.—Independent bus owners as well as electric railways operating buses have agreed to build a union bus station in Madison, Wis., providing a part of the recently introduced Williams bus ordinance is not enforced until Jan. 1, 1928, as they will be unable to have the station built before that time. If the Common Council will accept this modification and the ordinance becomes a law the bus station controversy will be disposed of. The proposed ordinance provides that buses will not be permitted to stand on any street for a period longer than is required to load or unload passengers. At present the downtown streets are used as stations by the bus lines, which practice has long been unpopular because of the part it plays in adding to the city's growing traffic congestion problem.

Improvements for Sightseers. — The Colorado Springs & Interurban Railway, Colorado Springs, Col., as the parent organization of the Gray Line Motor Tours Company, operating in the Pike's Peak country, is understood to be planning to use glass-topped buses for sightseeing purposes next season. This method will protect passengers from the wind and dust, but will permit unobstructed view of the wonderful canyons.

Bus Service Extended.—The bus operations of the Madison Railways, Madison, Wis., have again been enlarged. With bus lines already operating to the suburbs of Nakoma, Wingra, Tenney Park and Elmside, the company has installed another line to the rapidly growing suburb of Shorewood. Four trips will be made daily to this suburb.

New Service With School Opening.—Special bus service to and from the new Girls' High School in Atlanta, Ga., was instituted on Sept. 7 by the Georgia Railway & Power Company with the opening of school. The new service has been arranged to overcome the difficulty on the part of north side students, who last year were compelled to transfer once and sometimes twice to reach the school from their homes over the regular railway routes. Two trips will be made by the buses, which will form a special "High School" train, one in the morning going to the high school and one in the afternoon, at the close of the session, returning from the high school. It is the plan of the company to continue the system each year during the school term.

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Financial and Corporate

Narragansett After Railway Plant

United Railway Company's Power System Included in Plan to Coordinate Utilities in Providence

Utility developments in Rhode Island took a new turn during the week ended Sept. 18 in the shape of an offer by the Narragansett Electric Lighting Company, Providence, to purchase the power plant, transmission lines and substations of the United Electric Railways for cash to be used for the retirement of the latter's bonds, and so to operate this equipment in conjunction with its own plant for twenty years as to realize the economies which could be obtained were the companies merged. As a result of the presentation of the Narragansett plan, the proponents of the Rhode Island Public Service Company merger plan, who are identified with the banking house of Bodell & Company, Providence, agreed to postpone until Oct. 15 the time required for depositing Narragansett stock in connection with their program for consolidation, this action being taken at the request of the directors of the railway.

In a letter to the railway dated Sept. 8, E. A. Barrows of the Narragansett company said that it was felt all of the advantages resulting from such a purchase could be secured without the merger of the two companies or the loss of their separate corporate identities. He said there is a widespread feeling on the part of his shareholders and the public against a merging of the two companies. He then continued in part:

> All of the economies possible under a merger can be effected through a more simple and direct method without any of the attendant disadvantages. We are, therefore, prepared to enter into negotiations to purchase your power plant, transmission lines and substations for cash, to be used for the retirement of your bonds, and so to operate same in conjunction with our plant, for a period of twenty years, as to realize the economies which could be obtained if the companies were merged; and will give you, until you are able to share the benefits with us, all the advantages of such operation with respect to the electricity purchased by you that are possible to be obtained without detriment to our customers or shareholders.
>
> We are submitting herewith a tentative plan which we think conforms to the above principle. The effects of this plan, based upon the information now available, are as follows:
>
> 1. There would be retired immediately United Electric Railways bonds of the principal amount of from $5,000,000 to $6,000,000.
>
> 2. Beginning one year after the plan becomes effective, there would be retired United Electric Railways bonds, increasing from about $225,000, principal amount, the first year, to $4,700,000 by the end of the twentieth year.
>
> 3. At the end of the contract period of twenty years there would be outstanding approximately $3,270,000 principal amount of United Electric Railways bonds instead of $14,012,300 principal amount now outstanding.
>
> 4. Beginning one year after the plan becomes effective the approximate annual interest savings to the United Electric Railways would be as follows: $11,000 the first year, $23,000 the second year, $57,000 the fifth year, $85,000 the tenth year and $235,000 the twentieth year, with corresponding increases during the intervening years.
>
> 5. In addition to the interest saving shown above, there would be an operating saving to the United Electric Railways estimated at from $41,000 to $91,000 a year after providing for the retirement of bonds as set forth in subdivisions 1 and 2 above.
>
> 6. The interest and operating savings enumerated in subdivisions 4 and 5 will inure directly to the stockholders of the United Electric Railways and the riding public. These annual savings with the initial and subsequent annual retirement of bonds will, we believe, greatly enhance the value of the stock.
>
> The above figures relative to the retirement of bonds and the saving in interest charges are based upon purchasing bonds initially and during the 20-year period of the contract at prices at which we have assumed they might be purchased.

The services of Day & Zimmermann, Inc., have been engaged to make a thorough investigation of the plan and to report as to its effect upon the United Electric Railways, the Narragansett Electric Lighting Company, the railway company bondholders and the shareholders of both companies and their patrons and customers, and to give their opinion as to whether the plan conforms to the principle set forth in the letter.

The tentative proposal has the approval of the board of directors of the Narragansett company. To make it effective will require the approval of the security holders of both companies and of the Public Utilities Commission, and it is made, of course, contingent upon such approval.

A cash offer of $86 a share for Narragansett stock payable immediately upon presentation of certificates was made on Sept. 16 by Bond & Goodwin, Inc., Boston, with whom arrangements for the stock purchase have been made by the Rhode Island Public Service Company. This offer is not contingent upon the success of the proposed merger of the lighting and railway companies through the medium of the Public Service Company, but is an alternative to the original plan announced. All stock so purchased by Bond & Goodwin will be deposited under the plan and agreement to merge when such deposit is sufficient to make the plan effective both as to the Narragansett and the railway companies. Sept. 25 was fixed as the time limit on the Bond & Goodwin offer.

Receivership Sought for Iowa Property

Application for receivership for the Mississippi Valley Electric Company, demanded by stockholders, was granted on Sept. 11 by Judge Ralph Otto of the Johnson County District Court. Henry Negus, Iowa City Attorney, was named receiver with instructions to continue the operation of the three street railway properties involved. The Mississippi Valley Electric Company is the holding corporation for the Iowa City Electric Railway, the Fort Madison Electric Company, both in Iowa, and the Mankato Electric Railway, Mankato, Minn. Inroads on railway passenger traffic made by automobiles and buses were declared to be mainly responsible for the lack of patronage which brought on the receivership. Both of the companies in Iowa used a limited number of buses.

New Angle to Seattle Tax Case

The Puget Sound Power & Light Company, Seattle, Wash., has moved to collect an additional sum from the city in the street railway tax suit which has been pending in the courts for several years. Its idea for an additional sum is based on a rule of the Circuit Court which permits a respondent an additional 10 per cent where an appellant appeals "to cause delay." If the company is successful, the city would have to pay $500,000 plus 10 per cent, or $550,000. In the street railway case, the company asks that the city pay three-fourths of the 1919 tax on the street railway. Ownership was changed from the company to the city in that year, and as the city had possession of it for nine months, the company declares, it should pay three-fourths of the tax, which the company was required to pay, under protest, to King County. The company recently won a decision in the United States Court and the city appealed to the United States Circuit Court of Appeals. The amount of the 1919 tax was about $650,000.

Short Abandonment in Amsterdam Approved

The Public Service Commission on Sept. 3 approved the application of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., for permission to abandon part of its railway lines in the city of Amsterdam. The part to be abandoned consists of 2.08 miles of the so-called Hagaman line on Forbes Street-Vrooman Avenue and other streets, all within the city.

In the memorandum accompanying the order in this case the commission stated:

> As has been said by this commission in other cases, it is the duty of the commission to protect the interests of the public. The desire of the persons residing in the section traversed by this portion of the line to keep it in operation, however, is best evidenced by the patronage given it.
>
> Proposals to abandon portions of railroad lines because of continued financial losses resulting from operation have been passed upon by the courts on many occasions. Where it has been shown that the continued operation of an unprofitable branch or portion of line would tend only to exhaust the resources of the road as a whole, abandonment has been permitted.

Omaha Bondholders Act to Protect Franchise Rights

The City Council of Omaha, Neb., has refused to retain John P. Breen as an assistant to City Attorney Van Dusen in the litigation in the federal court brought by the Guarantee Trust Company, New York, representing the bondholders of the Omaha & Council Bluffs Street Railway, to restrain the city authorities from granting permits to bus companies to operate in competition with the railway. It will be recalled that the state Supreme Court decided that these were not franchises requiring a vote of the people but a

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license that the Council might grant or refuse.

The Council now stands enjoined by the federal court from taking the favorable action it indicated it would do with the buses, and the case, in the present crowded condition of the federal court calendar, will not be reached for six months. The petition has been drawn sufficiently broad to cover franchise litigation as well as bus rights, the refusal of the voters to extend the present railway franchise making that important to the bondholders.

Operating Income Lower on Boston & Maine Electrics

Operating income of the electric railways under the Boston & Maine Railroad supervision for the year ended Dec. 31, 1925, was $17,154, against $33,235 for a similar period ended the year previous. This fact was disclosed in the ninety-third annual report of the Boston & Maine. The electric properties included in the steam railroad system were the Portsmouth Electric Railway, operating from Portsmouth to Hampton, N. H., a distance of 14 miles, and the Concord Electric Railways, operating from Concord to Manchester and Penacook, N. H., a distance of 28 miles. The Portsmouth Electric Railway discontinued operation on May 17, 1925. The accompanying table shows the results of operation by these properties.

RESULTS OF OPERATIONS OF ELECTRIC RAILWAYS OF BOSTON & MAINE

	Year Ended Dec. 31, 1925	Year Ended Dec. 31, 1924
Revenues:		
Passenger	$202,535	$263,528
Freight	60	167
Mail	270	428
All other revenue	11,086	11,081
Total revenues	$213,951	$275,204
Operating Expenses:		
Total maintenance of way and structures	$25,635	$32,039
Total maintenance of equipment	$32,775	$47,945
Total power	$26,842	$37,042
Total traffic	$300	$489
Total transportation	$63,894	$83,315
Total general and miscellaneous	$21,994	$16,319
Total operating expenses	$171,443	$217,151
Net revenue	$42,507	$58,052
Tax accruals	25,353	24,817
Operating income	$17,154	$33,235

Doherty Interests Get Lake Shore Power

Ownership of the Lake Shore Power Company, carrying with it the control of the Toledo & Indiana Railroad, an interurban line between Toledo and Bryan, Ohio; the Toledo & Indiana Transportation Company, bus operating unit, and the Toledo & Indiana Building Company, owning the Toledo terminals of the electric line, has been purchased by Henry L. Doherty & Company.

It is anticipated that the power company will be linked up with the Toledo Edison Company, which serves territory both north and south of the Toledo & Indiana territory.

Future status of the railway is not yet determined. For the time being both units will continue to operate as at present.

Officers of the Lake Shore Power Company are Charles T. DeHore, president; Marion M. Miller, Toledo banker, treasurer, and LeRoy E. Eastman, secretary.

Officers of the Toledo & Indiana Railroad are L. G. Van Ness, Cincinnati, president; Charles T. DeHore, vice-president, and H. C. Warren, general manager.

President Van Ness and his associates also operate the Maumee Valley Transportation Company, a bus line which supplanted the former electric belt line operating on both sides of the Maumee River connecting Toledo with Maumee and Perrysburg, up-river suburbs.

Acquisition of the Toledo & Indiana line is the third electric railway purchase made by the Doherty interests here largely for development of the power distribution system in the Toledo territory. The Toledo & Western line and the Northwestern Ohio Railway were the two other railway properties whose power business was segregated and taken over by the Toledo Edison Company.

Change Proposed in Savannah Stock Set-Up

Stockholders of the Savannah Electric & Power Company, Savannah, Ga., which is part of the Engineers' Public Service System, a Stone & Webster, Inc., organization, will vote on Oct. 7 on a proposal to divide common stock on a four-to-one ratio and to place it on a no-par basis, and also to increase the authorized amount of first preferred or debenture stock.

It is proposed to change the present 25,000 shares of $100 par common stock into 100,000 shares of no-par stock and to give four new shares for every one of old held; to increase the number of common shares from 100,000 to 200,000; to increase from $1,800,000 to $2,300,000 the present amount of first preferred or debenture stocks, and to authorize directors to sell all or part of the new common or preferred stock.

Of the new common stock, 33,334 shares would be sold at $18 to Engineers' Public Service. The $600,000 provided by this sale would be used in part to complete an addition to generating equipment to cost about $2,300,000. Recently $1,700,000 of three-year 5 per cent coupon notes were sold to provide part of the amount required for this improvement.

The new preferred stock or debentures would be series C 7 per cent. It would be sold locally in lieu of 7½ per cent prior series debentures, which Savannah Electric has hitherto sold within its area of operations.

State Commission Reduces Illinois Rates $73,965,473 in Five Years

A total of $73,965,473 has been saved to the people of Illinois in reduced street car and elevated railroad fares and gas and electric rates in the five-year period from 1921 to 1926, during which Frank L. Smith has been chairman of the Illinois Commerce Commission. This statement was made by Mr. Smith himself to a committee composed of United States Senators in Chicago recently to investigate campaign fund expenditures.

Of the total saving, Mr. Smith declared, $43,223,473 was taken out of the earnings of Chicago traction properties; $35,281,326 of this was cut from Chicago Surface Lines revenues and the remainder from those of the Chicago Rapid Transit Company.

In answer to questions with regard to Rapid Transit rate reductions put to him by the investigating committee, Mr. Smith said:

> The rates were reduced about $8,000,000 in 1921. My recollection is that the fare was 10 cents at that time. The fare was lowered to three rides for 25 cents and a $1.25 book that reduced the average cost per passenger ride to 8½ cents.

$160,000 Net Income of Reading Company

The annual report of the Reading Transit Company, Reading, Pa., and its subsidiaries for the year ended July 31, 1926, shows a net income of $159,560, compared with $187,184 for the year previous. After deducting $119,145 for dividend on preferred stock, there was a balance of net income of $40,415 for the year 1926, compared with $68,039 for 1925. The company's complete statement follows:

EARNINGS OF READING TRANSIT AND SUBSIDIARY COMPANIES

	1926	1925
Operating revenue	$2,981,253	$3,018,159
Operating expenses and taxes	$1,715,145	$1,681,811
Maintenance and depreciation	700,990	750,186
Rentals	330,255	335,573
Total operating expenses maintenance, depreciation, taxes and rentals	$2,746,391	$2,767,570
Operating income	$234,861	$250,588
Other income	22,388	25,179
Total income	$257,250	$275,768
Deductions from Income: Interest on funded debt	$86,479	$77,459
Other deductions from income	11,210	11,124
Total deductions from income	$97,689	$88,583
Net income	$159,560	$187,184
Provision for dividend on preferred stock	119,145	119,145
Balance of net income	$40,415	$68,039

Record Travel on Chicago Surface Lines Continues

For the fourteenth consecutive month revenue rides on the Chicago Surface Lines, Chicago, Ill., exceeded the number of rides in the corresponding period of the previous year. The number of passengers carried in the month of July, while showing a slight decrease from the number recorded in June, increased 5,668,999 over a similar month of last year. The fact that the July figure is lower than that for June is attributed to the extraordinarily heavy traffic during the week of June 20, when in the three days of the Eucharistic Congress session in Chicago the system transported the largest number of people ever recorded by any single local transportation agency in the world. During the first seven months of this year there has been a total increase of 34,-

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982,866 rides on the Surface Lines, which is approximately 10,000,000 more than the total increase of 1925 over the previous year.

Gross earnings for the month of July totaled $4,978,676, compared with $5,135,966 in June and $4,753,357 in the corresponding month of 1925. Divisible receipts of $310,841 allowed the company $139,878 for its 55 per cent interest in earnings. During the month the company paid $2,755,126 in wages, of which sum trainmen received $1,806,704. The average fare per ride, including free and transfer passengers, was 3.78 cents, as against 3.77 cents in July of 1925.

Annapolis Interurban Earnings Off

A net loss of $62,478 is reported by the Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md., for the six months ended June 30, compared with a net loss of $14,488 in the corresponding period of 1925. In June the net loss was $4,598, against $9,104 last year.

Gross railway operating revenue during the half year was $984,068, against $1,109,108 in the comparative 1925 period. Gross revenue for June was $168,757, compared with $182,485.

While the percentage of railway operating expenses to railway operating revenue in the six months was somewhat higher than in 1925, substantial reduction was shown in June in favor of the company. Operating ratio for the first half of the year was 82.13, against 80.17 per cent, in the 1925 period, but in June this was lowered to 79.50, against 83.40 per cent in June, 1925.

STATEMENT OF EARNINGS OF THE WASHINGTON, BALTIMORE & ANNAPOLIS RAILROAD

	Six Months 1926	Six Months 1925
Railway operating revenues	$984,068	$1,109,108
Railway operating expenses	808,255	889,082
Net revenue railway operations	$175,812	$220,026
Net revenue auxiliary operations	45,314	44,539
Net operating revenue	$221,127	$264,566
Taxes assignable to railway operations	47,710	50,727
Operating income	$173,417	$213,839
Non-operating income	17,490	20,127
Gross income	$190,907	$233,966
Deductions from gross income	253,385	248,455
Net loss	$62,478	$14,488
Percentage railway operating expenses to railway operating revenues	82.13%	80.17%

The earnings are exclusive of the income of such subsidiaries as the Annapolis & Chesapeake Bay Power Company, the Terminal Real Estate Company, and the Maryland Development & Realty Company of Anne Arundel County.

New Customer-Ownership Campaign in Portland

To meet heavy capital requirements for the next year or two, the Portland Electric Power Company, Portland, Ore., has decided to offer to the public a new issue of first preferred stock. The dividend rate is $6 per share per annum. This issue is cumulative as to dividends and is non-assessable. It is to be sold for $90 a share, cash or on easy terms. It will yield 6.67 per cent return, with the dividend payable quarterly, on the first day of March, June, September and December.

The primary purpose in making the offering is to obtain the personal, friendly interest of the people of Portland as shareholders and their help and advice toward making the public service institution a better and more efficient public servant in every way.

The company is withdrawing from the market its present 7.2 per cent first preferred stock, of which nearly $4,000,000, par value, has been purchased by employees, customers and the public in a little over two years.

In order to carry on its vast program, the company says it will need more than $3,000,000 of new capital each year for a number of years.

Dividend on Louisville Railway Common

At a meeting on Sept. 10, directors of the Louisville Railway, Louisville, Ky., ordered a disbursement of $2 a share on the common stock, payable on Oct. 1, to stockholders of record Sept. 15. This is the first common stock dividend since July, 1918. The directors also ordered payment of the regular semi-annual dividend of $2.50 a share on preferred stock, payable also on Oct. 1.

It was announced that the directors hoped to be able to put the common on a 4 per cent annual dividend basis, but before anything can be decided upon, results of the present new operating agreement will have to be determined.

Gross Income Increases.—The St. Paul City Railway, St. Paul, Minn., reports to the Department of Public Utilities an increase of $16,000 gross income for July, 1926, over July, 1925. For the first seven months, under the new rate of fare of 8 cents and six tokens for 40 cents, the gross for the first seven months of 1926 was $85,639 more than in 1925. The income to July 31 is equivalent to a net return of 4.25 per cent on a valuation of $16,200,000. Revenue passengers carried in July, 1926, totaled 4,866,087, against 5,378,570 in July, 1925, and 5,053,970 in June, 1926. Revenue passengers for the first seven months totaled 39,287,931, compared with 42,878,437 in 1925.

Railway Service Plea Approved.—The Public Service Commission has authorized the issuance of 13,685 shares of no par value stock by the Cumberland & Westernport Transit Company, successor to the Cumberland & Westernport Electric Railway, Cumberland, Md. The authorized capital stock is 3,930 shares of preferred of no par value and 9,755 shares of common of no par value. As soon as the recent sale under foreclosure is ratified by the court and the receivership terminated the new company will take hold. Authority to furnish electric railway service between Frostburg and Cumberland and between Frostburg and Westernport has been granted to the company following a hearing by the Public Service Commission.

One Through Line Discontinued.—Operation of through cars on the Westfield-Holyoke line of the Springfield Street Railway, Springfield, Mass., ceased on Sept. 7. The company is still giving local service on this line as far as St. Mary's Cemetery.

Decreased Earnings Due to Strike.—The effects of the strike of employees of the Indianapolis Street Railway, Indianapolis, Ind., are reflected in decreased earnings and increased operating expenses totaling $111,037, according to a report just filed with the Indiana Public Service Commission for the month of July. The strike continued from July 5 to July 31. The report shows the gross earnings of the month were $371,002, compared with $420,155 for a similar month of last year; operating expenses were $384,839, compared with $322,954 for July a year ago. This, the company said, was due to the additional expenses in operation and protection of the company's property during the strike period.

F. C. Marston Named for Brooklyn Board.—At a meeting of holders of the voting trust certificates of the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., Fred C. Marston, secretary and treasurer, was nominated a director to succeed the late Charles Boody. The other eleven directors representing the voting trust certificate holders were renominated.

Bonds Refunded.—The $160,000 of 7 per cent bonds of the Marlborough & Westbury Street Railway due July 1, 1926, were paid off at maturity at the office of the American Trust Company, Boston, Mass. In connection with this payment the Worcester Consolidated Street Railway, Worcester, Mass., sold $160,000 of 6½ per cent refunding mortgage bonds dated Aug. 1, 1910, and due Aug. 1, 1930. The new securities were offered to the investing public through Harris, Forbes & Company, Boston, Mass.

Net Operating Revenues Fall Off.—During the calendar year 1925 the electric railways of the State of California had an operating revenue of $58,611,045, against $59,923,333 in 1924. This fact was disclosed in the annual report of the department of finance and accounts of the Railroad Commission. The operating expenses for 1925 were $47,062,373, against $46,181,326 in 1924. The net operating revenue in 1925 was $11,548,671, against $13,742,007 in 1924.

Revenue in Madison Increases.—While the total number of street car passengers carried by the Madison Railways, Madison, Wis., during August, 1926, showed a decrease compared with the 1920-24 four-year average for August the company's gross revenue from street car and bus operation increased $1,538 over that of August, 1925. Street car and bus passengers for August, 1926, totaled 441,703, compared with 407,744 for last year; street car passengers in August, 1926, 411,307, compared with 499,349 for the four-year average in August; gross street car and bus revenue in August, 1926, $30,251, compared with $28,713 for August, 1925; gross street car revenue August, 1926, $27,860, compared with $27,250 recorded for the corresponding month last year.

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Wishes to Abandon Line.—The New York & Stamford Railway on Sept. 10 filed a petition with the Public Service Commission for permission to abandon "that portion of its route which is located on Palmer Avenue between Fenimore Road and Mamaroneck Avenue in the village of Mamaroneck, Westchester County." It was claimed that the route was no longer necessary for the successful operation of the road and the convenience of the public. A public hearing will be held on the application.

Increase in Net Earnings.—For the year ended Dec. 31, 1925, the gross earnings of the operating subsidiaries of the Electric Light & Power Corporation amounted to $44,614,878, against $41,452,378 in 1924. The net earnings were $18,417,861, against $16,425,549 in 1924. The Electric Light & Power Corporation owns considerable stock in many railway properties, including the New Orleans Public Service, Inc., New Orleans, La., and the Texas Interurban Railway, operating a high-speed service between Dallas and Terrell and Dallas and Denton.

Discontinuance of Line Approved.—Abandonment of the Northern States Power Company's unprofitable interurban line between Chippewa Falls and Eau Claire, Wis., which was postponed during Fair Week, was made permanent on Sept. 1, in accordance with an order of approval by the commission. Tracks will be removed in Chippewa Falls and out of Chippewa Falls as far as the city limits of Eau Claire. Electric railway service, however, will be provided by the company in Eau Claire.

Rental Dividend Declared by Interborough.—Directors of the Interborough Rapid Transit Company, New York, N. Y., on Sept. 14 authorized payment of the regular quarterly dividend rental of $1.25 per share on the stock of the Manhattan Railway subject to the plan of readjustment. The dividend rental is payable Oct. 1 to stockholders subject to the plan of readjustment of record Sept. 20.

Would Abandon Freight Stations.—Permission has been granted by the California Railroad Commission to the Pacific Electric Railway to discontinue and abandon its freight stations at Surf Street in the city of Santa Monica and at Mildred Avenue in Venice. The company has been authorized to establish in lieu thereof a consolidated freight station at Sunset Avenue, Venice.

Approves Removal of Trolley Route.—The Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., recently received formal approval from the Public Service Commission to substitute buses in place of street cars in Grand Avenue and South East Avenue in the city and town of Poughkeepsie. The city of Poughkeepsie through Mayor Frank B. Lovelace approved the application of the railway company so that the city could carry out a new paving program.

Apply to Abandon Lines.—The International Railway, Buffalo, N. Y., has petitioned the Public Service Commission for approval of a declaration of abandonment of certain lines in the village of Kenmore and the town and city of Tonawanda, Erie County. At the same time the International Bus Corporation, a subsidiary of the International Railway, filed a petition for a certificate of convenience and necessity for the operation of a bus route over substantially the route to be abandoned. Public hearing on these two applications will be held before the Public Service Commission.

New Grouping of Mississippi Properties.—Incorporation of the Mississippi Central Power Corporation in Maryland is said to presage the consolidation into a new group of several Southern public utilities supervised by the Electric Bond & Share Company. The properties said to be involved in the transaction are controlled by the Electric Power & Light Corporation, an Electric Bond & Share affiliation. The Electric Power & Light properties which it is expected will be re-grouped are the Arkansas Light & Power Company, Pine Bluff Company, Louisiana Power & Light Company, Central Louisiana Power Company, Louisiana Power Company and Mississippi Power & Light Company. These properties are already for the most part interconnected. They serve a population exceeding 300,000 persons.

Issues of Bonds, Notes and Stock Authorized.—The Minneapolis, Northfield & Southern Railway, Minneapolis, Minn., has been authorized by the Interstate Commerce Commission to issue $750,000 of first mortgage gold bonds, $250,000 of five-year convertible 6 per cent gold notes and $250,000 of common capital stock. Bonds are to be sold at not less than 55 per cent of par and the notes at not less than par.

Will Abandon Railway Service.—The New Bedford & Onset Street Railway, New Bedford, Mass., plans to discontinue service on all its electric lines after Oct. 16. Elton S. Wilde, president of the company, has sent notices to that effect to the Board of Selectmen in the several towns through which the road operates, namely Middleboro, Wareham, Rochester, Marion, Mattapoiset and Bourne. This action follows a recent vote of the board of directors, which was authorized by the stockholders some time ago to take whatever action it saw fit with the best interests of the company in mind. The line is 33 miles long. Just what will be done with the equipment, property and franchises of the railway has not been decided. The Union Street Railway is operating a bus line to take care of service in that section.

Petitions for Discontinuance.—The abandonment of 9 miles of track and right-of-way between Salamanca and Little Valley, N. Y., has been proposed to the Interstate Commerce Commission by the Olean, Bradford & Salamanca Railway, Olean, N. Y. In its petition for authority to discontinue service and take up the tracks on its Little Valley branch the railway states that the line was built in 1906 with the expectation of doing a large business between the two communities. Since then a concrete highway has been constructed between the two towns, paralleling the railway much of the way and private automobiles and buses now carry a large part of the traffic which the railway had expected. For some time the line has been a losing proposition and last year the loss equaled 50 per cent of the gross income, it is declared.

Personal Items

S. E. Mason Made General Manager at San Diego

The recent promotion of S. E. Mason as general manager of the San Diego Electric Railway and of the San Diego & Coronado Ferry Company, San Diego, Cal., marks another step in his rather meteoric career with these properties, owned and operated by the Spreckels interests. Mr. Mason entered the service of the San Diego companies as superintendent of equipment in July, 1923, coming from the San Antonio Gas & Electric Company, with which he was connected for eleven years, the last six as superintendent of equipment, traction department.

In January, 1924, he was promoted to the position of general superintendent, and in June, 1925, upon the resignation of Claus Spreckels, vice-president and general manager, who at that time gave up active management of the electric railway in order to devote more time to the general direction of the large diversified Spreckels activities in San Diego, Mr. Mason was appointed assistant general manager directly responsible to the president of the road. Reorganization and division responsibilities brought about by the death of John D. Spreckels led to his promotion to the position of general manager in August of this year. Mr. Mason was born in Texas in 1889.

Dean J. Locke Joins Baltimore Company

Dean J. Locke will join the staff of the United Railways & Electric Company, Baltimore, Md., on Oct. 1, as assistant superintendent of traffic. He will go from the Public Service group of transportation companies of New Jersey, where he has been staff engineer and personal assistant to the vice-president in charge of operation during the past four years.

Following his graduation from Worcester Polytechnic Institute in 1912, Mr. Locke entered the employ of Albert S. Richey, electric railway engineer of Worcester, Mass., as electrical engineer, and during a period of eleven years was actively engaged in the solution of a wide range of transportation problems for railway properties throughout the East. Included in his activities were traffic surveys, appraisals of railway and lighting properties, car and equipment tests, and statistical work. In

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New Jersey Mr. Locke's work has been even broader, having to do with many of the activities of a large company operating city, suburban and interurban cars, city and suburban buses, and ferries, although the greater part of his time was devoted to the analysis and solution of problems arising from the active competition betwen motor vehicles and trolleys.

M. H. Aylesworth with New Broadcasting Company

M. H. Aylesworth, for many years managing director of the National Electric Light Association, has been elected president of the new National Broadcasting Company. He will perform the executive and administrative duties of the corporation.

Mr. Aylesworth, while not hitherto identified with the radio industry or broadcasting, has had public experience as chairman of the Colorado Public Utilities Commission, and, through his work with the association which represents the electrical industry, has a broad understanding of the technical problems which measure the pace of broadcasting.

One of his major responsibilities will be to see that the operations of the National Broadcasting Company reflect enlightened public opinion, which expresses itself so promptly the morning after any error of taste or judgment or departure from fair play.

The new company is really the outgrowth of the purchase of station W.E.A.F., by the Radio Corporation of America, which decided to incorporate that station, under the name of the National Broadcasting Company, Inc., to provide the best program available for broadcasting in the United States. It is hoped that arrangements may be made so that every event of national importance may be broadcast widely throughout the United States.

Obituary

C. A. Elliott

Clifford A. Elliott, cost engineer of the engineering department of the Pacific Electric Railway, Los Angeles, Cal., died on Sept. 6 at the Pacific Hospital. Mr. Elliott was one of the most widely known and highly regarded of veteran employees. Never of robust health, during the past two years he had been ill intermittently which caused him to give up his work from time to time.

Mr. Elliott became connected with the Pacific Electric in February, 1911, as a clerk. As cost engineer he had charge of computing expenditures and of preparing work orders. His familiarity with details of historical construction was one of his outstanding attributes. He was a regular contributor to the *Pacific Electric Magazine*, published by the railway, and for many years had been a contributor to the ELECTRIC RAILWAY JOURNAL.

Mr. Elliott was born in Missouri, in 1883.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

400,000 Tons of Steel Needed

New York City Will Want This Amount in Two Years, but Is Against Bids from Abroad

New York City within the next two years will require 400,000 tons of steel for its subway building program. To date, about 7,500 tons of steel has been contracted for on the subway construction sections now under way. On one of the subway contracts now under construction the Board of Transportation, in the hope of reducing costs, segregated the steel items from all the other items and asked for independent bids from steel manufacturers in this country. Despite this, only three bids were received from steel fabricators, and one of the leading steel mills that supplies most of the steel to subway builders did not bid at all.

The most recent subway construction contract awarded by the Board of Transportation contained an item for 3,000 tons of steel at $115 a ton. The average price, however, varies between $120 and $125 a ton.

Despite the urgings of contractors, the board has declined to approve of the use of foreign fabricated steel for the subways now under construction. Contractors have asked that German and Belgian made steel be utilized in the construction of the new rapid transit system, but the board is determined to adhere to its policy of using only American made steel, unless unit item prices for home-made articles are increased to a point where foreign competition must have to be considered as a matter of self-protection against unwarrantably high bids for domestic products.

The board does not wish unnecessarily to invite the foreign made steel here. Moreover, expert inspection of the foreign made material would necessitate the employment and maintenance of steel inspectors in the foreign mills. This objection is not so serious, however, for contractors have offered to defray the added expenses of foreign inspection and maintenance of American inspectors at the mills abroad.

Handbook of Pneumatic Tools for Railways

A convenient little pocket handbook of pneumatic tools for railways has just been published by the Ingersoll-Rand Company, New York, N. Y. While many of the tools listed therein are particularly designed for steam railroad uses, there are also many which are equally applicable for use in electric railway shops. The major portion of the handbook is given over to pictures of Ingersoll-Rand tools in actual use in various applications, and in each case the recommended size and type of tool for that particular task is given. Electric railway men will be particularly interested in the tools specified for repair work on steel cars, wood work on composite cars and wooden cars, and tools for passenger car work. Descriptions of Ingersoll-Rand pneumatic tools of all types suitable for railway work are also included in this compact handbook.

Sales of Yellow Coaches to Electric Railways Are Active

During the month of August a large number of buses manufactured by the Yellow Truck & Coach Manufacturing Company, of Chicago, Ill., were sold to electric railway companies and their bus-operating subsidiaries throughout the country. Three 21-passenger, pay-enter coaches were also ordered by the London Street Railway Company, London, Ont.

The purchasers and the types and numbers of units ordered by each are reported as follows:

Operator	Model	No. Units
Houston Electric Company, Houston, Tex.	"X" 21-passenger, pay-enter	1
	"Z" 230-wheelbase 33-passenger coach	1
London Street Railway, London, Ont., Canada	"X" 21-passenger, pay-enter	3
Potomac Edison Company, Hagerstown, Md.	"X" 21-passenger, pay-enter	2
Fort Dodge, Des Moines & Southern Transportation Company, Boone, Iowa	"Y" Parlor Coach, 29-passenger	2
Blue Goose Motor Coach Company, East St. Louis, Ill.	"Y" Parlor Coach 29-passenger	1
Tennessee Electric Power Company, Nashville, Tenn.	"Z" 29-passenger, City service	10
New Orleans Public Service Company, New Orleans, La.	Gas-electric chassis (St. Louis bodies)	9
Boston Elevated Railway, Boston, Mass.	"Z" 29-passenger, City service	5
Tri-City Railway, Davenport, Iowa	"X" 21-passenger pay-enter	6
West Pennsylvania Railway, Pittsburgh, Pa.	"X" 21-passenger pay-enter	2
International Bus Corporation, Buffalo, N. Y.	Gas-electric 33-passenger, City service	5
Wyoming Valley Autobus Company, Wilkes-Barre, Pa.	"X" 21-passenger, pay-enter	2
	"Z" 29-passenger, City service	10

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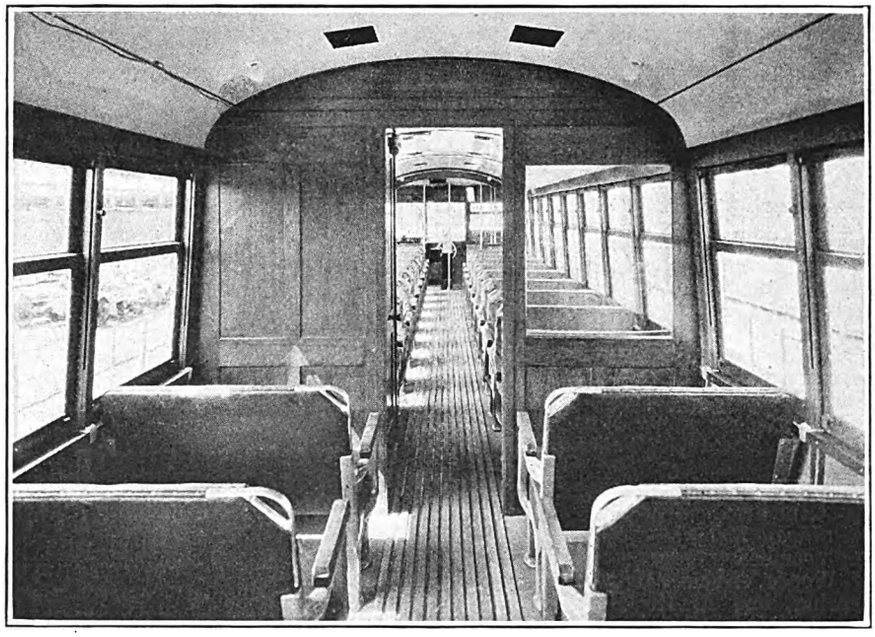
Important Notice to Exhibitors at Cleveland Convention

EXHIBITS at the American Electric Railway Association convention in Cleveland will be thrown open to the general public on Wednesday evening, Oct. 6, from 7 to 10:30 o'clock. It is expected, therefore, that each exhibitor will have some one in attendance at his booth between these hours. This will not only safeguard exhibits from molestation or possible theft, but will further pleasant relations with the public through having competent representatives on hand to answer questions. Exhibitors owe it to themselves to have their booths properly manned on Wednesday evening.



Looking Forward from the Smoking Compartment in One of the New Alliance Cars

Another Snag in Purchase of Seattle's 80 New Cars

Discussion over the purchase of extensive new rolling stock by the Municipal Railway waxes quite warm at times in official circles of Seattle, Wash. The City Council has attempted to justify the proposed purchase of 80 street cars with the statement that they are needed to accommodate the steady increase in patronage on the city's lines. Official reports have been forthcoming, however, to show that the number of car riders has done anything but increase of late. A legal obstacle to the issuance of bonds to finance the purchase has thus suggested itself to Corporation Counsel T. J. L. Kennedy.

He had been asked by City Comptroller Harry W. Carroll to pass on the ordinance providing for the purchase, the Comptroller meanwhile withholding the sale of $1,875,000 bonds. While leaving the finding of fact up to the Council, Mr. Kennedy held that it is without authority to issue bonds for the purchase of any new utility equipment intended as replacement. Such an act would be in violation of a section of the state law designed to safeguard the public from mismanagement of a municipally owned utility, Mr. Kenney pointed out.

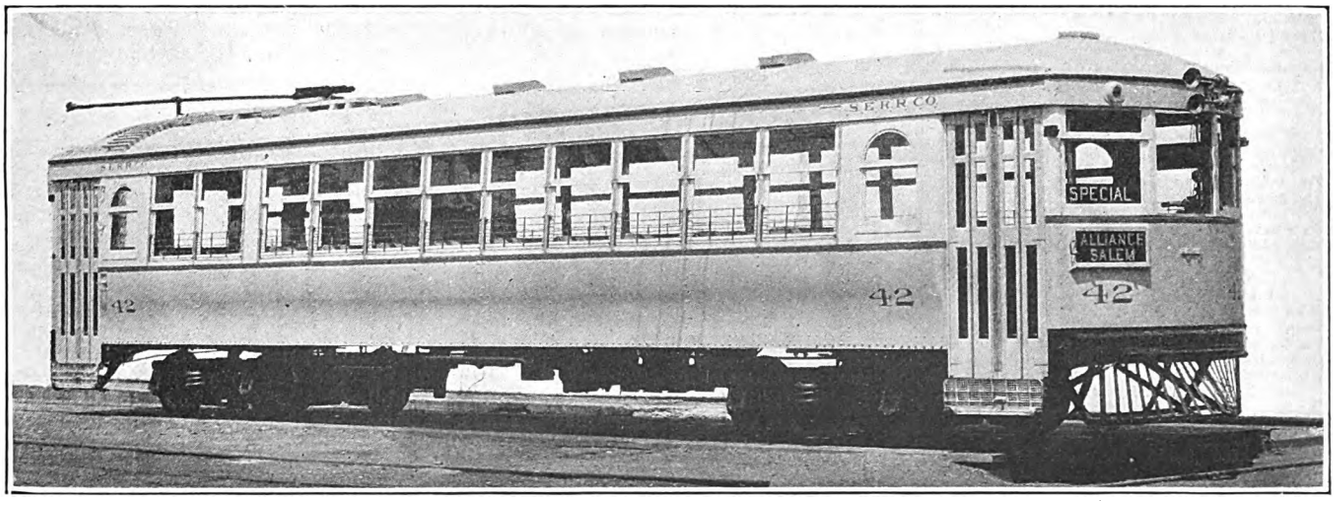
Whether the present contemplated purchase was for the purpose of extension or for replacement, the Corporation Counsel indicated, was for the Council itself to determine. This point has already been discussed at length among Council members. At the time the ordinance was being framed Councilman Oliver T. Erickson pointed out the "deceit" in the bill, which declares that the present rolling stock is "entirely inadequate to provide properly for transportation of the passengers now using the said system, and the increase in the number of patrons of said system has accentuated the already urgent demand for seats for all passengers." In view of all railway department reports showing a steady decrease in patronage, the falsity of such a statement is evident, according to Mr. Erickson. He points out, therefore, that any new equipment must be considered replacement.

Commenting on the opinion of the Corporation Counsel, City Comptroller Carroll said that he will continue to hold up the issuance of the bonds until he can determine whether there is any concealed discount in the purchase contract and also whether the new cars are in the nature of extension or replacement.

Passenger Comfort Is Greatest Factor in New Alliance Cars

Many special features have been incorporated into the design of the new cars delivered to the Stark Electric Railroad, Alliance, Ohio, to render them attractive to the riding public. Intended for interurban service, the eight new units combine both passenger and smoking compartments and each is further equipped with a toilet room, located at the partition between the passenger and smoking compartments. It is planned to operate the cars under one-man operation, full use being made of safety devices which will render that control absolutely safe.

Specifications on the cars were published in the issue of ELECTRIC RAILWAY JOURNAL for April 17, 1926. The new rolling stock was built by the Cincinnati Car Company, Cincinnati, Ohio, and is to be used in service between Alliance and Salem. Such un-



Eight of These Cars Have Been Placed in Service Between Alliance and Salem, Ohio

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usual features as hat check boxes and telephones are included in the equipment.

Westinghouse Engineering Department Reorganized

A reorganization of the general engineering department of the Westinghouse Electric & Manufacturing Company has been announced by H. W. Cope, assistant director of engineering. The reorganization has necessitated the reallocation of several engineers, four being elevated to managers of engineering. These are S. B. Cooper, manager of railway engineering; F. C. Hanker, manager of central station engineering; G. E. Stoltz, manager of industrial engineering, and W. E. Thau, manager of marine engineering.

Other appointments announced by Mr. Cope are:

Railway Engineering—H. K. Smith, engineer heavy traction engineering; G. M. Woods, engineer light traction engineering, and A. H. Candee, engineer gas-electric traction engineering.

Central Station Engineering—C. A. Powel, engineer generating station engineering; R. D. Evans, engineer transmission engineering, and C. A. Butcher, engineer substation engineering.

Industrial Engineering—C. W. Drake, engineer general industrial engineering; J. W. Speer, engineer material handling engineering, and E. B. Dawson, engineer electrochemical and electrometallurgical engineering.

The appointment of N. W. Storer as consulting railway engineer in charge of the group handling of Diesel-electric locomotives and rail cars, has been announced by R. S. Feicht, director of engineering.

Track and Line

Community Traction Company, Toledo, Ohio, has ordered 750 tons of 100-lb. rail to be used in the reconstruction of the Cherry Street line and a section of Nebraska Avenue. Track construction will be of the steel-tie type. The actual work will await the plans of the city of Toledo for its repaving of the two streets.

Seattle Municipal Railway, Seattle, Wash., has awarded contracts totaling $9,625 for cable on the Yesler Way, James Street and Madison Street lines.

Los Angeles Railway, Los Angeles, Cal., has filed an application for permission to extend the street car tracks from Fifth and Flower Streets west to the intersection with Beaudry Avenue, thence across Beaudry Avenue and Boylston Street to connect with the present Sixth Street line; also to extend the car line on Figueroa Street from Fifth Street to Sixth Street. A more direct connection with the downtown district will be made by the extensions requested and will be of great benefit to patrons using these car lines.

Winnipeg Electric Company, Winnipeg, Man., is building an extension of line on St. Ann's Road, from St. Mary's Road, 8,000 ft. of single track open construction to be laid with 60-lb. rails and provided with bracket arm trolleys. The company contemplates building a double-track line on the new Memorial Boulevard, connecting Portage Avenue and Broadway; 2,200 ft. of track to be laid on Main Street with 85-lb. C.P.R. rails with elastic fillers provided with span wire trolley on ornamental lighting posts. It will also relay 1,200 ft. of double track line on Osborne Street from Broadway to Osborne Bridge, construction to be similar to that on Memorial Boulevard. This relaying has been rendered necessary owing to the realignment of Osborne Street.

South Carolina Gas & Electric Company, Spartanburg, S. C., has received much of the material to be used in relaying its rails on West Main Street. The company is reported ready to start installation just as soon as the Southern Paving & Construction Company, holder of the local paving contract, is ready to pave the thoroughfare. This company will lay the rails as well as do the paving.

San Diego Railway, San Diego, Cal., has started the reconstruction of track on the Imperial Avenue line. The standard steel tie and concrete ballast type of construction will be used. Additional crossovers are being installed to permit through line traffic. The work will cost about $75,000.

Power Houses, Shops and and Buildings

Indianapolis Street Railway, Indianapolis, Ind., plans the construction of five substations, bids on which are being received. Each station will cost about $20,000 and will be 32 ft. x 50 ft. Each will be of brick with steel sash, and equipped with fire doors. Construction will start this fall in an effort to have the substations in operation before midwinter.

Trade Notes

E. H. Johnson has been appointed engineer of the service department for the Timken Roller Bearing Company, Canton, Ohio. He will have direct charge of the installation of Timken bearings in automotive and industrial applications. Mr. Johnson's experience in this field with the Timken company qualifies him particularly well to direct this work.

Ingot Iron Railway Products Company, Middletown, Ohio, announces the removal of its general office from 122 South Michigan Avenue, Chicago, Ill., to Middletown, Ohio. District offices are maintained at Chicago, St. Louis, Minneapolis and Philadelphia.

New Advertising Literature

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-452 describing its welding head and accessories for automatic arc welding.

Lincoln Electric Company, Cleveland, Ohio, has started the publication of a house organ known as "The Operator's Stabilizer," published "for operators who take pride in their jobs." A. F. Davis, the editor, wants to make the stabilizer a regular and frequent "convention" of the boys doing the real work in welding. The first issue devoted generous space to "How Can I Do It?" as well as "How I Did It." Suggestions are invited.

ELECTRIC RAILWAY MATERIAL PRICES—Sept. 14, 1926

Metals—New York

Copper, electrolytic, cents per lb.	14.35
Lead, cents per lb.	8.75
Nickel, cents per lb.	35.00
Zinc, cents per lb.	7.45
Tin, Straits, cents per lb.	68.875
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	56.00
General service	31.50

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$5.375
Somerset mine run, Boston	1.95
Pittsburgh mine run, Pittsburgh	2.00
Franklin, Ill., screenings, Chicago	1.575
Central, Ill., screenings, Chicago	1.40
Kansas screenings, Kansas City	2.35

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.30
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.20
Steel bars, cents per lb.	2.00
Ties, white oak, Chicago, 6 in.x8 in.x8 ft.	$1.45

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (24 gage), cents per lb.	3.00
Sheet iron, galvanized (24 gage), cents per lb.	3.85
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	2.50

Waste—New York

Waste, wool, cents per lb.	12–18
Waste, cotton (100 lb. bale), cents per lb.:	
White	13–17.50
Colored	10–14

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	11.6
White lead in oil (100 lb. keg), cents per lb.	15.25
Turpentine (bbl. lots), per gal.	$0.95
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	5.25–5.50

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire, cents per lb.	16.25
Rubber-covered wire, No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, cents per lb.	18.00

Paving Materials

Paving stone, granite, 5 in. New York—Grade 1, per thousand	$147
Wood block paving 3½, 16 lb. treatment, N. Y., per sq.yd.	$2.70
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3x8½x4 N.Y., per 1,000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	1.85
Cement, Chicago consumers' net prices, without bags	2.10
Gravel, ¾-in., cu.yd., f.o.b. N. Y.	1.75
Sand, cu.yd., f.o.b. N. Y.	1.00

Old Metals—New York and Chicago

Heavy copper, cents per lb.	11.75
Light copper, cents per lb.	10.00
Heavy brass, cents per lb.	7.125
Zinc, old scrap, cents per lb.	4.25
Lead, cents per lb. (heavy)	7.25
Steel car axles, Chicago, net ton	$17.75
Cast iron car wheels, Chicago, gross ton	15.50
Rails (short), Chicago, gross ton	17.75
Rails, (relaying), Chicago, gross ton	26.00
Machine turnings, Chicago, gross ton	8.25

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ANNUAL CONVENTION NUMBER

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, September 25, 1926 *Number* 13

Surely the Road Opens Ahead

BEFORE the electric railway industry there is gradually opening a broadened vista. Bends and crooks in the road are less tortuous and confusing. There appear patches of light ahead, penetrating sharply through the former enshadowing gloom. There are visible glimpses of a smoother and straighter road, leading constantly toward accomplishment, service and success.

MOST of the industry has stopped looking for sympathy. It is too busy struggling ahead toward substantial success. It has become aware of the obvious fact that an individual or an industry which falls victim to self-pity and is content to ask for charity, may expect to live in the poorhouse. This is an age of keen competition. An industry no more than an individual can afford to pause long by the wayside contemplating the route behind—rough though it may have been. Progress presses on and he who hesitates is soon counted out in the impatient rush toward greater convenience, increased comfort and luxury—better living conditions.

TRANSPORTATION is an essential part of modern everyday life. And the electric railway industry is beginning to realize the full significance of modern competitive conditions. Although still theoretically a monopoly, common carriers are in actual competition with individually owned vehicles. They are beginning to understand how to approach the situation. They are beginning to interpret the full significance of the much-talked-of need for transportation salesmanship. The start of any intelligent selling campaign should be a careful analysis of the product itself and its markets. Electric railways are becoming better sales organizations.

IN THOSE instances where substantial progress has been made in this direction, there has quickly taken place a replacement of old and dilapidated equipment with the finest which the builders had to offer. There has developed a growing demand for still further improvement of the vehicle in which rides are sold. Such a program of rehabilitation and replacement has proved profitable on practically every property where it has been followed. The first big step in making transportation pay has proved to be the application of new, improved equipment and modern methods of operation. The experiences of many properties, as outlined in this issue, indicate what can be done.

THE road is becoming smoother. Fear and doubt disappear under the stimulus of accelerated motion. One after another the record is being written of properties which have emerged from stagnation to progress. The industry as a whole is getting ready to move forward—"full speed ahead"!

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Eight Cents per Car-Mile May Change Red Figures to Black

REPLACEMENT of old cars by new can reduce operating cost approximately 8 cents per car-mile. That, in a nutshell, is the result shown by a survey, appearing elsewhere in this issue, covering the experience of twenty electric railways which have been active in adopting modern equipment. Looking at the matter from another angle, the cost on these properties is 9 cents per car-mile less than the cost on twenty comparable railways which have made but little progress in modernization. More convincing evidence of the value of new cars would be difficult to find.

The representative character of the railways embraced in the survey makes the comparisons particularly significant. All types of operation are included, city, interurban and combinations of the two. Service is rendered in large, small and medium-size communities. Under widely differing conditions, these progressive railways have all found that it pays well to substitute modern, light-weight cars for old, heavy rolling stock.

Economies were most clearly demonstrated in the conducting transportation and power accounts. Maintenance of equipment costs showed a smaller reduction, due possibly to an increased allowance for depreciation. In the way and structures account, naturally, the economic advantage of new cars was more difficult to find. Less significance attaches, perhaps, to the actual figures than to the disclosure that every one of these twenty railways made substantial savings by modernizing its equipment. It would be going too far to assume that replacement of old cars by new ones will always reduce operating expenses 8 or 9 cents per car-mile. In certain cases the resulting economies would probably be somewhat less than that, while in other cases they might easily be a good deal larger. The best indication of what may be expected, however, is the experience of the many railways of varying size and wide geographical distribution which have found modernization of equipment highly successful.

Lost Revenue Regained by Better Cars

REVENUE-PRODUCING attributes of new cars frequently are lost to sight because of the spectacular character of the savings in operating expenses. It is easier to trace cause and effect in costs than in revenue, and the advantages of equipment modernization are more readily discernible. Of equal, or even greater, importance, however, is the increased traffic that results from the operation of better and more attractive cars.

Notable examples of increased patronage resulting from rolling stock improvement are cited in the experience stories by prominent railway executives, published in this issue. The Pennsylvania-Ohio Electric Company, from a low ebb in 1920, first won back its traffic from bus competitors by operating de luxe coaches. Attention was then turned to applying the same ideas to the rail business, and with the advent of new cars a substantial increase in riding occurred. On the Key System in California revenue on one line increased approximately $1 per car-hour after the line had been fully equipped with modern cars. Revenue on the Indiana Harbor division of the Gary Railways increased 2 cents per car-mile after modernization of equipment.

With new rolling stock in operation on the Youngstown & Suburban Railway during the first five months of the present year the gross passenger revenue was about 4 per cent greater than during the corresponding period in 1925. Traffic increases as the result of operating new cars are reported also by the Interstate Street Railway, the Cumberland Traction Company, the Buffalo & Erie Railway and the Morris County Traction Company. In Grand Rapids, revenue has shown an extremely encouraging growth since the new equipment has been in service. The gross for each month of this year has been larger than that for the corresponding month last year. These are but a few among the many railways that have experienced a gain in traffic as the result of improvement in equipment.

The Bus Is Finding a More Definite Place

THE meaning of bus service supplemental and auxiliary to electric railways is becoming clearer. In most states regulation has changed the competitive situation except with respect to interstate buses. It has therefore become possible to study bus operations started in an emergency for self-preservation, with a view to avoiding the wasteful duplication that resulted. This has gradually led toward more fundamental thinking with respect to the bus and enlarged vision of its possibilities. Instead of proving to be white elephants after the need for protection from competition was overcome, buses have proved valuable for opening up new avenues of revenue. In some instances this process has been held back by fares which, having been established in the competitive period, are too low and are now difficult to change.

Special party, de luxe express and tour services have proved to be both popular and profitable. Fare limits in such service have been flexible enough to make profitable operation possible. There is little question but that large opportunities exist for expansion in this direction. There is a rapidly growing number of people who, having tasted the luxury of the private automobile, are no longer satisfied with the democratic, low-price, common-carrier vehicle. Just as the steam roads have found a growing patronage for solid Pullman excess fare trains in long hauls, so does a similar demand seem to exist for something exclusive in short-haul travel. It does not seem to be so much the actual comfort or luxury that is demanded as the select association or "exclusiveness" which comes with a preferred form of service. A distinctly higher fare than that of the basic transportation agency seems to be essential.

In the case of city properties the past year's experiences in Washington and Kansas City, where 25-cent de luxe express lines have been gradually attracting increased riding, show the possibilities of further bus expansion in this direction. With the constantly increasing congestion of city streets, de luxe express service at fares of 25 cents, or some variation in the form of a taxi-bus making a comparatively high mileage charge, would appeal to an increasing number of automobile drivers and would make a distinct contribution to the relief of traffic congestion. With that in view, vehicles for such service should preferably be comparatively small in size and not over three seats wide.

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Small capacity would increase the "exclusiveness" of the ride and make possible schedule speeds approximating true express operation. The fare should be high enough to compensate for the small carrying capacity.

Much progress has been made in finding the place of the bus. That place is a large one in the general scheme of transportation, but it becomes more evident steadily that it is not found in duplication or replacement of any large electric railway mileage. Replacements of rail operations in territory that will not support rail service are a minor rather than a major field for the bus.

As experience has grown it has become increasingly clear that there is no mysterious "rubber urge" in respect to common-carrier transportation. There is a demand for something that approaches the automobile in luxury and exclusiveness. Co-ordination is taking on a more definite meaning. The bugaboo of the bus as a competitor is disappearing. Transportation men are realizing that the individually owned vehicle is the real competitor and that each form of common carrier has a proper place in meeting this competition.

Maintenance, Too, Must Meet Today's Popular Demand

SUCCESS in full measure demands a full measure of modernization. Even new cars may fall short of attaining the results that should be expected of them if they are allowed to run down in conformity with the old idea of "adequate" service.

Adequate maintenance standards today must be measured in terms of operating excellence expected by an automobile riding public. Modern cars are designed with closer fits and smaller clearances—these are among the details that make them modern. For continued improved performance they must be kept in a condition which rises above former standards. In the hands of master mechanics, in so far as the management policies permit, lies the power to sustain or destroy the reliability and performance of new equipment.

Light cars, when well designed, ride easier on rough track than the older, heavier units. This makes for public satisfaction, but it should not be accepted as an excuse for failure to improve the track. It should be accepted only as a preliminary to such an improvement. Compare this with the highway situation. Only a few years ago any kind of a hard road was considered entirely satisfactory. But now concrete roads have been developed so that the automobile passenger resents a surface that is only slightly uneven. So it is with track. Here the maintenance of way engineer fits into the new car program, but he must have an adequate budget and a proper sense of modern demands to win public approval of his track.

To read through the cross-section of recent developments contained in this issue shows that much has been done in establishing better maintenance practices. In Pittsburgh both the way and equipment departments have been reorganized, so that a better job is being done at lower cost. The Cleveland management for years has given special attention to improving maintenance, by the development of improved tools and methods. Other properties show similar evidence of improvement in maintenance practices.

Maintenance men might well be in close touch with the public relations department. Behind the lines, their work largely unseen by the general public, they can do a great deal to create or to destroy the good will of the public.

What New Cars Are Doing for Public Relations

AMPLE evidence is available in the columns of this issue to indicate the degree of success which has been attained in carrying out a program of building good will through installation of improved cars. Properties which long since had bidden farewell to the last vestige of public concern in the ultimate working out of the railway's destiny have lived to see that interest restored and enhanced to a degree unconceived even a few years ago.

Take the street railway in Gary, for example. This Indiana industrial town was literally flooded with unrestricted jitneys shortly after the war and the railway's earnings began to take a sharp decline under this cutthroat competition, which seemed ominous. But improved light-weight, one-man cars and carefully revised headways and schedules won the support of the public in favor of the progressive established carrier. Six months later an ordinance was passed excluding all jitneys from the streets.

Grand Rapids presents another example. Realizing that pride in its railway system is the first step toward public friendship, patronage, fair franchise terms and adequate rates of fare, the railway has bent every effort to improve the physical equipment with which its service is rendered. The recent unsolicited statement by Mayor Swarthout that it would be well to subsidize the railway if necessary to continue the program of improvement thus auspiciously started is unnecessary of comment. Prominent citizens and local organizations have been proud to have the new Grand Rapids cars named after them.

No attempt was made in Schenectady to bargain for "so much increased good will per new car." It was felt by the local railway officials that once the people were convinced of the sincerity of the company's expressed desire to give the best possible service under existing conditions, good will, with all of its by-products, would follow. A healthy development of employee morale and of public co-operation has been manifested since the first of the new cars were placed in service on that property. The Eastern Massachusetts Street Railway has experienced much the same reaction in its program of winning good will through the medium of putting its house in order. New cars have proved to be tangible evidence of a railway's desire to meet the public half way.

These are but random examples. Wherever the railways have had the courage to throw down the gauntlet to their outstanding rival, the private automobile, and have taken a few leaves from the latter's book in the matter of improved comfort and appearance results have not been slow to manifest themselves in the form of public appreciation and patronage. Public relations work, after all, seeks only friendship, and nothing stimulates friendship more than a sincere effort to improve the character of equipment and service offered the community.

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By-Products of Modern Cars

DISCUSSIONS of light-weight cars are prone to dilate on the advantage of light weight *per se*. True, much is gained in cost and in characteristics that make the light-weight car a valuable innovation. Savings in car and track maintenance as well as lower energy consumption may spell the difference between bankruptcy and profit. Still, these obvious advantages do not begin to tell the story of what the weight reduction can be made to accomplish on a property where every possibility can be turned to account.

Take the case of power supply. Many roads operating heavy cars have their systems loaded to capacity. Any addition to service means a revision of the substations and distribution circuits, or, worse still, an increase in generator capacity. Replacement of heavy cars with light ones will not only reduce energy consumption but will release system capacity. This can be used to give an increase in service, or, if this is not needed, the surplus power can in many instances be sold at a profit. In case of purchased power, the maximum demand will be lessened, with resultant lowering of the charge or possibility of revision of the contract on advantageous terms. Then, too, the voltage drop will be lessened. In fact, light-weight cars with relatively small motors have often been able to make better schedules than the large ones they replaced, due to better regulation.

Of an entirely different nature is the possible saving in shop facilities. Machines of smaller capacity can be purchased to care for the light-weight equipment. Parts can be handled with greater facility, reducing dead time and taking less manual labor. The cost of spare parts, usually, is less for the light equipment.

Possibilities for lighter track construction are discussed elsewhere. But there are further savings than in use of lighter rail and fewer ties. The handling of these materials is easier, an important factor in reducing cost. If the street requires opening less often for track repairs, delays to the cars and the resulting loss of revenue are minimized. A broken-down car on the street can be moved more readily and the line restored to service sooner than with heavy equipment.

It does not take a great deal of imagination to expand such a list of advantages as this. Some of them are obtained automatically with the substitution of light cars. Others require planning of the management if they are to be secured in full measure. But only when careful attention is paid to the matter will the greatest advantage of light-weight cars be obtained.

Light-Weight Cars Reduce Track Costs

TRACK maintenance and reconstruction are major items of cost in the operation of an electric railway. But unfortunately it has been very difficult to determine definitely the effect of changes in rolling stock design upon the life of the track structure. A general claim for light cars has been that maintenance costs of existing track are reduced and that material savings can be made in the cost of new construction.

Fortunately, definite figures are now available from the experience of the Kentucky Traction & Terminal Company, where careful records indicate the effect on track cost of a complete change to light equipment made a number of years ago. In an article published in this issue F. W. Bacon presents figures showing that even with an increase in service aggregating 25 per cent as measured in car-miles, the ton-miles decreased 44 per cent. Under these conditions experience has shown that less general tamping and alignment work is needed on the old track. Wear on curves and expensive special work has been materially reduced. Tie renewals and the size of track maintenance forces have been cut down.

In the replacement of track it was found practicable to go to lighter construction. Even with tie spacing increased 50 per cent the records show decreased maintenance required. This is attributed to decreased impacts on the rail ends.

This is not the only road where such savings have been made possible by lighter equipment. It is, however, one of the few where the complete change to light equipment has been made for a long enough period of time to develop definite comparative records. This effect on track life is undoubtedly being duplicated wherever light-weight cars are used.

All ready for the Cleveland convention of the A.E.R.A.

At the left is the recently completed exhibit building, and at the right the Public Auditorium. Between them are the tracks for the display of modern cars and track machinery

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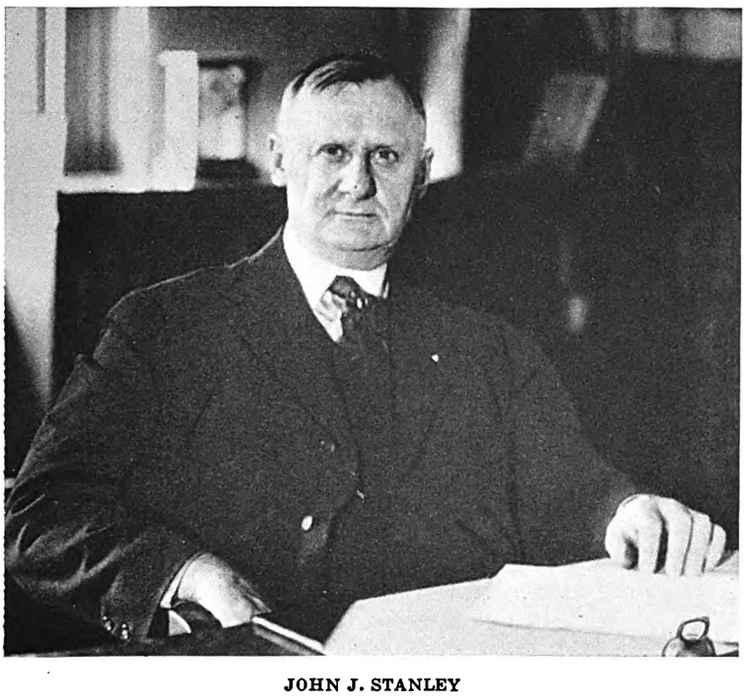
PERFORMANCE

is the keynote of Cleveland Railway's success

By JOHN J. STANLEY
President the Cleveland Railway



JOHN J. STANLEY

Public confidence has been won and patronage has been built up by the employment of modern equipment and good track, maintained by methods many of which have been developed to fit the exacting needs of this property—Electric surface cars, rapid transit trains and motor coaches all contribute to this great transportation system serving a population of more than a million people—Public co-operation has supplanted demands for public ownership

SUCCESS has attended the operation of the Cleveland Railway during the past sixteen years under the Tayler plan because its watchword has been "performance." Besides building up a transportation system which we believe to be second to none, the winning of public confidence, resulting in the acceptance of transportation as an essentiality, has been the principal achievement of this period. Like the rest of the industry, we have passed through times of doubt and stress. In every instance we have emerged successfully because of this confidence on the part of the public we serve. This performance has been accomplished by the maintenance of fast schedules with modern cars adapted to the needs of the community. High-grade maintenance of cars and tracks has made this possible. The power supply has been completely rebuilt, changing from isolated generation to an all-purchase basis. Machine methods have been developed for track reconstruction that lessen the time during which important thoroughfares are torn up, thus decreasing the delay to vehicles and the liability of accidents.

Aside from physical elements, discussed at greater length elsewhere, the operation of the company under the Tayler plan is of interest. The start as a unified system of street railways dates back to 1893, when four separate companies were brought together. In 1903 the Cleveland City Railway was bought, thus com-

We welcome you to Cleveland, gratified that you have selected this city in which to hold your 45th convention. We expect to gain much from your visit. We likewise hope that you will be well repaid. To those of you who have been in Cleveland before, as well as to those for whom this is the first visit, the Cleveland Railway extends a welcome and will be delighted to show you any part of its workings. —JOHN J. STANLEY

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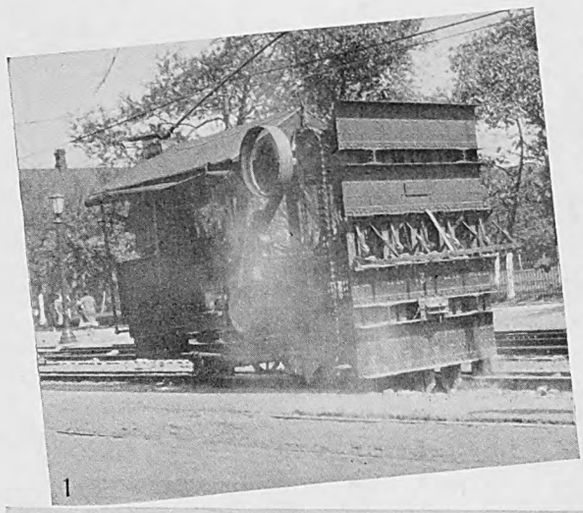
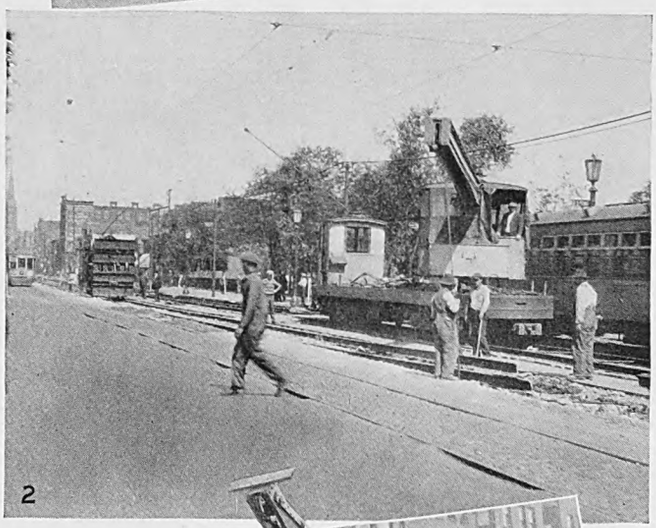




pleting the unification of the existing surface lines. However, during the first decade of this twentieth century, the era of the greatest popularity for most street railways, the reverse was true for Cleveland. The agitation for the 3-cent fares, beginning in 1899, finally culminated in the operation of 3-cent lines in 1906 by Tom Johnson. From that time until 1909 three years of turmoil and grief were experienced, but in December of 1909 the City Council ratified the ordinance embodying the Tayler plan as outlined by its author, the late Judge Robert W. Tayler.

For sixteen years since March 1, 1910, when the "service-at-cost" operation under the Tayler plan first became effective, the Cleveland Railway has continued to exist and grow in comparative peace and harmony. During this period attention was concentrated on producing transportation adequate to the growing needs of the city. The success of these endeavors has been twice expressed by the people of Cleveland in the renewal of the original grants on the basis of the Tayler plan, in 1919 and still more recently in the important revisions agreed upon in 1926.

This latest change in the history of the company became effective July 1 of this year in the passage of Ordinance No. 70561-A. While this is a renewal of the street railway grants, several important changes were made to meet changed conditions. They may be briefly summarized under six items, as follows: The extensive bus operations started on a somewhat temporary basis last year have been made a definite part of the Cleveland Railway and placed under the provisions of the new franchise. The second important element in the new ordinance has been to allow an increase in the interest fund from the middle point of $500,000 to $800,000. This increase in the interest fund was necessary to meet the expansion of the company since the original ordinance of 1909 was first made effective. Now the fare will be increased one step when this fund drops to $500,000 and decreased when it rises to $1,100,000.

Several of the important changes of the new ordinance have been designed to make possible the floating of 6 per cent treasury stock at par—a condition of the franchise—when deemed necessary by the city and the

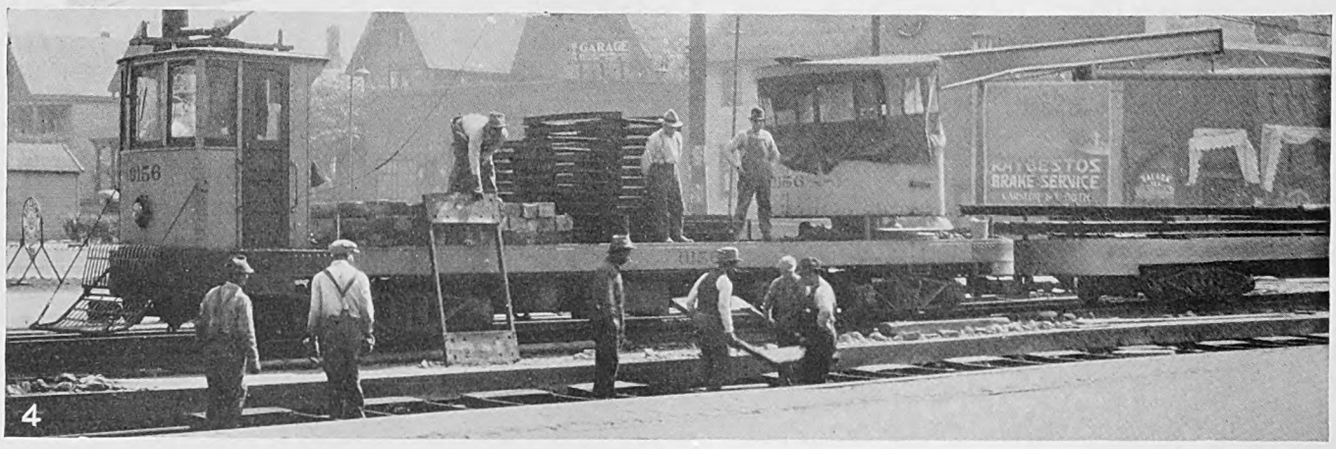
Cleveland's modern performance demands machines and methods that permit of rapid track reconstruction

No. 1. After the paving block has been lifted the concrete breaker moves over the track to be removed.

No. 2. Then the old rail is lifted by crane and loaded.

No. 3. The next step is to follow along in the trench and remove the broken concrete by means of the electric shovel, loading the material into cars on the adjoining temporary track. This shovel runs either on rails or on caterpillar tractors.

No. 4. Following the preparation of the trench, the steel ties are laid on blocking. Note the rail on trail car ready to be unloaded.



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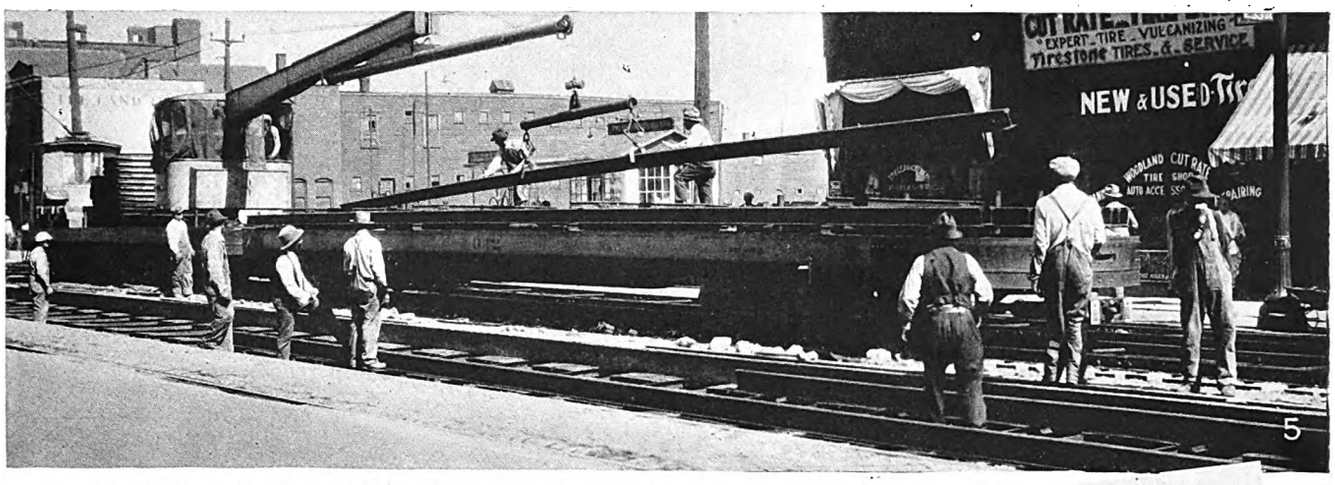

Hand labor is avoided whenever machines can do the work more rapidly

No. 5. The 60-ft. rails especially designed for the Cleveland Railway are loaded with equal number of "rights and lefts" and unloaded by means of the crane.

No. 6. The steel ties are then hooked to the rail. This view shows a temporary crossing for vehicles being prepared. In this job on Woodland Avenue, Cleveland, the old rail was not removed, but dropped into the trench, where it acts as a further support for the new tracks built on top of it. The old rail, of course, will be imbedded in the concrete of the sub-base.

No. 7. Bringing the track to line and grade. Joint plates are riveted to the rail ends, which are first held temporarily by bolts.

No. 8. After the rail is brought to line and grade concrete is poured by means of a specially constructed concrete mixer operating from the new tracks, as shown in this picture of work accomplished this summer.

company to provide for further expansion. Prior to 1920 the market price of Cleveland Railway stock fluctuated above or below par, but since 1920 the market conditions have been such that the market price has been consistently below par, making the sale of new stock under the terms of the franchise impossible.

The new ordinance extends the street railway and bus grants for 25 years, with the provision that in case no action of renewal is taken after ten years of operation the city will lose control of the service and the company may set up a separate fund of ½ cent per car passenger and 1 cent per bus passenger that may be used at the termination of the franchise, provided no action to extend the franchise has been taken, for the retirement of the outstanding common stock.

Beginning July 1 1½ per cent of the earnings are set aside for the retirement of certain outstanding securities, except that this fund shall first be used to create the additional $300,000 allowed in the interest fund.

The new ordinance further provides for an enlargement of the permissible schedule of fares determined from month to month by the condition of the interest fund. This new schedule of fares has an upper limit of 10 cents cash.

When deemed desirable to issue additional common stock the company may pay out of earnings a marketing charge up to $2 per share.

Whether or not these new provisions will be successful in raising the market price of our common stock to par or above remains yet to be seen. The time as yet has been too short to determine whether such a condition will prevail.

Transportation Equipment

Modern equipment and up-to-date methods of operation and maintenance are of tangible interest in a study of the property. Perhaps the feature that first impresses the visitor to Cleveland is the train operation of excellent equipment and at reasonably high speeds. The rendering of this service is based on a co-ordination of good physical equipment, a high order of maintenance and a superior performance of employees.

There are 1,023 passenger motor cars in the service

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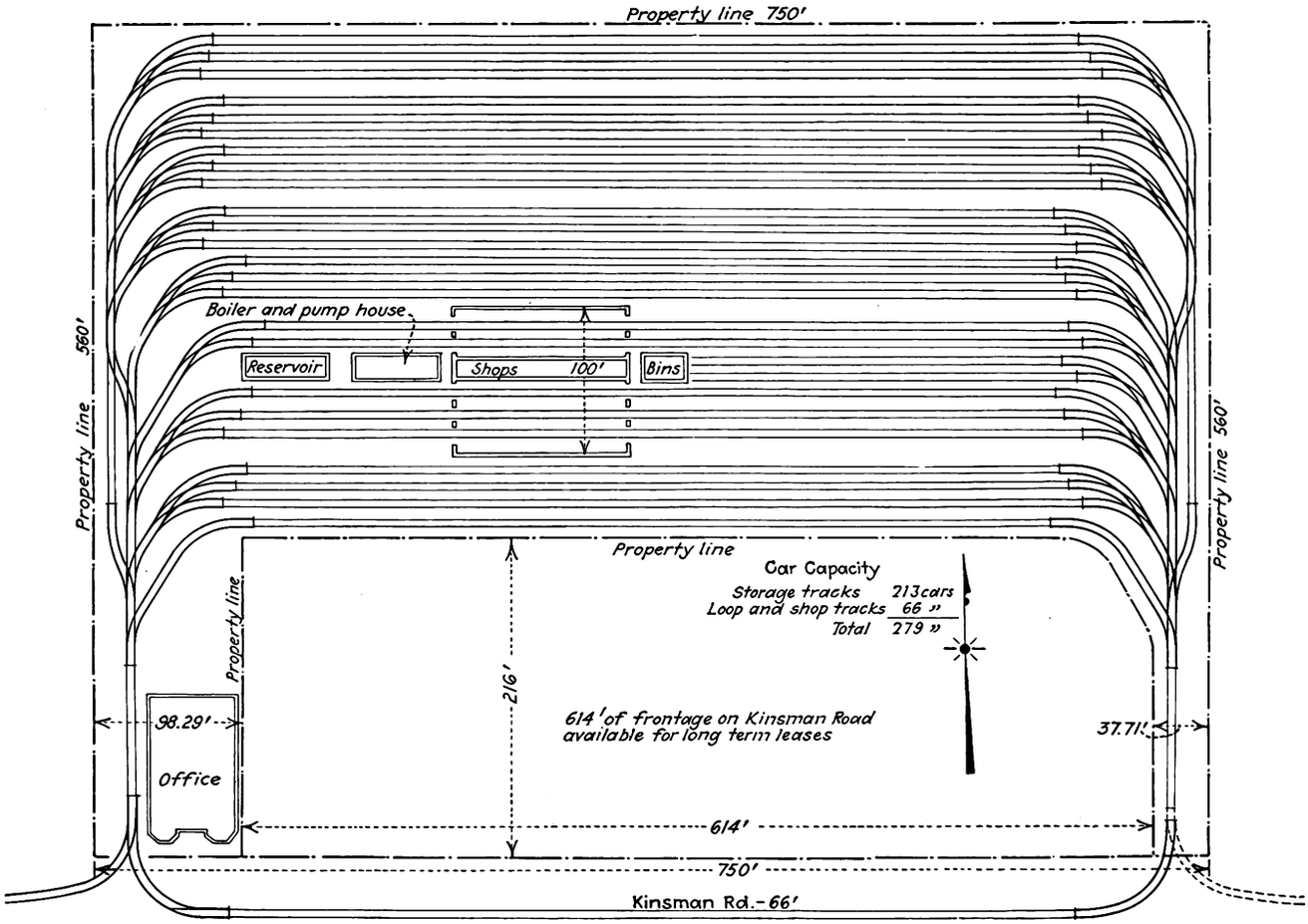
provided by the company, 494 trailers and 218 service cars of one kind or another. The average age of passenger equipment now in use is about ten years. We are planning to retire 100 cars during the year, or 6.6 per cent, which will reduce the average age to less than ten years.

The latest standard passenger motor car is illustrated in views on page 492. One hundred have just been constructed in the Harvard shops. They are front exit side entrance type and are 51 ft. 2 in. over the bumpers and seat 52 people. The thought in mind in the construction of these cars was to design them to be strong enough to pull trail cars in rush-hour service and at the same time keep the weight down to a minimum, as the cars are run in single units for the major portion of the day. These cars are constructed of steel up to the belt rail and a combination of wood and steel in the superstructure. The trucks are Brill 68-E1 with 26-in. steel wheels. Four Westinghouse No. 340 50-hp. motors are used, having been designed especially for Cleveland service. The weight of these new cars is detailed as follows:

Car body	18,354 lb.
Trucks	10,636 lb.
Motors and equipment	10,540 lb.
Brake equipment	1,764 lb.
Heating equipment	446 lb.
Total	41,740 lb.

All motor cars on the system are equipped with energy-saving devices. A test recently run on the heaviest line of the system shows these cars to require a consumption of energy materially lower than any other type on the property. The results of this test are given in the following figures:

Type Car	Kilowatt-Hours	Car-Miles	Kilowatt-Hours per Car-Mile
400	593,011	219,991	2.69
800	15,213	5,610	2.71
1,300 (new)	39,898	15,753	2.53



This new operating station layout allows the leasing of valuable street frontage

The Cleveland Railway believes that 10 acres is necessary for proper operating conditions. This view shows one of the new developments, having 24 loop tracks sufficiently toward the rear of the property to make available the use of the frontage for long-term leases. Only the office seen to the left occupies frontage on Kinsman Road.

The average energy consumption of the system for this same period was 2.66 kw.-hr. per car-mile.

Illumination of the interiors of these cars is from five 94-watt lamps connected in a single circuit, with a single spare lamp in the center of the car which may be turned into the circuit in the place of any one of the five by turning the selector switch until the spare lamp cuts out the defective lamp and relights the circuit. With the present type of prismatic reflector the intensity and distribution of illumination are very satisfactory. Both the life and efficiency of the large filament lamps are high.

In recent years there has been a tendency for the passenger to prefer the motor car of a two-car train. As an experiment three complete trains were taken out of service, stripped of all seats and, after refinishing the interior, were re-equipped with comfortable leather-upholstered bucket-type seats, 48 in the motor car and 60 in the trailer, instead of 56 and 58 seats respectively. While the cost of this change was rather high, they have met with great popularity. The prejudice against the

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Improved facilities increase value of Cleveland's cars

Above, East Ninth Street Pier loop, serving the main passenger docks of Cleveland. These piers are just a short distance from the site of the coming convention.

In center, typical safety signal erected at Euclid and Superior Avenues.

Below, looking southwest across the Public Square, the center of Cleveland's transportation system. In the left background can be seen the site of the new Union Depot.

trailer is removed and both of these cars are used about equally. This experiment was told of in the ELECTRIC RAILWAY JOURNAL in the May 15, 1926, issue, on page 844.

MOTOR COACH SERVICE HAS GROWN RAPIDLY

Upon the passage of the Collister-Krueger act the Cleveland Railway, with the permission of the city, started seven motor coach lines and has extended this service to eleven lines this year. In all there are 56 miles of streets and highways served by the motor coach department. The different lines serve as feeders or cross-town connections except in the case of the Carnegie-Franklin-Clifton route, which is a main artery from the extreme eastern city limits through the downtown district over Euclid Avenue through the Public Square to the extreme westerly limits of the city in Lakewood. A 10-cent cash fare is charged on all the bus operations except on Mayfield Road. Some of the bus routes are proving successful financially, but to speak of the financial success of all is hardly fair, because so much of the service is in the nature of feeders, extensions or unremunerative cross-town lines.

A further description of the motor coach operation

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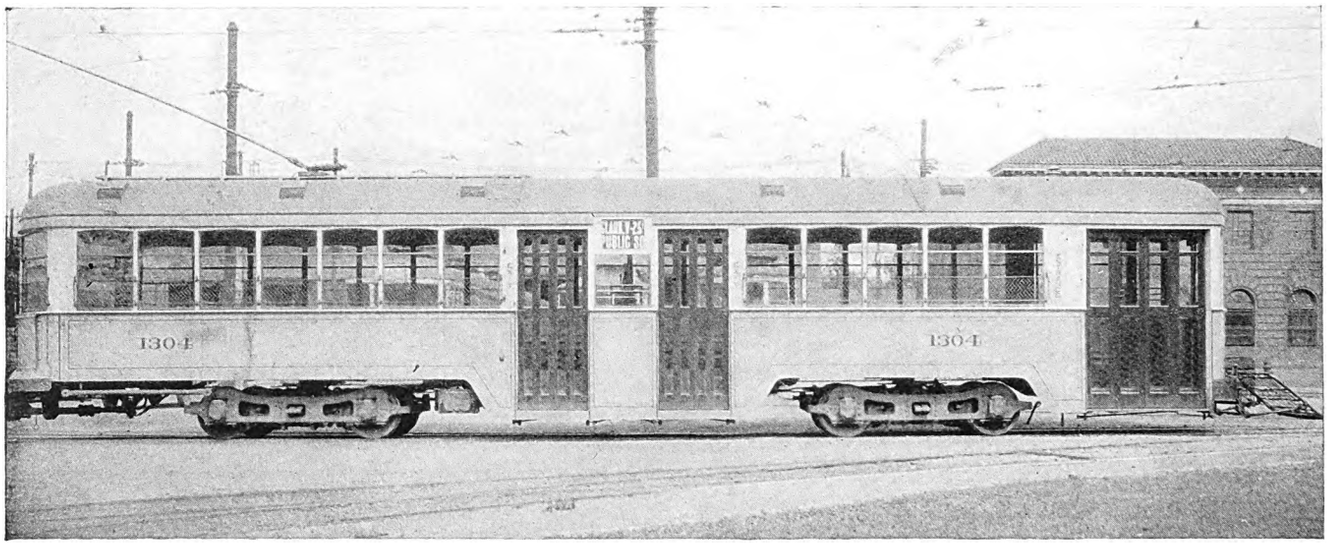


One hundred of these cars have just been completed at the Harvard shops. They are designed for either single unit or for hauling a trailer in rush hours. These are the most economical cars on the system due to their light weight

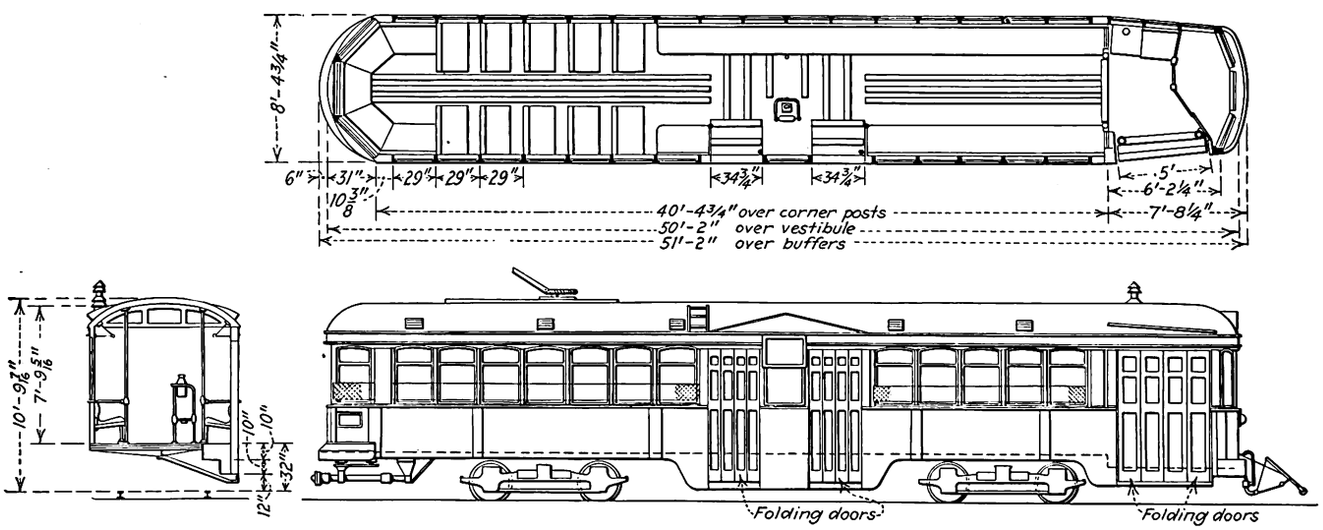
was given in the ELECTRIC RAILWAY JOURNAL, issue of March 27, 1926, page 545. The 50 double-deck coaches now in service seat 62 and are standard six-wheel Safeways using Continental motors. The length of this coach is 32 ft. 6 in. and the height over all 13 ft. $2\frac{3}{8}$ in. The 61 single-deck buses have a seating capacity of 29 and were practically all manufactured by the White Motor Company. Pneumatic tires and Westinghouse air brakes are used on all coaches, both single and double deck.

All of the motor coaches are serviced in three garages and in each station a regular washing, greasing and overhauling schedule is maintained. Motor coaches which have been on the road are washed every night. All coaches are greased on a schedule that covers all elements once a week. Certain items are greased on Monday, certain items on Tuesday and so on for each day of the week so that the complete schedule is finished in five days. After each 2,000 miles a system of unit inspection takes place, at which time worn or defective units are replaced. The defective units are sent to a central shop for overhauling and repair. Our experience so far indicates that this method will keep the coaches in excellent operating condition at all times.

We are particularly proud of the performance of our Harvard shops. While much has been written about this plant, only a visit can truly depict the extensive shop equipment and facilities used in the maintenance of cars. During 1925 and 1926 100 motor cars were completely constructed in these shops except for trucks and electrical equipment. During the year 1925 a total of 711 cars were completely overhauled and painted. In addition to these 2,260 damaged cars were repaired, 5,228 armatures and fields and miscellaneous units were handled.

The shops are well equipped with modern machinery of standard manufacture, augmented by equipment designed for our particular use.

The Harvard shops, where the company's maintenance activity centers, are located on an 18-acre plot. Half



Side view, floor plan and middle section of the car illustrated above. Due to the lower weight of these cars, which totals 41,740 lb., the energy consumption is lower than any other cars of a similar type on the system

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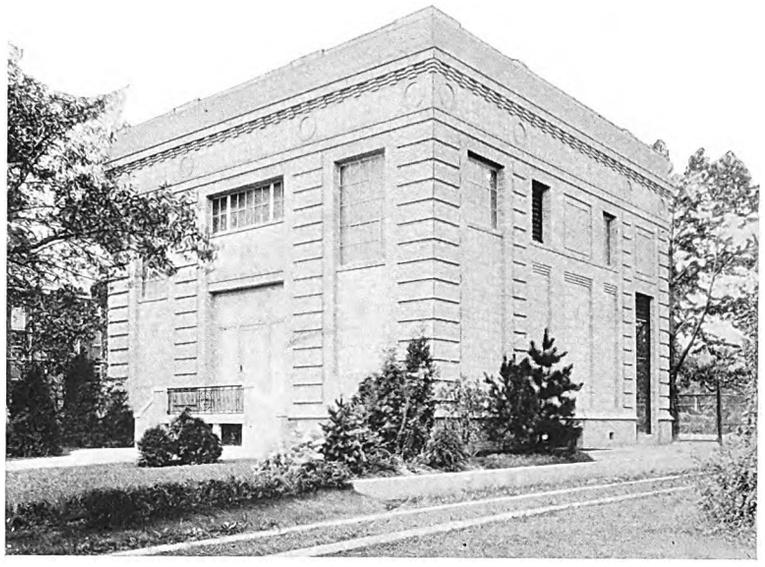
of this tract is used for the car maintenance shops and the other half for a storage yard for way and structures materials and equipment. It is located centrally in an east-west direction but just south of the actual city limits.

Whenever it is possible to perform work by machinery, though the expense is the same as hand labor, this is done for the sole purpose of accomplishing an increase in speed. The quicker a job in a street is finished the less liability of accidents.



This fine type of architecture and landscaping used in substations erected in residential districts is illustrated by Automatic Substation No. 10 in Lakewood

Division foremen are in charge of all track maintenance and construction on their respective divisions, and a yardmaster controls all work trains and the loading, unloading and delivery of materials upon the requisition of each division foreman. A superintendent of machinery is in charge of all the electric shovels, plows, grinders, welders and other roadway machinery. It is his duty to place the roadway equipment on the job and to perform the work.

It is the practice of the Cleveland Railway to relay track with the least interruption possible to street car traffic, and for this reason temporary side tracks and crossovers are used wherever possible. Temporary side tracks can also be used in the loading and unloading of material from flat cars by use of a crane car. A track to be reconstructed is first plowed to remove all paving. This work is followed up by a work train, on which the old material is piled, or if to be used again on this job it is laid to one side. If the concrete base is to be removed a concrete breaker is operated over the track, which breaks the concrete base into small enough sections so that it can be handled by an electric shovel. The old rail is then removed, placed by crane on flat cars and taken to the Harvard yard. After the removal of the old rails and ties the broken concrete is shoveled onto flat cars and removed.

International steel ties are used in standard construction and are distributed by means of the crane into the track trench and placed in their approximate location. Sixty-foot rails previously loaded with the proper per cent of rights and lefts are then lifted by crane and placed on top of temporary blocking laid in the trench. This work is immediately followed up by a gang which hooks the steel ties to the rail and by still another gang

Modern cars and double-deck coaches perform the heavy service on Euclid Avenue

This intersection at Ninth Street is the heaviest traffic point on the system and one of the heaviest in the United States.

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which rivet the joint plates by means of the automatic track riveter. When these plates are riveted the joints are further strengthened by welding the top and bottom of the plates to the rails. The next process is to warp the track to line and grade. The track is then ready for the pouring of concrete. The first course is poured to within 1½ in. of the bottom of the tie plates and after a proper period of setting the space under the tie plates is thoroughly packed with a dry mix of sand and cement. This is considered one of the most important elements of the work of securing a permanent track, and the dry mix is for this reason both hand and machine tamped. The paving base is then poured and the paving surface laid, which completes the track.

It is planned to have some of this work in progress during convention week, with gangs working day and night so that delegates may observe the use of the machine equipment, some of which is peculiar to this property.

Paving materials are purchased by weight, a method which has been found to be very accurate. These materials are piled high in the yard to save space, this process being made possible by the 15-ton gantry crane used in the storage yard.

With the shutting down of the Viaduct power plant on Nov. 6 of last year and the completion of the last of the ten automatic substations the Cleveland Railway went on an all-purchased power basis. It now has fifteen substations constructed since 1910, five of which are manually operated and ten non-attended automatic substations.

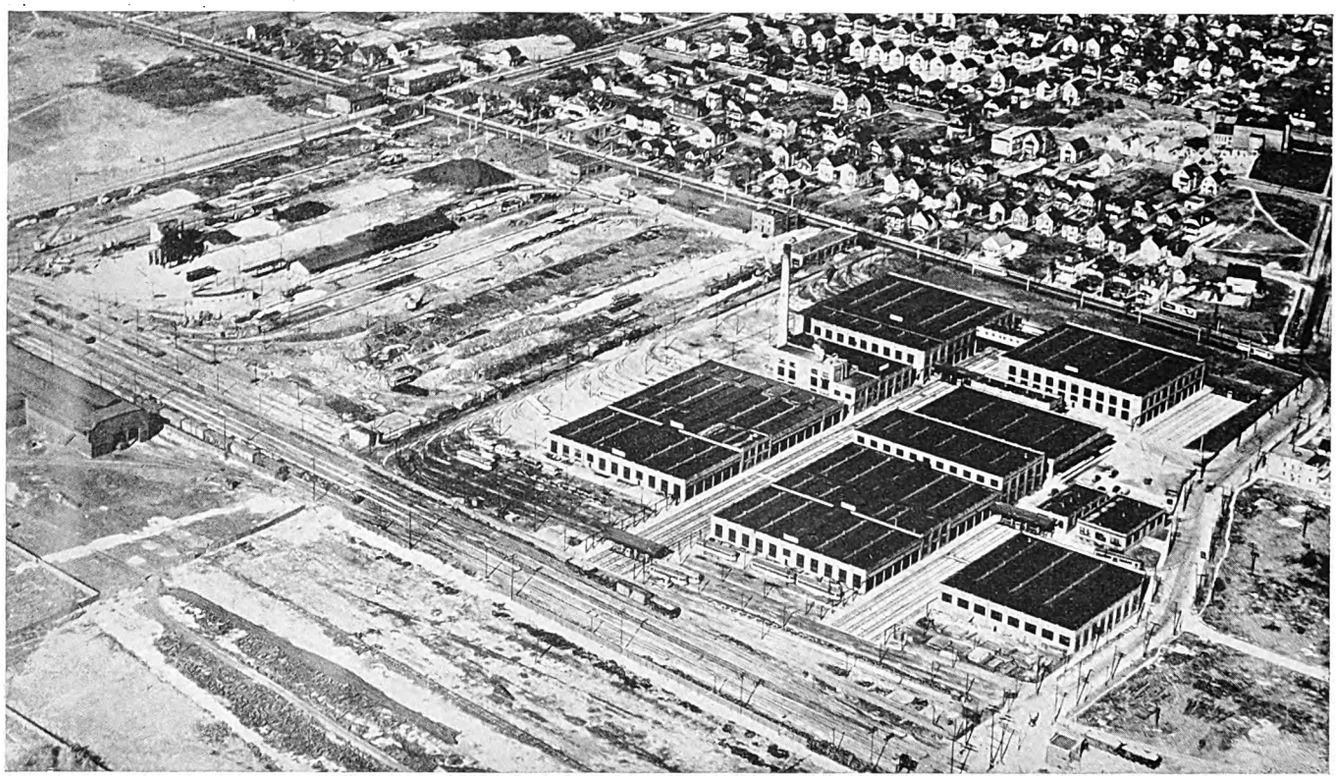
Of particular interest is the control system used to supervise and operate the automatic substations. This centers in the load dispatcher's office, on the seventh floor of the Hanna Building. From this point the load dispatcher handles the manual stations by telephone and the automatic stations by means of a system of low voltage operating circuits through a series of relay chains that automatically sets up the functioning circuits at the substation. The basic principles employed in this work are similar to those of the automatic telephone. In addition to being able to perform any of the usual operations at a remote substation at will, the automatic functioning of this equipment is reported back to the load dispatcher through a series of lights.

A complete description of the Cleveland Railway power system has been written by L. D. Bale, superintendent of power, appearing in the ELECTRIC RAILWAY JOURNAL, issues of Sept. 4, 11 and 18.

Construction and maintenance of the distribution system is carried on by the power department with the aid of seventeen trucks, one line car equipped with a collapsible tower and two work trains. Twelve of the automobile trucks are also equipped with towers. The emergency construction and maintenance of the entire system is handled from a centralized location in the downtown area of the city.

There are at present 123 electric track switches in operation on the system. All work in connection with the installation and maintenance of these units is under the jurisdiction of the power department.

This brief outline of the physical operations of the Cleveland Railway will serve to indicate some of the major elements of this transportation system that is successfully serving more than 1,000,000 inhabitants through its 425 miles of track and 56 miles of bus routes. This service spreads over the city and well into the many suburbs surrounding Cleveland.



Harvard Shops—center of maintenance activities of the Cleveland Railway

To the right of this view of the 18-acre tract used for the maintenance of the cars and tracks of the company are seen the shops and to the left the storage yards used by the track department.

In the lower right-hand foreground is the carpenter and woodworking shop. Above it is the administration building, with the garage in the rear. Across the transfer table, from left to right, are the erecting and machine shop, the stores building and the truck shop. The main car transfer runway, the longest in the world, divides the shop in two. The buildings to the left of this runway, from left to right, are the paint shop, power plant, motor and armature department, and motor shop. The power plant serves the entire layout, furnishing heat, compressed air and waste disposal service.

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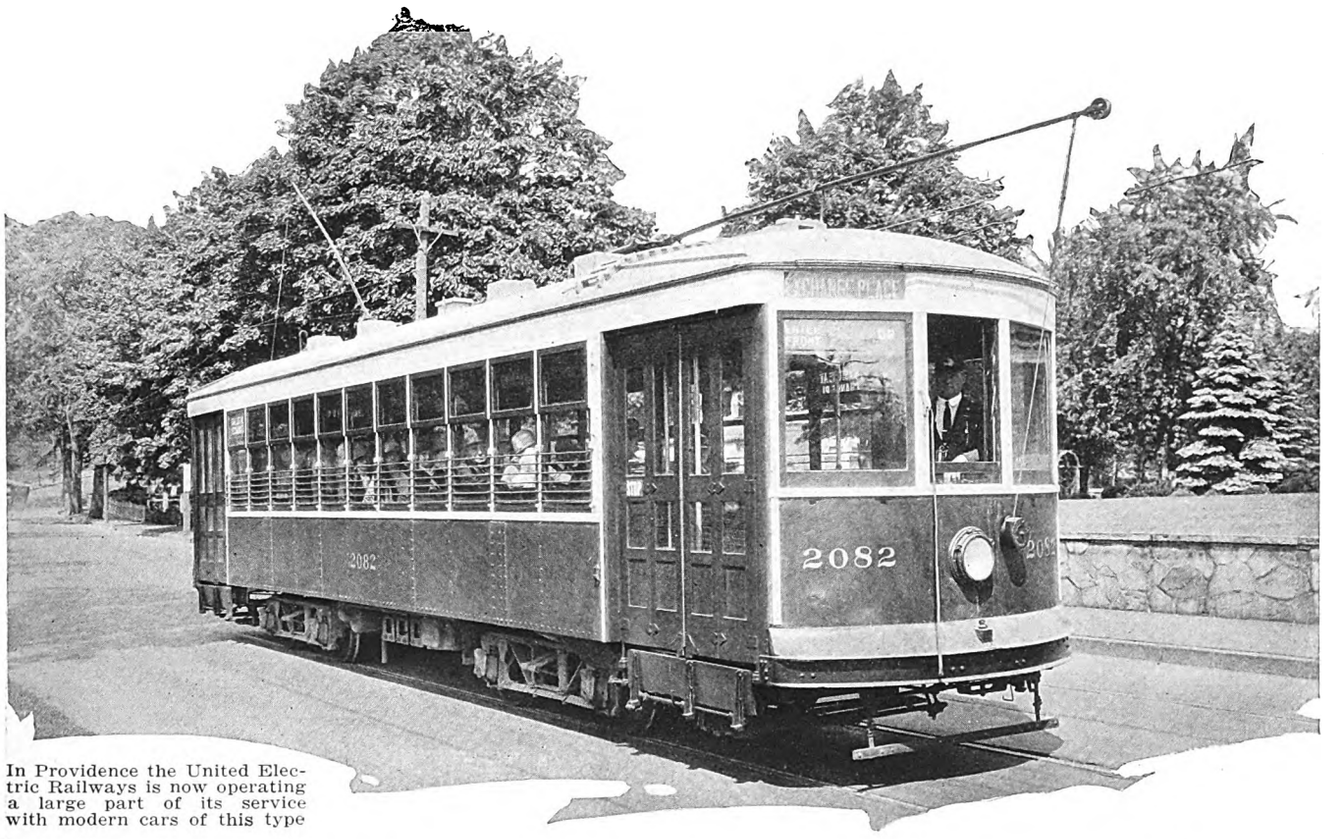

In Providence the United Electric Railways is now operating a large part of its service with modern cars of this type

VALUE OF NEW CARS

proved by the experience of twenty railways

By JOHN A. MILLER, Jr.
Associate Editor Electric Railway Journal

Replacement of heavy cars by those of lighter weight has resulted in substantial savings — Survey shows that average operating costs are 25 per cent lower for group of companies with modern rolling stock than for similar group with old equipment

MONETARY savings amounting to many million dollars have resulted from the replacement of old heavy cars by new lightweight equipment on twenty electric railways notable for their modernization policies. A survey made by ELECTRIC RAILWAY JOURNAL shows that operating expenses on these properties have been reduced from about 36 cents per car-mile to about 28 cents per car-mile, largely as a result of the improvement in equipment. The present average cost per car-mile is approximately 25 per cent lower than the average for a similar group of companies with older rolling stock.

Included in this survey are railways rendering service under a wide variety of conditions. Among them are both city and interurban properties. In size the companies range from one with about 10 miles of track to those having more than 500 miles. The populations of the territories served vary from a few thousand to well over a million. In each case, however, the purchase of new cars has resulted in a substantial reduction in operating expenses.

For purposes of comparison the average operating cost for the calendar year ended Dec. 31, 1925, was determined for a group of twenty progressive railways and also for a second group of properties conspicuous for their lack of modern equipment. The latter were selected one by one to correspond as closely as possible in size and operating conditions with the railways in the first group. No statistics were used from any property where the conditions are so unusual as materially to affect the operating cost, either in the group of modernized or that of backward railways.

Each group of twenty railways operates some 5,000 cars on approximately 2,500 miles of track. In each group are city companies, interurbans and railways giving both types of service. The combined population served by each group, as closely as can be estimated, is slightly under 4,000,000. Each group operated approximately 137,000,000 revenue car-miles in 1925. Average wages of transportation employees were found to be substantially the same, being 57.2 cents per hour for the railways of group one and 58.2 cents for those of group two.

In the matter of rolling stock, however, the two groups are entirely dissimilar. On the average the

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Economies resulting from the operation of modern cars have made it possible for the Interstate Street Railway to provide transportation service at a reasonable profit in the Attleboros

Convenient transportation is provided at low cost with up-to-date cars by the Poughkeepsie & Wappingers Falls Railway

companies of the first group have acquired about half of their total active passenger cars within the last five years, whereas those of the second group have acquired only one-tenth during this period.

Under the different conditions encountered on the railways of these two groups considerable variation occurs in the operating expenses of individual companies. Due to low wages or cheap power some railways with old rolling stock have been able to keep down the cost per car-mile to a comparatively low figure. Conversely, high wages make operation expensive in certain instances despite the modernization of equipment. By averaging for each group the data of twenty typical railways, however, the effect of special conditions has been minimized and a representative figure has been obtained.

Total operating expenses of the modernized group average only 28.29 cents per car-mile, including depreciation, as compared with 37.94 cents per car-mile for the companies with old equipment. Figures for each group separated into the usual six general classifications are given in Table I.

As all other conditions are nearly equal, the difference in operating expenses of 9.65 cents per car-mile between the modernized and non-modernized group can be attributed largely to improvement of rolling stock in one case and lack of it in the other. Much of the difference in the conducting transportation account

Table I—Comparison of Operating Expenses, 1925, of 20 Progressive and 20 Backward Railways

	Cents per Car-Mile						
	Way and Structures	Maintenance of Equipment	Power	Conducting Transportation	Traffic	General and Miscellaneous	Total
Group I Modernized	4.20	3.17	4.78	10.96	0.13	5.05	28.29
Group II Not Modernized	6.89	4.93	6.00	14.42	0.27	5.43	37.94

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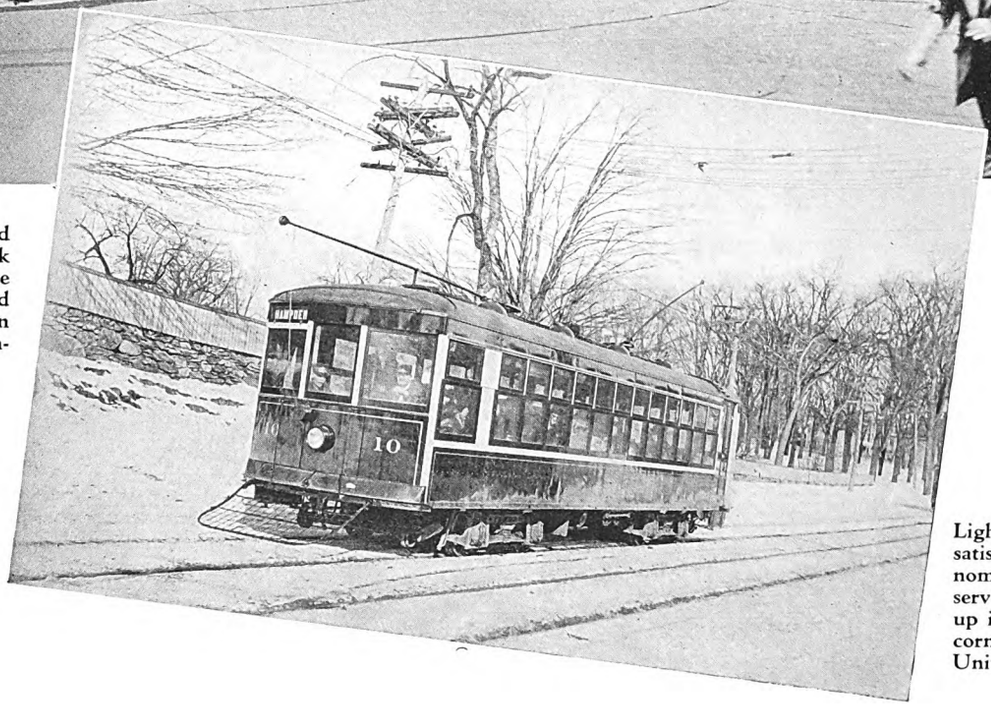
Both single and double - truck safety cars are extensively used by the Houston Electric Company



Light-weight cars give satisfactory and economical transportation service at Bangor, Me., up in the northeastern corner of the United States

probably is due to a larger amount of one-man operation in the modernized group. Savings in the way and structures, equipment and power accounts, on the other hand, are directly traceable to lighter and more up-to-date cars.

This conclusion is confirmed by further examination of the operating statistics of the railways in group one.

Table II—Comparison of the Operating Expenses of 20 Progressive Railways Before and After Modernization

	Cents per Car-Mile						
	Way and Structures	Maintenance of Equipment	Power	Conducting Transportation	Traffic	General and Miscellaneous	Total
Group I Modernized....	4.20	3.17	4.78	10.96	0.13	5.05	28.29
Group I Before Modernization.....	5.75	4.39	7.19	13.66	0.10	5.32	36.41

From this it will be seen that the same companies which are now operating for 28.29 cents per car-mile were a few years ago spending an average of 36.41 cents per car-mile with old equipment. Classification of these expenses under the usual six headings is given in Table II.

On the basis of an average reduction of 8.12 cents per car-mile in the cost of operation due to modernization of equipment these twenty railways, operating 137,311,472 car-miles in 1925, made a saving of more than $11,000,000.

The largest single saving was the reduction in the cost of conducting transportation. While this is attributable in large part to a greater amount of one-man operation, the higher speed of modern cars has been an important factor in reducing the expense per car-mile. The saving in the cost of power, which was nearly as large as that of transportation, is the direct result of the operation of lighter cars. Maintenance of equipment costs have been reduced because of the

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Table III—Classification of Operating Expenses, Cents per Car-Mile—Twenty Railways Described on Pages 499-501

Authority	Way and Structures		Maintenance of Equipment		Power		Conducting Transportation		Traffic		General and Miscellaneous		Total Operating Expenses	
	1925	Old	1925	Old	1925	Old	1925	Old	1925	Old	1925	Old	1925	Old
Boston Elevated Railway*	6.78	6.28	7.02	7.85	4.56	8.90	20.82*d*	22.44*b*	0.01	0.01	4.74	4.69	43.93	50.17
Pittsburgh Railways*	6.28	9.81	5.63	6.91	5.05	6.30	18.31*c*	19.22*b*	....	....	7.18	4.96	42.45	47.20
United Electric Railways*	8.13	9.22	6.94	5.99	5.24	6.07	16.58*h*	19.45*b*	0.08	0.04	4.65	4.11	41.62	44.88
Houston Electric Company†	1.72	2.34	2.09	3.07	4.21	2.70	9.15*h*	11.82*f*	0.15	0.04	4.42	7.05	21.74	27.02
Coast Cities Railway*	2.67	2.83	2.84	3.95	6.73	6.11	11.01*g*	12.31*c*	0.02	0.13	2.36	2.63	25.63	27.96
Poughkeepsie & Wappingers Falls Ry.*	7.47	5.33	3.47	3.96	5.37	6.61	8.08*a*	12.58*b*	0.17	0.16	6.55	6.53	31.11	35.17
Ohio Valley Electric Railway*	4.63	4.67	2.57	2.88	3.56	4.00	9.55	11.69	0.14	....	7.77	8.09	28.95	31.33
Southern Ohio Public Service Co.	1.30	1.90	1.00	2.50	4.10	6.00	12.20*a*	12.00*a*	0.50	0.20	3.10	6.70	22.20	29.30
Interstate Street Railway*	3.10	4.09	2.47	8.14	5.38	8.92	9.38*a*	13.08*b*	....	....	5.77	3.52	26.10	37.75
Bangor Hydro-Electric Company*	6.50	7.05	4.70	5.71	0.70	3.42	9.40	11.90	....	0.10	5.40	4.98	26.70	33.16
Cumberland Traction Company*	4.24	4.92	3.18	5.24	4.72	5.84	6.94*a*	8.53*b*	....	....	4.14	3.47	23.22	28.00
Buffalo & Erie Railway†	3.10	5.60	1.90	2.30	3.30	5.00	10.70*a*	14.00*b*	0.70	0.30	9.10	10.30	28.80	37.50
Kentucky Traction & Terminal Co.†	5.10	5.30	1.30	2.90	2.40	6.70	8.20*a*	10.80*b*	0.50	0.30	2.50	4.50	20.00	30.50
Aurora, Elgin & Fox River Electric Co.*	3.29	6.07	2.55	4.53	4.35	9.38	12.15	17.79	0.34	0.55	3.93	3.98	26.61	42.30
Morris County Traction Company*	4.50	5.46	2.80	2.80	5.19	6.47	8.01*a*	8.87*c*	0.05	0.02	4.68	5.15	25.23	28.77
New Haven & Shore Line Railway*	1.68	7.23	2.68	4.24	4.51	15.02	5.21*a*	10.06*b*	0.05	....	5.35	6.49	19.48	43.04
Milford & Uxbridge Street Railway*	3.61	5.07	3.25	3.09	6.72	8.15	10.40	14.92	....	....	2.57	2.97	26.55	34.20
Beaver Valley Traction Company*	3.93	5.28	3.77	5.62	4.56	5.43	10.17	14.63	....	....	8.67	6.99	31.10	37.95
Warren & Jamestown Street Railway*	2.85	11.87	1.55	4.35	7.75	10.25	9.18	11.18	....	....	4.67	6.54	26.00	44.19
Lewistown & Reedsville Electric Ry.	3.27	4.71	1.72	1.86	7.11	12.63	13.83	16.00	....	....	2.67	2.70	28.60	37.90
Average	4.20	5.75	3.17	4.39	4.78	7.19	10.96	13.66	0.13	0.10	5.05	5.32	28.29	36.41

a One-man operation. *b* Two-man operation. *c* Partly one-man operation. *d* Approximately 20 per cent one-man operation. *e* Approximately 33 per cent one-man operation.
f Approximately 50 per cent one-man operation. *g* Approximately 75 per cent one-man operation. *h* Approximately 85 per cent one-man operation.
* Depreciation included. † Depreciation not included.

improved equipment on the modern cars. A material reduction has been made also in the way and structures expense because of the less destructive effect on track. As it happens, there has been some slight increase in the traffic account and a slight reduction in the general and miscellaneous account, but these changes are not directly connected with the types of cars operated.

Cross-Section of the Industry Represented

Railways comprising the group of twenty progressive companies were selected carefully to include the greatest possible variety of operating conditions so that the average would represent an accurate cross-section of the industry. Boston and Pittsburgh typify the large cities, the railway in each of these places serving a population of well over a million people. The systems in Providence and Houston are examples of operation in communities of between 100,000 and 500,000 population. The Coast Cities, Poughkeepsie, Zanesville and Bangor railways represent smaller city properties.

Among the interurbans the Buffalo & Erie Railway is in the 100-mile class. The New Haven & Shore Line Railway and the Warren & Jamestown Street Railway, on the other hand, are comparatively small properties. A number of the companies operate both city and interurban service. Such are the Kentucky Traction & Terminal Company, the Aurora, Elgin & Fox River Electric Company and the Morris County Traction Company. Thus among the twenty properties may be found nearly all types of electric railway operation. Despite the wide diversity of conditions, however, every one of these companies has shown substantially lower expenses.

Reduction in operating costs of twenty electric railways due to modernization of equipment

What the Individual Companies Have Done

Detailed figures for the individual railways are given in Table III. While these figures have been developed in the same general way for all companies, the existence of certain differences in accounting practices and, even more important, considerable fundamental differences in operating conditions, tend to make comparisons between companies somewhat misleading. Comparisons between present and former costs on the same property, however, are entirely fair and show in a convincing manner the good effect of the new cars.

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Within the scope of this survey it is possible to summarize only briefly the results that have been attained by the individual companies. Many articles have already been published in ELECTRIC RAILWAY JOURNAL describing the modernization of these properties. For reference purposes the dates of these articles are given in an accompanying table.

Index to Articles on Modernization of Railways Included in Survey

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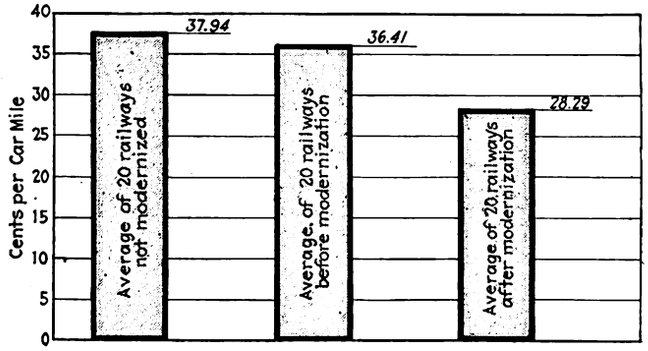
Boston Elevated Railway—During the past five years the Boston Elevated Railway has been making steady progress in the modernization of its rolling stock. More than 800 new cars have been placed in service. At first the light-weight cars were used principally on routes in the outlying districts, but more recently their use has been extended to lines operating in the heart of the city. While it is difficult to show by cost statistics the actual economies which have resulted from the use of modern cars, it is clear that there have been substantial savings. Comparing the operating expenses for 1920 with those for 1925 there has been a reduction of $1,363,387. The cost per revenue car-mile has been reduced by 6.24 cents. In the opinion of Edward Dana, general manager, the use of modern cars has contributed materially to this improvement.

Pittsburgh Railways—Another company which has made notable progress in modernizing its rolling stock is that at Pittsburgh, winner of the Charles A. Coffin prize in 1925. Early in 1914 the Pittsburgh Railways began the operation of modern, light-weight, low-floor cars. Additional cars have been purchased practically every year since that date. The present replacement program contemplates the retirement in the near future of all old and heavy equipment.



Comparison of operating costs on railways with and without modern rolling stock

At present there are 795 low-floor cars in service, approximately 500 of which have been acquired during the past four years. To fill the base schedules on the 100 lines operated 494 cars are required. Thus the railway has sufficient modern equipment to cover all needs in non-rush hours. New rolling stock and improved operating methods have reduced costs to a marked extent. The comparison given in Table III between 1920 and 1925 is a striking example of what can be accomplished by retiring old equipment.

United Electric Railways—Early in 1922 a modernization program was begun by the United Electric Railways, Providence, R. I. At that time 25 Birney cars were placed in service. About the middle of the next year 150 one-man, two-man cars were added. In addition, 35 double-truck cars were received in June of the present year, making a total of 210 new cars now in operation. Of the 222 cars required for the present base schedules 134 are one-man, 88 are two-man operated. Approximately 54 per cent of the total mileage is operated with one-man cars.

Although it is somewhat difficult to give definite figures of savings in equipment, power and platform expense which may be credited to the new cars, there is no question but that these accounts have been materially reduced and better service provided.

Houston Electric Company—Between the first of 1920 and the end of 1925 the Houston Electric Company bought 75 new cars. Their lighter weight has reduced substantially the expenditures required for way and structures. Maintenance of equipment costs less than formerly, and important savings have been made in conducting transportation. In 1921 this company had approximately 50 per cent one-man operation, whereas in 1925 this had been increased to more than 88 per cent.

Coast Cities Railway—Another transportation company which has accomplished substantial savings by the operation of new cars is the Coast Cities Railway, Asbury Park, N. J. Figures of this company show a reduction from 27.96 cents per car-mile in 1924 to 25.63 cents per car-mile for 1925. It is the opinion of L. F. Gillett, superintendent of transportation, that the maintenance of equipment costs show most plainly the savings of new cars against old. The way and structures costs do not show much difference because deferred track maintenance has not yet been entirely made up. Energy costs per car-mile show a slight increase with the new cars on account of additional heaters having been installed. "On the whole operation, however," Mr. Gillett says, "we show a decrease for the two years, and as we are constantly making improvements in our operation and equipment we are gradually reducing the cost of operation. Outside of the reduced platform expense due to one-man operation we are thoroughly convinced that new, modern equipment will effect a large saving from the old type of car."

Ohio Valley Electric Railway—During the latter

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part of 1923 the Ohio Valley Electric Railway made a complete replacement of all its rolling stock on the lines operated in Huntington, W. Va.; Ashland, Ky., and the suburban route between the two cities. The property comprises 46 track-miles, serving a population in excess of 150,000. Forty light-weight cars now give practically the entire service. The old rolling stock which they replaced consisted of four single-truck, fourteen double-truck, two-motor cars and 33 double-truck, four-motor cars.

With modern cars it is possible to maintain the same headway with two less cars on the Huntington-Ashland suburban line. Operating figures for 1925 compared with those for 1923 show a saving of $76,140. The economy of the new equipment has allowed the management to operate at a profit.

Poughkeepsie & Wappingers Falls Railway—On this railway, operating four local lines in Poughkeepsie, N. Y., and one interurban, only one old car is now in service. Modernization of equipment began in 1919 with the purchase of two double-truck cars. In the years 1920-22 seventeen Birney cars were bought, and two additional double-truck cars in 1924. A substantial reduction in operating expenses has been effected thereby.

Southern Ohio Public Service Company—Reduced cost of power has been one of the outstanding results of modernization of rolling stock of the Southern Ohio Public Service Company at Zanesville. Twenty new single-truck cars were placed in service in 1925. According to John W. Hewitt, general superintendent, with the advent of light-weight cars it has been possible to reduce the number of rotary converters from four to three. Power demand has decreased 150 kva., which at the rate of $2.50 would amount to $350 per month. In addition to this there has been a material saving in energy consumption.

"To the operation of the light-weight cars we were compelled to add several of the old type four-motor cars so that the comparisons made between 1924 and 1925 operations are not strictly for the old cars and the new cars, but for combinations of the old and new," he says. "In 1925 we operated 814,839 car-miles and used 2,444,517 kw.-hr., whereas in 1924 we used 3,701,749 kw.-hr. for 785,934 car-miles. The kilowatt-hour rate per car-mile was 4.71 in 1924 and only 3 last year."

Bangor Hydro-Electric Company—Up in the extreme northeasterly corner of the United States, at Bangor, Me., the railway was one of the first to undertake to modernize its equipment. Birney cars were first bought in 1916 and since that time light-weight, double-truck cars have been procured to replace old, heavy equipment. The savings resulting from this modernization are shown in Table III. These give only a general idea of the result of modern car operation as the costs are not kept separately for old and new rolling stock. Reduction in the cost of power is due in part to a change in accounting practice.

At Zanesville the new single-truck cars of the Southern Ohio Public Service Company have made substantial savings

Interstate Street Railway—On the Interstate Street Railway, Attleboro, Mass., five double-truck and three single-truck, light-weight, one-man cars were purchased in 1925 to replace the 45,000-lb. type previously in use. Schedule speeds have been increased so that one car has been eliminated. This has been due primarily to better line voltage and faster passenger interchange, due to the lighter, low-wheel cars. On account of the lessened repair work with the new cars, there has been a reduction in the shop force, and the total expense per car-mile has gone down from 37.75 cents to 26.10 cents. The result of modernization has been to change the status of this transportation company from bankruptcy to prosperity.

Cumberland Traction Company—In the little town of Bridgeton, N. J., is located a small size electric railway which has been saved from the junk heap by modernization of rolling stock. Reduction in costs resulting from the operation of new light-weight cars

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has made it possible to continue railway service in this thinly settled territory.

Kentucky Traction & Terminal Company—In 1922 all interurban lines were re-equipped using twelve light-weight, double-truck cars. The following year 27 cars were bought for passenger service in Lexington. In 1924 two cars were acquired for Frankfort and in 1925 seven cars for Pomeroy. This new rolling stock has proved so satisfactory that today the management would not accept heavy cars as a gift.

Buffalo & Erie Railway—Success of the Kentucky property, under the same management, led to complete replacement of old, heavy equipment by eighteen modern light-weight cars. This has proved to be a profitable investment on the Buffalo & Erie Railway, Fredonia, N. Y. Economies resulting therefrom have been so marked that the condition of the property too has been converted from insolvency to prosperity.

Aurora, Elgin & Fox River Electric Company—In 1923 the Aurora, Elgin & Fox River Electric Company, operating the railway system in the Fox River Valley of Illinois, bought 47 new cars, thereby providing enough modern equipment for all base service. Operating expenses have been materially reduced from the level prevailing when all heavy cars were in service.

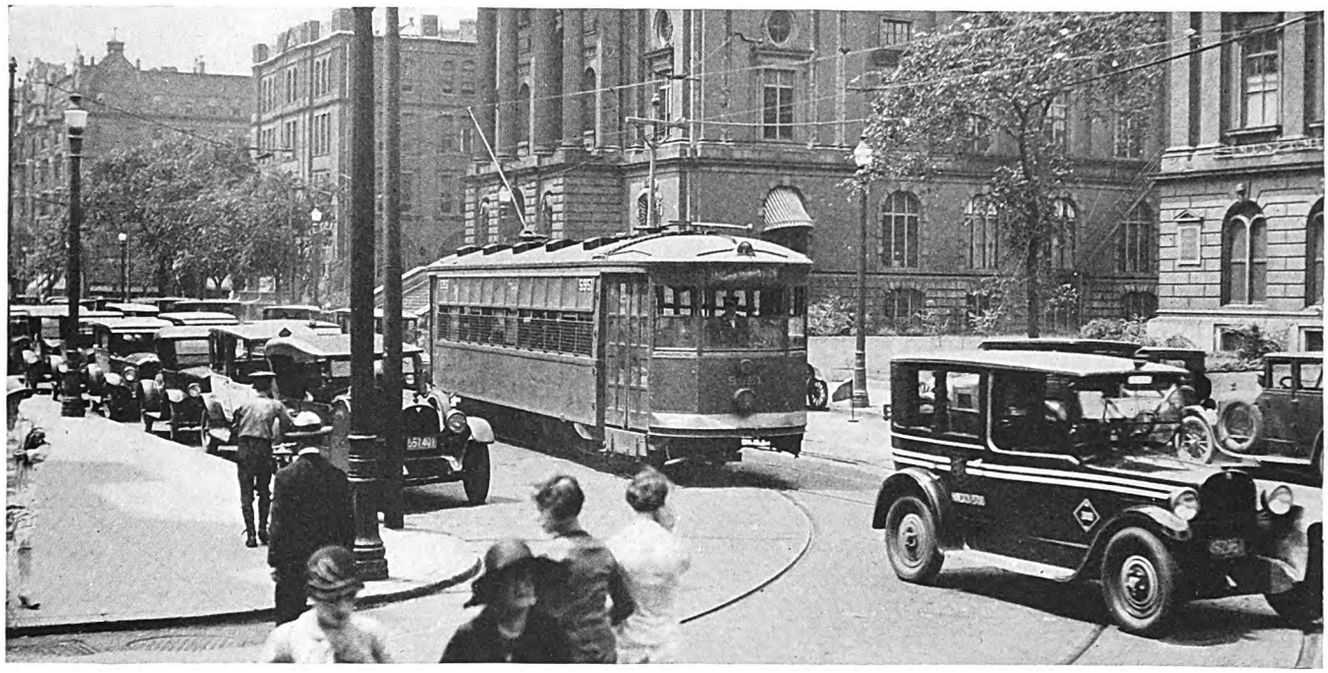
Morris County Traction Company—Light-weight cars, both single-truck and double-truck, have been a substantial aid to the management of the Morris County Traction Company, Morristown, N. J., in its endeavor to reduce operating expenses. While the new equipment represents only a comparatively small part of that required to fill the schedules, important savings have been accomplished and the volume of traffic has increased considerably.

New Haven & Shore Line Railway—After a lapse of years, during which no service was given, operation was resumed with new cars on the 37-mile New Haven & Shore Line Railway in the summer of 1924. Due largely to the economies resulting from this modernization the operation has continued on a paying basis since that date.

Milford & Uxbridge Street Railway—Substantial savings have been made on the Milford & Uxbridge system, serving a group of Massachusetts towns southwest of Boston, by the introduction of new, light-weight cars. Old cars are still in use for tripper service, but on the interurban line between Framingham and Milford the new cars are used exclusively.

Beaver Valley Traction Company—In the retirement of old cars and making replacements with modern types the Beaver Valley Traction Company has been very active. Modernization began in September, 1920. At this time, and in August, 1921, twenty standard safety cars were purchased. In November, 1923, six modern light-weight, double-truck cars were added. These cars replaced 36,000-lb. double-truck, semi-convertible cars. Results have been so good that it is felt by the management that without the use of modern cars and a change to one-man operation it would not have been practicable financially to continue operating the property.

Warren & Jamestown Street Railway—Results with modern cars have been very satisfactory on the Warren & Jamestown Street Railway, both from a financial and an operating standpoint. The property consists of a 22-mile interurban line between the two cities. The former rolling stock on the interurban lines consisted of five double-truck cars weighing 50,000 to 60,000 lb. complete. These cars were eighteen to twenty years old. In 1923 three modern light-weight, low-floor cars weighing 36,000 lb. complete were purchased to improve service and reduce operating cost. There has been a reduction in expense of 41 per cent. With the new cars and operating economies it has been possible to reduce expenses sufficient to keep the property on a paying basis.



Modern light-weight surface cars of this type have been instrumental in reducing the operating costs of the Boston Elevated Railway

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FINANCING OF NEW CARS

made possible by the savings effected

By L. R. NASH
Vice-President Operating Division, Stone & Webster

The public judges electric railways by the appearance of their equipment—Its modernization is the most pressing problem today —Savings from new cars will pay their cost and will provide a substantial balance

L. R. NASH

EXPERIENCES of the electric railways during the past dozen years with competition from jitneys and buses and the phenomenal increase in motor vehicles led, among other things, to an impairment of the credit standing of the industry. When one considers the increase in private automobiles during that period, from about two million to nineteen million, it would not have been surprising if the results had been far more serious. During the last year or two the industry has experienced a noteworthy improvement in morale and a determination to reassume with renewed vigor the obligations of urban transportation in whatever form desired. The improvements in equipment and service on such properties as the North Shore and Aurora-Elgin, operating interurban lines out of Chicago, and the Grand Rapids city lines give striking evidence of such revival. It is, nevertheless, discouraging to see so many financial circulars and advertisements pointing out directly or indirectly the comparatively small part, if any, which transportation plays in the operations of the utilities whose securities are offered.

ROLLING STOCK PRESENTS PROBLEM

Due to their impaired credit and the necessity of making substantial improvements in their properties if business which has been lost is to be regained, electric railways now find themselves in a doubly embarrassing position. Electric railway property may be roughly divided into three groups: Power supply and shop facilities; roadbed; rolling stock. Only the last-named group receives significant public attention. If track is reasonably smooth and power supply free from interruption, these factors are not noticed by the traveling public. On the other hand, they come in frequent daily contact with rolling stock, and ancient and poorly maintained cars not only invite unfavorable comment but also discourage traffic. Recent surveys indicate that about one-third of the passenger cars now in service on electric railways in the United States are more than twenty years old. Based on purchases of new cars in the earlier and more profitable years, it is estimated that there has been in subsequent years an annual deficiency in purchases of something like 1,500 cars. It is obvious that traffic cannot be stimulated by rolling stock of this character even with costly maintenance expenditures.

The pressing problem of the railways is, therefore, the modernization of its rolling stock, and it is the opinion of the industry's leaders that this modernization must be accomplished in spite of difficulties attending its financing. Few electric railways have adequate retirement reserves. In the early years of the industry the need of such reserves was not clearly appreciated or their accumulation was postponed to subsequent years which were expected to be more prosperous. Obviously, in recent years the net income of the business has not been sufficient to permit adequate appropriations. The need of retirement reserves exists not only to write off obsolete rolling stock but also to provide for the abandonment of trackage and substitution of bus service in the many cases where light traffic or impending paving requirements make bus service more profitable. The solution of this difficulty is not yet clear, although, as will appear, there are hopeful aids to its solution.

In view of the fact that the power facilities and trackage of electric railways do not need substantial expansion, the financing problem under consideration narrows down to that of providing new, efficient and attractive rolling stock. The physical as well as the financial aspects of this problem are having careful attention and many interesting and surprising facts were embodied in the recent report of the American

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Electric Railway Association committee on essential features of modern cars. It might profitably be studied not only by electric railway officials but by investment bankers and their clientele. The report emphasizes the obvious fact that standardization of design would result in lower costs and more speedy delivery of rolling stock, and outlines in some detail the proposed plans for such standardization. It then presents in considerable detail the savings which have been effected on a number of properties where modern, light-weight cars have been substituted. The major part of the properties in question operate interurban service where the advantages of the recommended reduction in weight of rolling stock are most pronounced, but the gains from modern equipment on urban properties are also shown to be attractive.

WHEN one considers the increase in private automobiles during that period from about two million to nineteen million, it would not have been surprising if the results had been far more serious. During the last year or two the industry has experienced a noteworthy improvement in morale and a determination to reassume with renewed vigor the obligations of urban transportation in whatever form desired.

Obviously, new cars require comparatively small initial maintenance, but even their ultimate maintenance will doubtless be less than that on the older equipment, and the upkeep of roadbed, shops and other facilities will also be permanently less because of reduced car weight, all in addition to savings in platform wages, power cost and other operating items. It appears from detailed figures, assembled from a wide range of properties, that modern cars will save enough in operation not only to pay their carrying charges, but to leave a substantial balance for amortization of superseded equipment. In fact, in some cases this superseded equipment can be written off in a surprisingly brief period of years, the saving in operating costs being from 15 to 50 per cent or more on the added investment. This showing is made in most cases without allowance for increase in traffic which the new cars stimulate, and there is abundant evidence that the number of new riders attracted by more modern cars is substantial.

As soon as such improved showing permits, the railways should give serious attention to more adequate provisions for depreciation. As already stated, past provisions have been inadequate and service and efficiency have thereby suffered. In its future more liberal provision for this element in the cost of service to be recovered through fares, the industry should not itself be deceived or permit regulatory authorities to be misled by past history of retirement costs. Other classes of utilities have developed a habit of using carefully prepared records of useful life history as the basis of future provisions for depreciation. Our industry has voiced its general opposition to this procedure because of the local character of its property as compared with interstate agencies and the widely varying effect of climatic conditions, governmental requirements, changes in the art and public tastes and demands.

Even if useful life were recognized as a factor, past experience is not a safe guide. More than one-third of the cars now in use are over twenty years old. Here is an obvious deficiency in past retirement costs. Track has also failed to receive needed attention, and there are many cases of power station investment still retained on the books, although power is regularly secured from other sources. All these deficiencies in past retirement charges should be clearly understood in estimating future appropriations. Even if past shortages cannot be promptly overcome, future appropriations should recognize the rate at which past appropriations should have been made rather than the retirement costs which the books actually show. There are doubtless cases where now and for some time in the future the maximum rate of fare which either regulation or business judgment dictates is too low to cover the full cost of service. Such full cost should, nevertheless, be known, including provision for retirements based upon recognized normal requirements rather than past history. It should also take into account the probable increase in use of buses and accompanying release from service of other types of rolling stock.

Fortunately, the financing of new rolling stock purchases has been made comparatively simple in recent years through co-operation of manufacturers and their banking affiliations, and cars may be purchased through installment payments under the equipment-trust plan in common use by steam railroads. Under such plan payments are commonly spread over a period of five years or thereabouts, and there have been numerous cases where savings in operation have been more than sufficient to provide the necessary installments. Where bus service can advantageously be substituted for rail service, the purchase of buses many also be made on similar terms.

It may be objected that additional financing under the equipment-trust plan is undesirable in that it adds further obligations to a financial structure already heavily overloaded with debt. For more than ten years junior financing by electric railways has been negligible, and the new obligations incurred for added facilities, although in comparatively moderate amounts, have made the financial structure less stable and have contributed to the collapse of a number of such structures.

THE pressing problem of the railways is, therefore, the modernization of its rolling stock, and it is the opinion of the industry's leaders that this modernization must be accomplished in spite of difficulties attending its financing. Few electric railways have adequate retirement reserves. In the early years of the industry the need of such reserves was not clearly appreciated or their accumulation was postponed to subsequent years which were expected to be more prosperous.

The report of the advisory committee on electric railway finance, presented to the American Electric

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Railway Association at its 1925 convention by a committee representing primarily the investment banking interests, clearly pointed out the dangers in the existing financial situation and its tendencies. This advisory committee demonstrated, through carefully prepared figures covering a projected period, assumed to represent a continuation of present financing policies, that the financial structure of the industry as a whole would steadily weaken, as shown by the margins over interest and the ratio of net income to dividends.

The committee then proposed a voluntary revision of the capital structure, under which a substantial proportion of outstanding obligations would be converted into preferred stock, dividends on which would equal interest charges on the bonds replaced. The immediate effect would be relief in an appreciable number of cases from danger of receivership, a higher credit standing of the bonds remaining and a better market for such new bonds and preferred stock as might from time to time be issued.

The advisory committee recommended that a substantial part of new financing after such reorganization be done through preferred stock sales. For obvious reasons customer ownership, so popular in the electric power, telephone and gas industries in recent years, has made little progress in the railway field, and there has as yet been little opportunity to test the recommendations of the committee in this respect. It does not, however, appear that the confidence of the committee that the customer-ownership movement should find representation in the electric railway field was wholly premature or misplaced. Recent sales of junior issues by well-known electric railways indicate improved investment sentiment.

It may be of interest to those who have not read the advisory committee's report to point out the results which it gives in a ten-year period of future operation under a revision of the financial structure which converted 25 per cent of its debt into preferred stock. During this period, with normal growth in income and investment, interest charges are shown to have been earned at least twice, and also preferred dividends with a constantly increasing margin, the ratios of net income to preferred dividends ranging between 3.0 to 1 and 2.2 to 1. According to investment bankers' standards, both bonds and preferred stock under such conditions should find a ready market in the absence of surviving prejudice. The author has had occasion to criticise these methods of testing investments and has suggested what seems a more logical alternative or, at least, a desirable supplementary check by showing the relation of the balances available for interest or dividends to the annual revenues. Where revenues are subject to substantial change without corresponding change in operating expenses, the available balances may be dangerously reduced, although the number of times interest is earned may appear safe.

Under this alternative method of testing the attractiveness of the revised capital structure proposed by the advisory committee it appears that the gross income available for bond interest is about 25 per cent of the probable operating revenues at the end of the ten-year test period and but little less at the beginning, a wholly satisfactory ratio. Net income available for preferred dividends increases roughly from 12 to 13 per cent of operating revenues, a not wholly satisfactory showing if the financial history indicates lack of stability in income, but suitable for many investors.

Although the balance left for common dividends shows a material increase in dollars and in percentage on a fixed outstanding issue, it actually decreases during the period in per cent of operating revenues, indicating that at best the prospects of common stocks of electric railways as investments, as shown by the report of the advisory committee or elsewhere, are not yet encouraging. In spite of this fact, the availability of preferred stock under a reorganization plan, of equipment-trust certificates, and of some further issues of longer term obligations for income-producing facilities, such as have been referred to herein, gives the industry a sufficient field for its current financing. Common stock financing may safely await a future date when co-ordination of transportation agencies, improvement in equipment and more logical fare structures have brought about, as they undoubtedly should, a substantial and permanent improvement in the financial standing of the industry.

AS SOON as such improved showing permits, the railways should give serious attention to more adequate provisions for depreciation. As already stated, past provisions have been inadequate and service and efficiency have thereby suffered. In its future more liberal provision for this element in the cost of service to be recovered through fares, the industry should not itself be deceived or permit regulatory authorities to be misled by past history of retirement cost.

The difficulties attending voluntary reorganization of a solvent railway property are apparent. The holders of undefaulted obligations naturally hesitate to exchange them for even a cumulative preferred equity. When, however, the future holds possibilities or prospects of decreased market value of their holdings or failure to meet interest payments, such holders may well consider the alternative, offered through reorganization, of equal income regularly or cumulatively received without legal formalities unless further serious reverses are encountered, with the further inducement of probable increase in market value. Increased experience with involuntary readjustments of capital structures may in time furnish the best argument for similar voluntary action in certain cases.

Under the conditions above outlined the outlook for the industry is by no means discouraging. It can finance rolling stock purchases in a comparatively simple way at rates of interest which are by no means exorbitant. Other kinds of railway property do not in general need important expansion. New rolling stock will attract new business, which the industry needs for permanent improvement in its showing, and will also reduce operating costs. It may require courage in many cases to add, if necessary, to an already embarrassing series of obligations, but where such addition will reduce the cost of service, as indicated by recent experience, that courage should be mustered.

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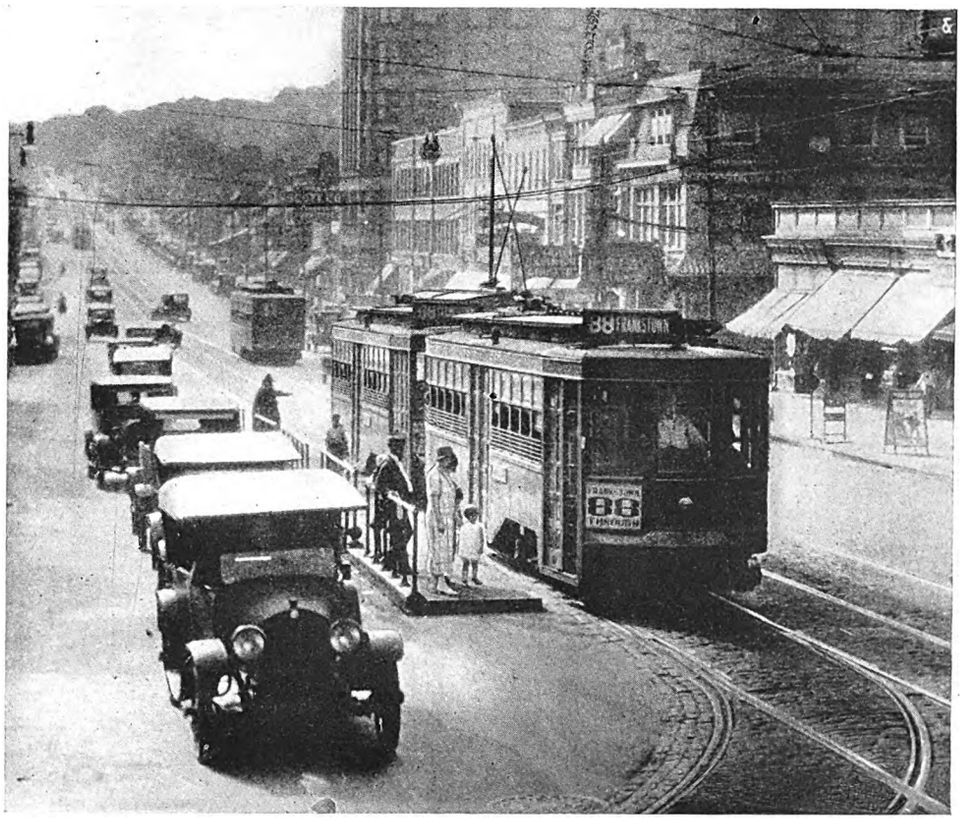
IMPROVEMENT

continued in Pittsburgh with modern equipment and methods

By T. FITZGERALD
Vice-President
Pittsburgh Railways

Better equipment has made service more attractive and increased riding, while resultant improvements in maintenance methods have effected substantial reductions in operating expenses



Modern cars furnish high-class transportation service in Pittsburgh's busy streets

DURING the first six months of 1926 the Pittsburgh Railways carried 38,000,000 more passengers than during the corresponding period of 1923. Due to numerous recent fare reductions, however, the gross revenue was less despite the larger traffic. The decrease in earnings has been more than offset by economies effected in both the maintenance and operating departments, so that the net revenue shows a substantial gain. Contributing elements to this result have been many. First, new cars of modern design have made it possible to furnish a service that has pleased the public. Second, development of the way department, made possible by the purchase of new tools, together with the adoption of modern methods, has produced large savings as well as improvements in the quality of maintenance. Third, a similar development in the equipment department, following the purchase of new rolling stock, has resulted in a considerable saving.

Industrial conditions in the Pittsburgh district have been rather unsatisfactory during recent years. In particular the coal industry has been seriously affected, the estimated decrease in earnings being about $100,000,000 a year. Railway revenues, however, have not followed the downward trend of business conditions nor the upward trend of traffic. More than 100 concessions have been made in the use of transfers. Five-cent fares have been established on short-haul routes and Sunday and weekly passes have been put into effect. All this has stimulated riding tremendously, but the actual return to the company has been $286,000 less than during the first half of 1923. Comparative figures of revenues and expenses for the past three years are given in Table I.

Table I—Revenue, Expenses and Earnings, 1923-1925

	1923	1924	1925
Gross railway revenue...	$22,547,745	$22,063,777	$21,813,696
Total operating expenses	17,622,092	17,360,901	16,847,034
Taxes.....	801,627	668,018	614,143
Total operating expenses and taxes.....	18,423,719	18,028,919	17,461,177
Net earnings after taxes	$4,124,026	$4,034,858	$4,352,520

Included in operating expenses for 1924 and 1925 are portions of debts which were assumed when the receivers were discharged and which are being amortized over a period of years. The year 1924 carried $402,903 and 1925 $441,537 of such expense. The expenses of the traction conference board, also carried in operating expenses, was $41,250 for the year 1924 and $37,500 for 1925.

After the Pittsburgh Railways emerged from receivership attention was directed first to making savings in the maintenance of way and structures department. This was done through purchase and use of new and modern equipment and facilities, the consequent concentration of gangs, better distribution of material, and improved methods. In two years time a reduction of

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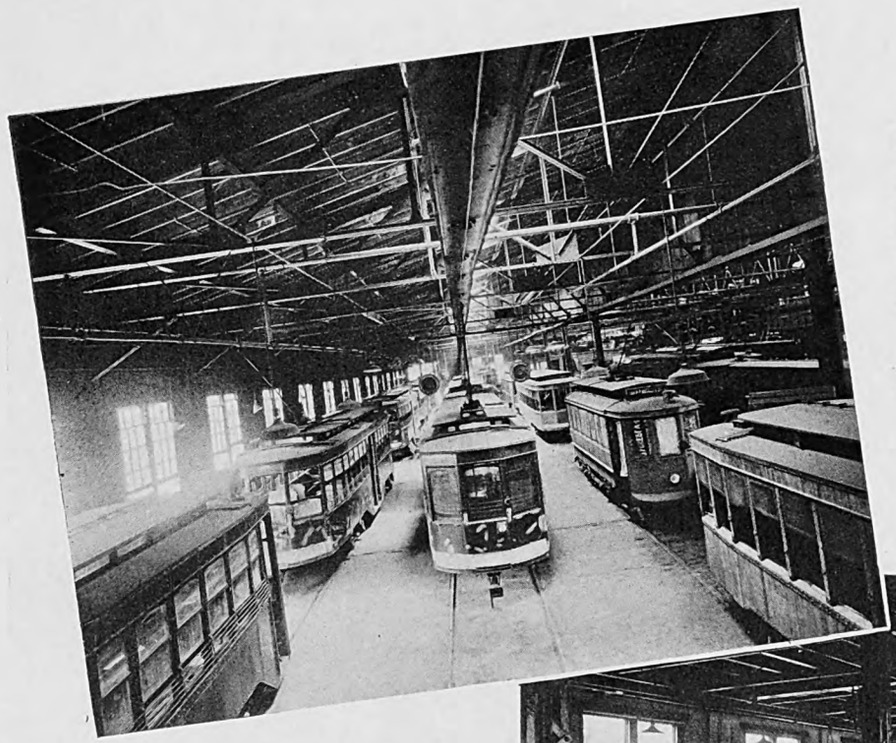
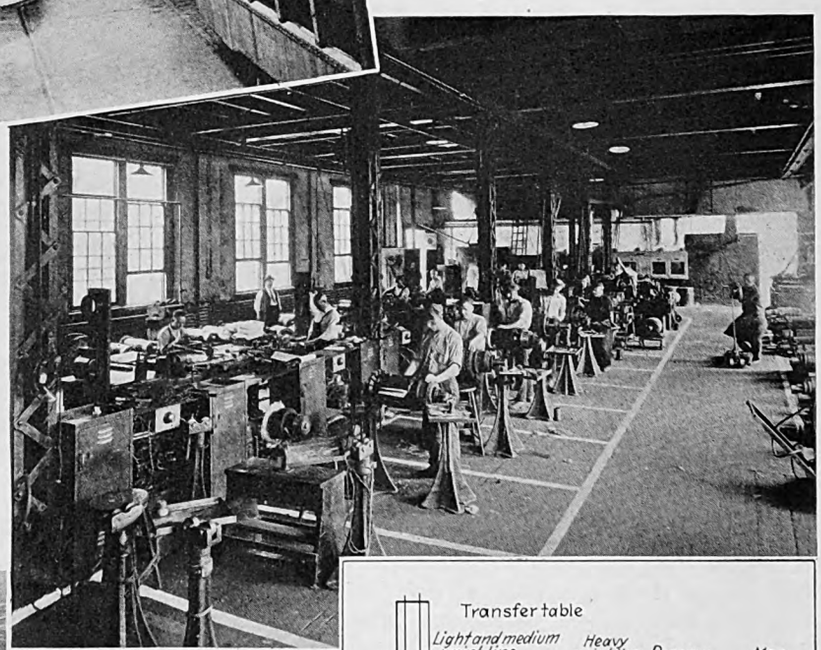
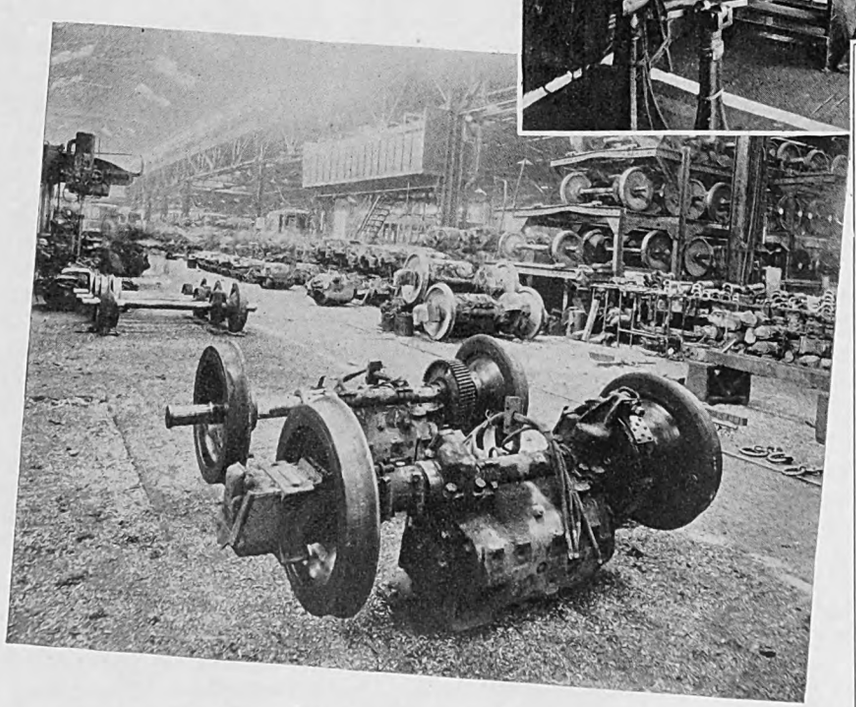




Upper view—Car painting is done on the line production basis. The three lines of cars advance one position every night. The same men thus perform the same work on different cars each day

Lower view—Armatures are wound on the line production basis, by the creation of a pool of cores ready for winding and another pool of completed armatures ready for installation in motors



After the trucks are disassembled the wheel assemblies are set to one side for further dismantling. The wheels are turned and replaced, motors are taken apart and armatures sent to winding room, if repairs are necessary, and then all parts are brought back and reassembled in the units shown in this view

Three paint lines used in Homewood shops, Pittsburgh Railways

The line drawing below illustrates the layout of the paint shop, requiring 24 painters and workmen, producing twelve to fifteen repainted cars per week. During the night the painting line on each of the three tracks is stepped up one position. The finished cars are removed by the transfer table at the top of the diagram and the new cars to be painted are placed in the first position at the bottom of the line.

Lines Nos. 1 and 2 are used for light and medium paint jobs and line No. 3 for complete repainting. The cars in line No. 3 stay in each position two days.

The bogey set for this paint shop is fifteen cars a week. The company has standardized on the lacquer system for all steel cars.

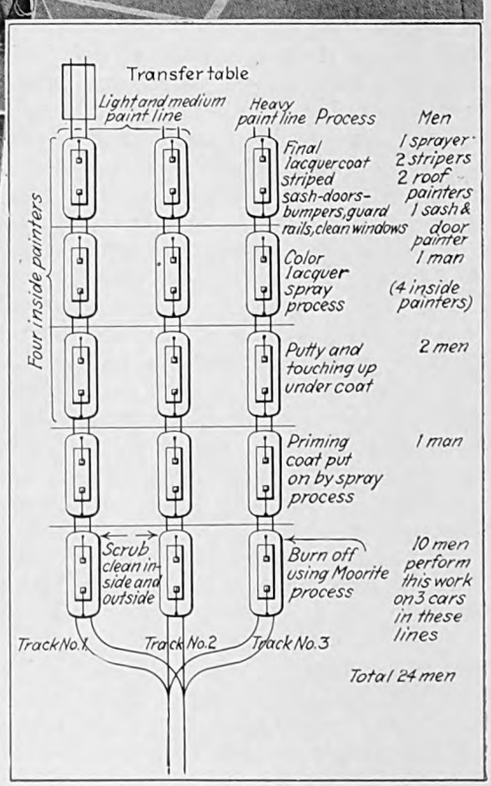


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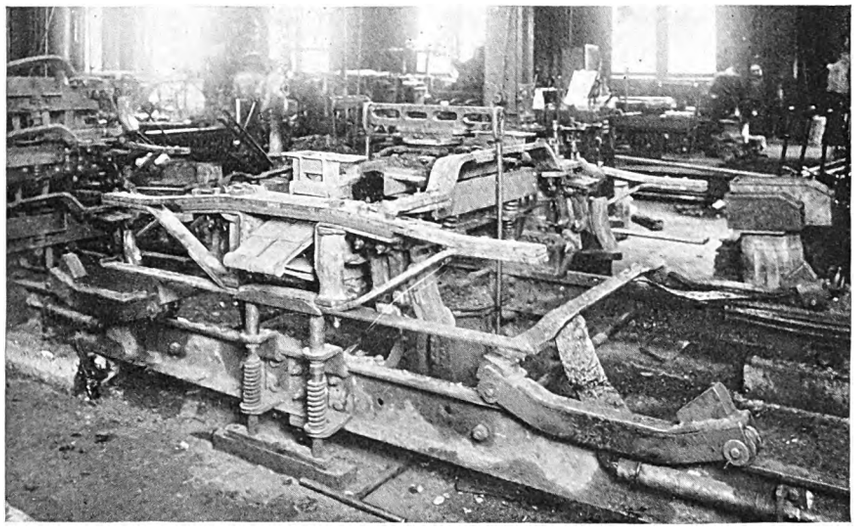
Table II—Development of Maintenance Departments Reflects Savings in Expense Without Curtailment of Work

Detail of operating expense:	1923	1924	1925
Way and structures	$3,788,843	$2,685,011	$2,492,697
Maintenance of equipment	2,497,494	2,513,962	2,235,267
Power	2,136,006	2,034,877	2,005,651
Conducting transportation	7,162,007	7,440,744	7,263,546
Traffic	59,675	160,226	204,490
General and miscellaneous	1,978,066	2,526,082	2,645,384

Conducting transportation expense has increased despite the increase in one-man operation, totaling 135 cars at present, due largely to increase in wage rate effective May 1, 1923. Present wages are 63 cents minimum to 67 cents maximum, with 5 cents per hour additional for one-man car operators. General and miscellaneous expenses are higher largely due to amortization of certain pre-receivership expenses, as previously outlined.



This illustrates the jig used to mount the wheel and motor units in place. An air cylinder depresses the bolster and springs, making possible the mounting of wheels and motors without the tedious depressing of springs by means of the screw process very generally used. The wheels are laid on the racks shown at the ends

53.3 per cent was made in the number of men employed in maintenance work of this department, with consequent reduction of 50.5 per cent in the payroll.

During the latter part of 1925, and continuing up to this date, drastic changes in equipment maintenance methods have taken place. Even yet the work is far from completion and, hence, present results are only partial. Nevertheless, during the year 1925 a reduction of about 23 per cent was made in the number of men employed, with a consequent reduction in this payroll of more than 18 per cent.

First the overhauling work previously carried on in six of the company's shops has been concentrated at Homewood, which is the largest and most centrally located of six shops. At the present time about 90 per cent of the shop work is done there and the remaining 10 per cent at Manchester. The principle of the "line assembly" as used in automobile manufacture was applied to this overhauling work. In the Homewood shops this system has been applied also to the painting of cars, the winding of all armatures and the rebuilding of the "M-25" trucks, which are now practically standard on the property.

Cars to be painted enter the paint shop at one end and are placed in the "first position" on one of the three tracks used for this purpose and move progressively from one position to the other. The completed cars are taken off the other end of the tracks on a transfer table completely finished. Two of the tracks are used for the repainting of cars that do not require that the old paint be removed. The third track is used for cars which are scheduled for stripping to the metal, requiring a complete repainting job.

The first position on the two repaint tracks is devoted to cleaning the cars. A gang of ten men can thoroughly clean the outside and inside of the two cars in one day while in this position. At night the two lines of cars for light painting are advanced one position, or a car length. The heavy paint line advances every two days. Here another gang applies the priming coats by the spray process. The third day puttying and touching up the under coat is accomplished and cars are prepared for the finishing coats, applied the fourth day. At night these cars are again moved forward to the fifth position, where the final lacquer coat is applied and roofs, fenders and window guards are finished. In all, five days are required and the cars are ready for service, each phase of the work being done by men experienced in this one element of the work and with equipment and material always in place.

On the third track, where cars are completely repainted, slightly longer time is required, the car remaining in the same position for two days in certain steps.

In all 24 men are used continuously in these three lines of the painting process, and at present about

Table III—Car Change Record, Highland Carhouse, 1926

Month	Permissible Car Changes (Based on 6,000 Total Car Changes	Miles per Change)	Per Cent Performance
January	50	33	66
February	55	38	68
March	52	34	65
April	35	34	99
May	22	36	163
June	18	34	188
Total	...	...	...
Average	...	...	...

Table IV—Car Change Record, Ingram Carhouse, 1926

Month	Permissible Car Changes (Based on 6,000 Total Car Changes	Miles per Change)	Per Cent Performance
January	60	28	46
February	80	26	32
March	40	29	72
April	24	28	116
May	22	28	127
June	16	28	175
Total	...	...	...
Average	...	...	...

Car change or "pull-in" records are kept for each carhouse. Here are two records for Highland and Ingram. Improvement is observed in the per cent performance record for this year as a result of the better inspection methods developed.

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eleven completed cars are being turned out per week. With further experience with this system, it is expected that on an average of fifteen cars can be turned out every week by the same number of men. This has been accomplished certain weeks. The lacquer system is used entirely in this process, both the priming coats and the final coats being sprayed on. The cars to be completely repainted are first cleaned by the Moorite paint-removing process.

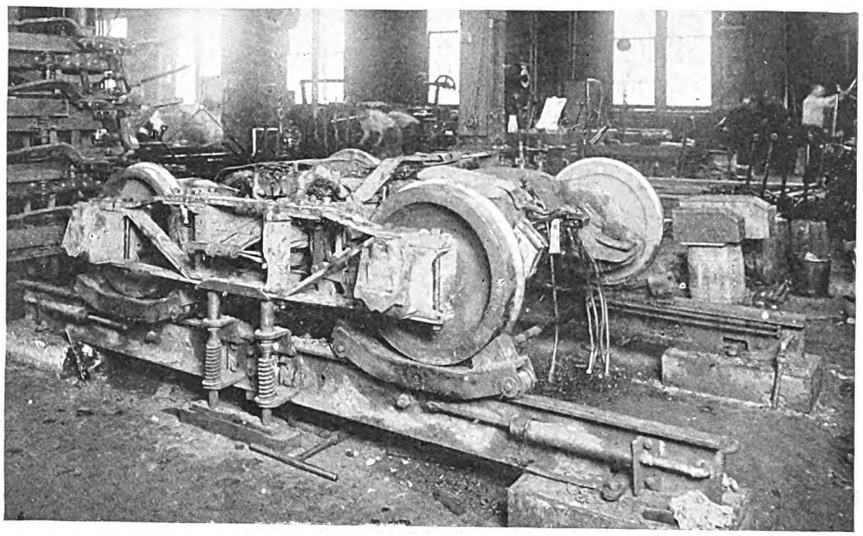
The same general plan has been applied to the rebuilding of the M-25 trucks. In the first place, whenever any trouble develops on the motors, leads or trucks, except slack brakes, the crippled car is sent to the Homewood shops. There the car body is lifted by means of an electric hoist and the disabled truck removed on a transfer table. From there a crane immediately removes it to the pool of damaged trucks. A rebuilt truck from a pool at the other end of the line is immediately placed under the car. This complete change of a truck requires about fifteen minutes. The car is then ready for service again.

For the successful operation of this kind of system it is essential to have a pool of trucks requiring repair and another of trucks that are completely rebuilt, as well as a supply of rebuilt parts always ready for use. The truck to be rebuilt is placed in the first position, where a "gang" of one man and a helper burn off all the necessary bolts and rivets (marked by the inspector). The truck is then broken down. Component parts are next set in line just to one side of this position. These parts are sent to the blacksmith or machine shop and after repair are again immediately placed in pools alongside the truck line. The rebuilt truck frames are then assembled in another position, as shown in the accompanying diagram. Brake rigging is assembled, motors and axles put together, and finally the entire truck is reassembled by other gangs working adjacent to these positions. In the final position the truck is placed on a jig and an air cylinder is used to depress the bolster, which allows the wheel assembly to be set in place, thus completing the process. The completed truck is then carried by crane to the rebuilt truck pool.

One man is engaged with the supplying of the necessary bolts, rivets and washers, etc., to the truck assembly position. The exact number needed is laid on a steel plate convenient to each operation, so that none of the gang has to make trips to and from the storeroom. The necessary stores supplies are requisitioned ahead of time and are delivered from the storeroom in small motor lorries that make regular trips to all of the points of distribution in the shops. These motor lorries also deliver broken down parts to the repair units and redeliver the repaired parts to the assembly line.

Damaged armatures first go to the stripping unit, where one gang completely removes the winding and prepares the cores for new coils. After core and commutator repairs, the armatures are placed on the winding racks and other operators place the coils and core insulation. The armatures are then moved to another position, where the armature leads are soldered into the commutators. In the next position the coils are banded by the man who is engaged in this one process all of the time. Then, if necessary, the cores are dipped and baked, when they pass to the commutator turning and undercutting positions, after which they are tested, painted and moved by lorry to the motor assembly floor.

Car washing methods have been improved by installing spray racks and electrically driven scrubbing brushes at several of the carhouses. As this system is developed it will be extended to other stations. A specially designed window cleaner has been developed that allows the windows to be cleaned without removing the window guards. This operation was told in detail in ELECTRIC RAILWAY JOURNAL, page 262, Aug. 14, 1926.



After the wheel and motor assemblies are placed in the racks and the bolster depressed, small air cylinders, seen in this view, slide the wheels into place, after which they are bolted to the trucks and the job is complete, being carried by crane to the rebuilt truck pool

Cars are housed in twenty different locations in the Pittsburgh district. Inspection work is being developed on the basis of unit inspections of all equipment in a

Table V—Comparative Car Change Report

Carhouse	Position Standing Each Month—Jan.	Feb.	March	April	May	June
Highland	3	3	6	4	2	1
Ingram	4	5	5	2	3	2
Emsworth	1	1	1	5	5	3
Craft Ave.	14	17	14	11	14	4
Manchester	5	4	8	3	6	5
Charleroi	2	2	3	1	4	6
West Park	15	8	9	8	1	7
Tunnel	9	11	10	12	11	8
Carrick	8	13	7	9	9	9
30th St.	7	6	13	13	8	10
C. Shannon	6	7	2	6	13	11
Keating	11	12	12	7	10	12
Millvale	10	9	11	10	7	13
Homewood	18	15	15	16	12	14
Glenwood	17	14	16	17	17	15
McKeesport	20	20	20	20	20	16
Rankin	19	19	18	19	19	17
Washington	12	16	4	4	14	18
Plummer St.	18	18	17	18	16	19
Herron Hill	13	10	19	15	18	20

Every month a "position standing record" is prepared listing the carhouse having the best performance for the past month first and the rest in the order of their results. These sheets are sent to each carhouse foreman.

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manner similar to the work of overhauling of cars in the Homewood shops.

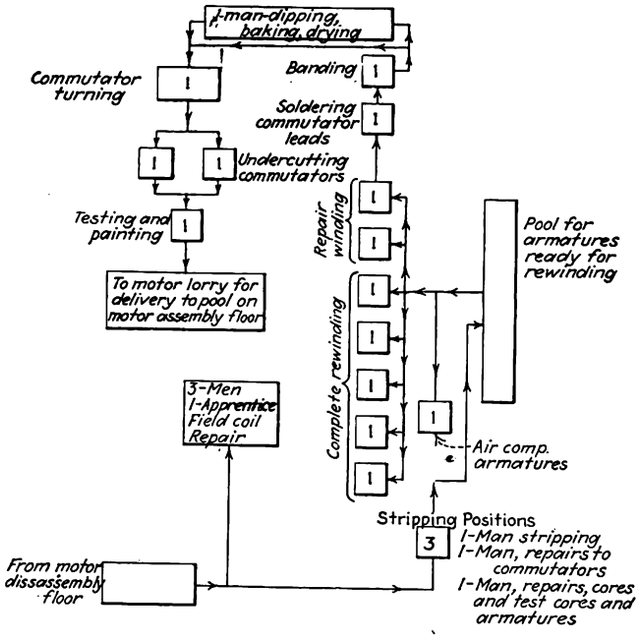
The cars to be inspected in each carhouse are lined up and specialized gangs do their work in logical order — one gang inspects trucks and tightens brake-rigging, another inspects car body, seats, steps, doors and such details, another inspects controller and electrical connections, etc.

For the purpose of building up a comparative record a complete follow-up system is being established and each month the position of each carhouse is determined on the basis of the mileage obtained for each pull-in necessitated by a crippled car.

In order to follow up the work at each carhouse a position standing sheet is made up each month and sent to all the foremen at the various carhouses which shows their records for several past months and listing the order of their standing for the current month.

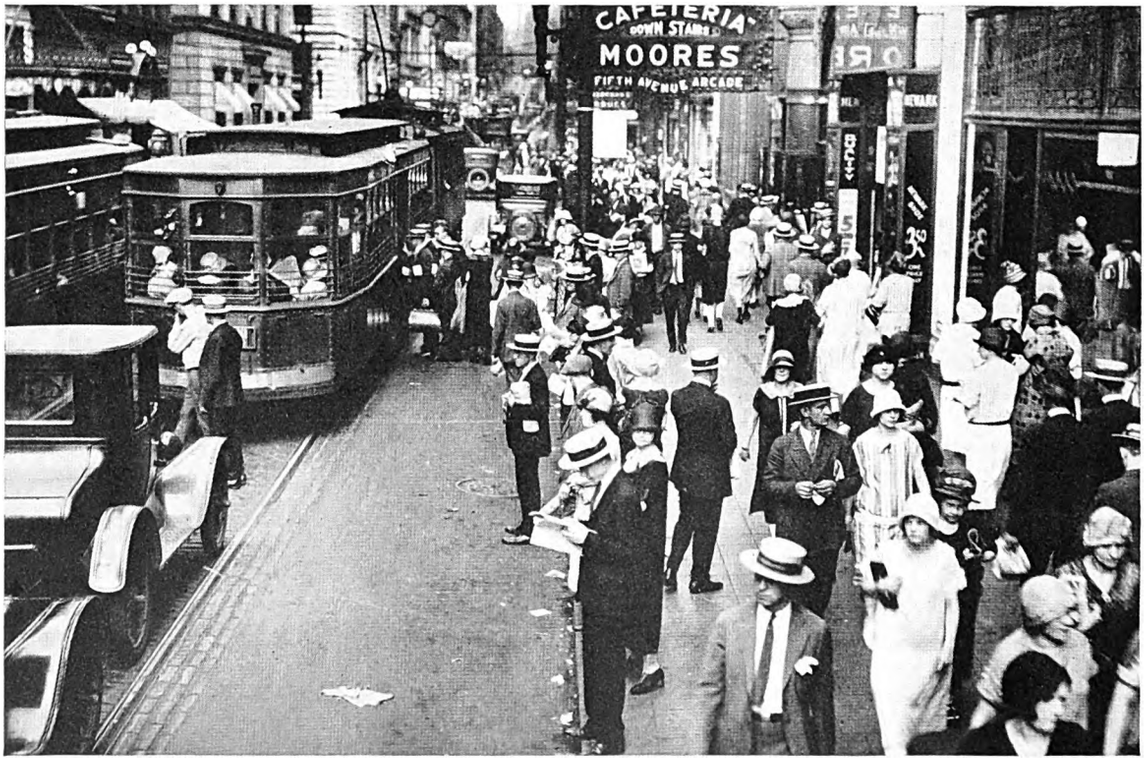
In addition to this, a small set of sheets is prepared, similar to the sample reproduced herewith, showing the total car changes and the permissible number based on a bogey of 6,000 miles per car change; the third column shows the percentage performance, which is the ratio of the second column divided by the first. The work has progressed so far in the Highland carhouse that nearly double the permissible mileage originally set as a bogey is now obtained. All of the carhouses show improvement.

In addition of these records, other more detailed records are obtained and kept for reference showing the exact cause of each car failure. These records are invaluable as they throw a searchlight on the weak points. Several of these details are now under investigation and plans are being developed to change the construction of the device causing the trouble. In this way it is expected that the condition of the cars will not only be maintained but greatly improved as time goes on.



Armature winding systematized in Pittsburgh shops

Diagrammatic plan of handling armatures in the "line" process shows the direction of movement and the number of men employed in each position, there being 22 in all. The success of this operation depends upon having not only a pool of armatures ready for winding but a steady flow of all materials used. Materials are requisitioned ahead of time and placed in proper locations so that the workmen do not have to move away from their positions or go to the storeroom for any materials.



Typical scene at Fifth Avenue and Wood Street, Pittsburgh, during the rush hour

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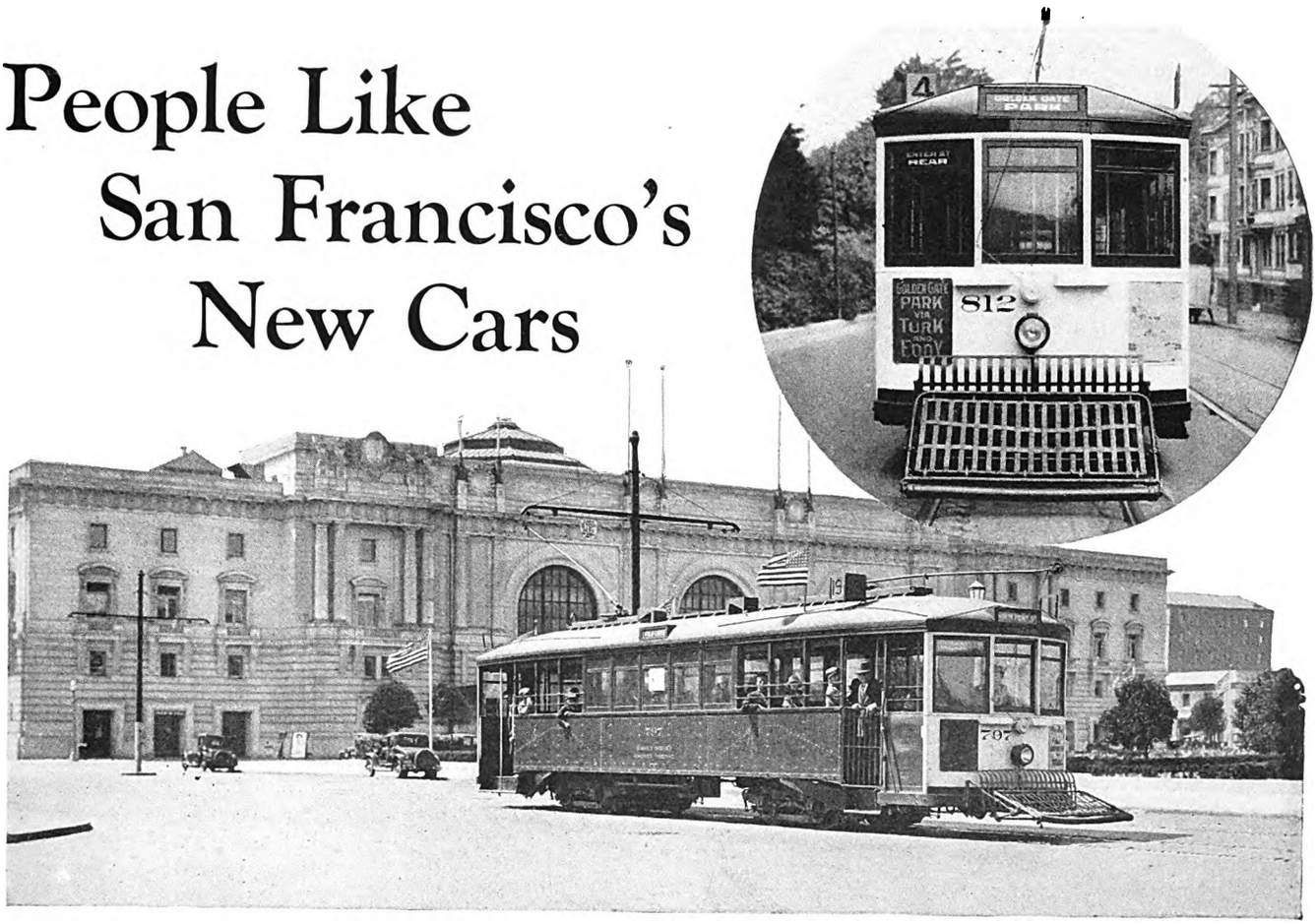
People Like San Francisco's New Cars



Open-end sections on the new cars of the Market Street Railway of San Francisco have proved popular with the riding public

In circle—The ends of the new car are painted white and brightly illuminated at night, thus greatly increasing its visibility

By M. McCANTS
General Manager Market Street Railway
San Francisco, Cal.

Market Street Railway has developed a standard type of vehicle combining moderate first cost and low operating expense—Open-end sections are liked by passengers

PRIOR to 1920 the Market Street Railway of San Francisco, like many others, had experimented with a number of different types of cars. We had long cars and short cars, high cars and low cars, cars with seats lengthwise and cars with seats crosswise. The electrical equipment showed nearly the same variation. About that time, however, we instituted a new training system for platform employees. So difficult were the problems of breaking in new men with such a variety of cars and equipment that we decided to try to design a standard car that would suit our own local conditions. Requirements which the new car was expected to meet were lightness with strength, attractiveness with economy, simplicity with safety, and large capacity with adequate speed.

San Francisco, "sitting on its seven hills," probably has more and steeper grades than any other city in the United States. For this reason in designing a car allowance must be made for steps, fenders and trucks at the dips in the street level and for plenty of motor power on the heavy inclines. Also, in San Francisco the people are great lovers of fresh air and sunshine, so that plenty of open space must be provided. At the same time it must be possible to protect passengers in wet weather, for there are occasional rains even in sunny California. The building of a car that would meet these specifications seemed impossible at first, but, thanks to the skill of our superintendent of equipment, it has been done. To meet the demand for fresh air each end of the car has an open section with a seating capacity for twelve passengers. There are two cross seats on each side, each seat being 34 in. long, thereby allowing 17 in. per passenger. Longitudinal seats for four persons are also placed at the ends of the open sections, thus leaving a wide space for entrances and exits.

In winter the open sections are protected by storm curtains. The upper ends are ratcheted tightly against the inside upper part of the car frame and the lower ends are buttoned on the outside of the car. When not in use these curtains are rolled tightly and inconspicuously on the inside at the top.

A few of our old cars had one open section, but many of them were entirely closed. Needless to say, our patrons very much prefer the new cars, especially during the ten months of the year when it is more pleasant to be out of doors than to be inside. Another advantage of the two open sections is that passengers may smoke at either end without giving offense to non-smokers who may also want to sit outside.

Platforms are roomy and are reached from the street by one step, which is 15 in. from the ground. This is

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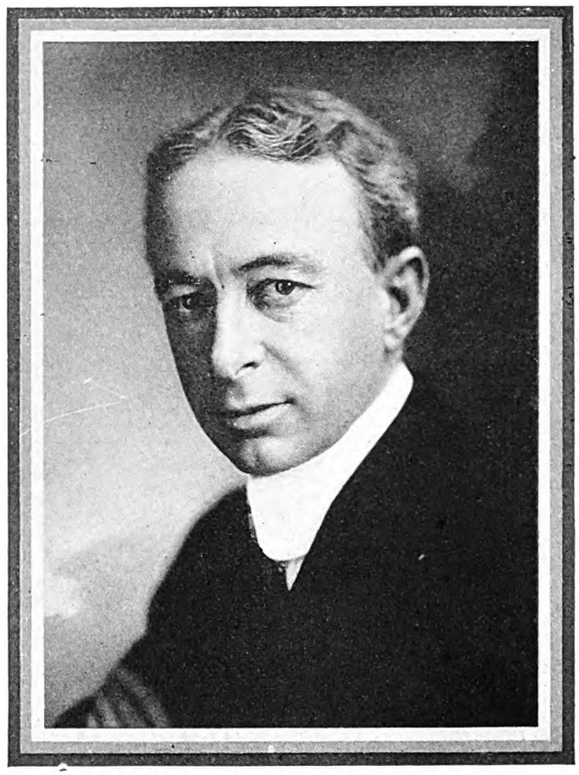
the minimum possible owing to dips in the street at the ends of steep grades, which sometimes are as much as 13 per cent. From the step to the platform is only 10 in. To give the car the greatest possible capacity without requiring too great width for clearance the steps are all set back into the platform proper and do not project beyond the longitudinal body line.

On each side are five fixed-sash windows extending high enough so that even a standing passenger can see out without stooping. Ventilation is secured by means of a perforated panel over each door, and the roof, which is turtle-backed, has four funnels, two opening forward and two backward, similar in type to ships' ventilators. There are no floor ventilators.

In San Francisco the track centers are 11 ft. ½ in. apart and this permits a wide car body, so that our standard design has a width of 9 ft. 2 in. and is 47 ft. over bumpers. The weight of the car body complete is 17,560 lb. and of the entire car 39,100 lb. The standard capacity of the car is approximately 100, so that during the rush hour 150 passengers can be carried without difficulty.



M. MC CANTS

Light Weight Has Many Advantages

Many advantages have resulted from the light weight, particularly because it is combined with large carrying capacity. Not only does the car require less power on the hills, but it takes less power to start and stop and consequently operation is smoother. Passengers frequently remark about the comfortable riding qualities, but these qualities are merely due to smooth operation. The lighter weight also means less wear and tear on roadbed and reduced expense for maintenance.

The standard car adopted is not only economical to manufacture but economical to maintain. The frame and posts are of yellow pine, which is a local wood, and the sides are of No. 12 steel. The side is assembled in one piece and then bolted to sills and posts with Eagle carriage bolts. The platform fronts also are assembled as units. In case of a damaged front or a damaged side it can be removed easily and repaired in a short time. Bolsters are so constructed that they can be removed in less than an hour. Wiring and auxiliaries also are designed for simplicity and ease of repair.

All frills have been eliminated. There are no fancy panels or headlinings. Platforms, floors and steps are all covered with a material that resembles heavy roofing paper. When its use was first suggested to us we were skeptical. However, we gave it a trial on one of our cars and at the end of two years no appreciable wear could be detected, so it has been adopted as part of our standard equipment.

Roofing paper has numerous advantages over an uncovered wooden floor. It is smooth. No one trips over it, and yet it is impossible to slip on it even when it is wet. Cheap lumber can be used underneath. It is easy to install. It eliminates replacement of worn-out flooring. It is warm on the feet of both the platform men and passengers. It is inexpensive and wears indefinitely.

As a safety precaution a strip of the same material has been placed on each step to minimize the danger of slipping. The low height of the steps has been an important factor in reducing boarding and alighting accidents on this type of car. So, also, has the elimination of overhanging steps, which were a prolific source of accidents on the older cars.

Another improvement which we have recently made is to paint the car fronts white. The sides remain chrome green medium, which is the color that has been used on all of our cars for a number of years. The fronts have been wired so that they are brightly illuminated at night. Two reflectors with two lamps each are placed on each side of the car and one light illuminates each exit step. This not only makes the car more visible at night, but also makes it appear wider. Both ends are kept lighted at night while the car is in service. Because the car can be seen at a considerable distance accidents involving pedestrians and vehicular street traffic have been reduced to a marked extent.

Operating Costs Have Been Substantially Reduced

We now have 190 of these standard cars in service, all built in our own shops. We figure that the adoption of this new standard type of car has saved us thousands of dollars in operating expenses. The interest on the reduction in original cost is itself probably sufficient to take care of all maintenance charges on the new bodies. Added to that is the great reduction in the number and cost of parts we now have to carry and the savings already mentioned due to lighter weight, etc. Thus it will be seen that it is to our advantage to change over to the new type as rapidly as possible. Our shops are at the present time turning out a completed car every two weeks and as fast as a new car is ready an old one is scrapped.

We realize, of course, that this design is not the last word in car construction. There are several features which are now being studied with a view to further improvements, and we regard this design as but one of a series of steps which will ultimately combine all of the desirable features we wish to have incorporated in the design.

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Better public relations, increased traffic and reduced expenses have resulted from operation of cars of this type in Schenectady

PUBLIC APPROVAL

gained by improvements at Schenectady

By E. M. WALKER
President Schenectady Railway

FROM the very beginning of the business of transportation on land, and this business in one form or another is doubtless as old as the race itself, the trend in vehicle types has been gradually and definitely toward ease, comfort, convenience and safety for the passenger. Great progress has been made; as great, in fact, as that of the human race in its cultural development. Vehicle styles and types have been continually and progressively changed. Innovations during the last century have been frequent as well as radical, and especially so since the advent of the street railway. These changes are all the more marked when the comparatively short life of the street railway in relation to the whole transportation industry is borne in mind.

Collateral developments stimulate each other by their competition, in response to the law of natural selection or survival of the fittest. Whether we are in one business or another, we must always heed natural laws, as the violation of each one carries its own penalty.

Since its advent the street car has had to keep pace with the tastes of the people it served. One has but to turn back in his memory, if old enough, or to look at the numerous available series of pictures showing the development of transportation vehicles from 1888 to 1898, 1908, 1918, and so on down to the present. In the past fifteen years, on account of the amazingly rapid development of the automobile, the pace has been much more rapid than during the early days of the electric car. The field of development has been so alluring, on account of rapid growth and high rewards, that a multitude of ingenious minds have been attracted to the work of vehicle design and construction. The contest of minds engaged in producing something more comfortable, more speedy and more sightly than has ever before been produced has been without precedent both as to the time required and the results achieved. Tastes have been quickened and the demands have been much more exacting than in the "horse and buggy age." This, of course, has given a challenge to those operating electric railways as well as to those engaged in building electric cars and transportation appliances.

The Challenge Accepted

Any one engaged in the electric railway business must be willing to accept this challenge. He must be sincere in his belief in his business, in its necessity and in its utility. He must be a believer in the general principle that any business for which there is a legitimate

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need, and which performs a necessary service and performs it well, can be operated profitably. In other words, the world always holds out rewards for wise management of useful and necessary public service enterprises.

Realizing the change and development of the public taste in the matter of vehicles for transportation the American Electric Railway Association has in its organization an active committee engaged in this very matter of bringing the industry up to date in the matter of replacing out-of-date equipment with modern, attractive and more efficient rolling stock. That this demand is growing is evident from the statistics of passengers carried and that it will continue to grow is in the very nature of our modern city life.

Public Demands Modern Equipment

People who ride, and in these modern days who does not ride (it has been estimated that there is enough automotive equipment in use in this country today to furnish the entire population with a simultaneous ride), have all of a sudden been educated to the most modern kinds of vehicles. They would, as far as automobiles are concerned, just about as soon walk as ride in one of the old "highboys" of ten or fifteen years ago. What wonder, then, that in the matter of street cars the riding public (the very same people) should be rather exacting and critical in the matter of the kind of cars they ride in and that they should want something modern and up to date as distinguished from the heavy, slow-moving car of other days, with its high steps—and sometimes three or four of them—to climb, narrow doors, small vestibules, and what not. They simply will not be satisfied with such vehicles, and mortification is bound to set in on the property so equipped.

IF THE character of our service has reached a point where people won't ride unless they have to, it is up to us to make the service more desirable. And we can do this by modernization of equipment, by putting on cars that will furnish the best known means of electric railway transportation and by relegating to the scrap pile those that tend to remind the passenger that because they were good enough for his father they ought to be good enough for him.

We have heard much in the past and are hearing much at present about valuation, or cost, being the determining factor in the rate of fare. As a matter of fact the value of any property is determined by the value of its service. The truth of this is as old as the hills and it is only a restatement of the following law: The value of an article depends on who wants it and on how badly he wants it. To realize the truth of this one has only to try to sell a $25,000 house when nobody else wants it. All of this has a bearing on our own business.

If the character of our service has reached a point where people won't ride unless they have to, it is up to us to make the service more desirable. And we can do this by modernization of equipment, by putting on cars that will furnish the best known means of electric railway transportation and by relegating to the scrap pile those that tend to remind the passenger that because they were good enough for his father they ought to be good enough for him.

There are in the industry many properties where this has been done partially or completely. The improvement has always been followed by the desired results, provided there was in the first place a real demand for service and a real reason for the existence of the line.

The case of the Schenectady Railway is not in any way unique. It is rather typical of what can be done, and in fact has been done in many other instances. At the close of 1923, in the latter months of a well-nigh destructive labor disturbance, the management, taking stock of the available tools and appliances, found five distinct types of city cars, and just as many different methods of fare collection, with only 10 per cent of these cars less than six years old, and some of them 25 years old. Clearly many of them had passed their years of usefulness. The patience of the riding public was well-nigh exhausted and there was but little faith in the company's willingness or desire to operate a real railroad and to furnish real service in a city where such service is really needed. Schenectady is perhaps in a class by itself, in that a very high percentage of the people are capable, by the very nature of their occupations, of judging intelligently the elements that go to make up railroad service. Accordingly the company embarked upon a definite plan of modernization of its equipment. Ten modern cars were immediately purchased. Within a year and a half of their installation twelve more of the identical type were added to the company's system.

We were confident that we must modernize if we wished to retain the business we had and recapture some of that which we had lost and, above all, if we were sincere in wishing to give our people good railroad service. We did not make any bargain with the community for so much increased good will per new car, but felt that, once the people were convinced of the sincerity of our announced aims of giving the best possible service, good will, with all of its byproducts, would follow. Complaints of poor service were frequent and were in most cases justifiable. Morale was low, as it always is in the wake of a long strike.

Better Employee Morale with Up-to-Date Cars

It has been interesting and gratifying in the extreme to experience the change in public sentiment toward the company since the advent of the new cars. A sufficient number were purchased to furnish about 50 per cent of the base service and the remainder of the service was furnished by the best and most modern of the existing equipment, all thoroughly overhauled and as far as possible standardized as to equipment. Fare collection was standardized and simplified and a new and quicker transfer system installed.

Along with the favorable development in public feeling toward the company has come an improved employee morale, which together have brought about several desired results, a great reduction in accidents and in car failures and a change in the trend of traffic volume from gradually declining to gradually increasing. There has been no radical, no revolutionary change, but simply a healthy development. This has occurred in the face of a continuing increase in the automobile registra-

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tion in the county. Schenectady County is so relatively small in area that most of its population is urban or suburban and the greater part of it is served by electric lines. The number of automobiles registered up to Aug. 9 in each year for the past five years follows:

Schenectady County Registration (Population 116,000)

1922	11,581
1923	15,634
1924	19,575
1925	22,369
1926	24,443

Of course, it is not claimed that the mere act of buying new cars has brought about these happy changes, but they have been one of the indispensable factors in producing the change. There has been no change in the rate of fare during the five-year period.

New Cars Meet All Requirements

The type of the new cars is double truck, double end, light weight, safety, each car weighing complete for service about 32,000 lb. From actual experience they have met every requirement and tests have demonstrated that they are a most economical car to operate and by far better suited for all-year-round service than any other type of car operated by the company. Records which these cars have made in actual operation have been most gratifying and convincing. Actual results have shown that with a seating capacity of 44 they have carried in an emergency as many as 140 passengers. Under the P-A-Y-E system of fare collection it has been shown again and again that 44 passengers, the full seating capacity of the car, have entered and paid their fares in 52 seconds, which is rapid, in view of the fact that the fare is 7 cents, and although tokens are sold there is no reduction from the 7-cent rate.

Another record was established by these new and modern cars during the very severe snowstorms of last winter. Every line equipped with this type of car was kept open and full service given, which was not possible on the other lines operated by older types of cars. This fact earned a lot of good will and favorable comment.

The car is easy of access, which facilitates the movement of passengers in and out, and the low steps make it much easier for passengers boarding or alighting along unpaved sections of road. Higher schedule speeds have been made possible since the introduction of these cars, and this of itself improves the quality of the service to the passengers.

Naturally, very appreciable economies have resulted from the use of these cars on account of their large carrying capacity and light weight. They are capable of rendering exactly the right kind of service at whatever moment it may be needed. A combination of cross and longitudinal seats permits a spacious opening at the front of the car, making more room for passenger interchange.

Record of Cars Turned in from Dec. 1, 1925, to May 31, 1926

Car No.	Damaged by Accident	Motor	Electric	Resistance	Air	Brakes	Wheels and Trucks	Registers and Car Body
200	2	2				1	1	
201	5	2			1	1		2
202	1							2
203	3	3	1	1	1	3		
204	4	2				1		
205	2	3						1
206	5	3						
207	2	1	1			2		1
208	1	4		1		1	1	
209	2	3	2	2			1	
210	1	1		1	2			1
211	1		1		2			
212	2				1			
213	2		1				1	
214	1		1					
215	1			1				
216			1	2				
217								
218	1	1						
219	1			3				4
220	2				1			
221	1			1				
Total	40	23	8	12	8	9	4	11

Grand total	115
Accidents	40
Total	75

NOTE: Most resistance trouble due to rough tracks. Most motor trouble due to operating through water during spring thaw. The first ten 200-type cars (200-209) have been in service one year and nine months longer than the second of the 200 type cars (210-221). The armatures were not dipped in the first ones, while in the second they have all been dipped and baked. This accounts for less motor trouble.

Modernization Brings Its Own Rewards

A combination of satisfied riders, operators who are so highly pleased with the cars themselves that runs equipped with the new type of car are the first ones chosen by operators when signing for their runs, and satisfied management on account of these two elements, plus operating economies, would seem to be a fairly convincing combination of proof that modernization of equipment carried along with it its own rewards.

No mention has been made of the effect of a modernization and standardization program on the mechanical department. Since undertaking this program in Schenectady it has been possible gradually to reduce shop and carhouse forces, which were too large to permit of economical operation. The total reduction over a two-year period amounts to nearly 30 per cent. A record of mechanical performance of these cars will no doubt be of interest and is appended hereto with explanatory footnotes.

Taken altogether and from the accumulated experience of those who have tried the remedy, there would seem no doubt that if we are to keep pace with modern trends in transportation and justify our existence by showing our willingness to furnish an up-to-date, reliable, safe, speedy and comfortable form of mass transportation at a low cost that is available to everybody all the time and that can and must be furnished at a profit, we should and in fact must see to it that our equipment is kept reasonably up to the times and fully abreast with all developments.

The new idea in cars is being given attention in Europe as well as in this country. A recent article from London said that the London County Council had recently put in operation along the Thames Embankment a de luxe street car containing seats as comfortable as those in limousines. Special attention was paid to the lighting so as to enable passengers to read their newspapers without straining their eyes. The car has proved so popular that 100 more of the same kind are to be ordered.

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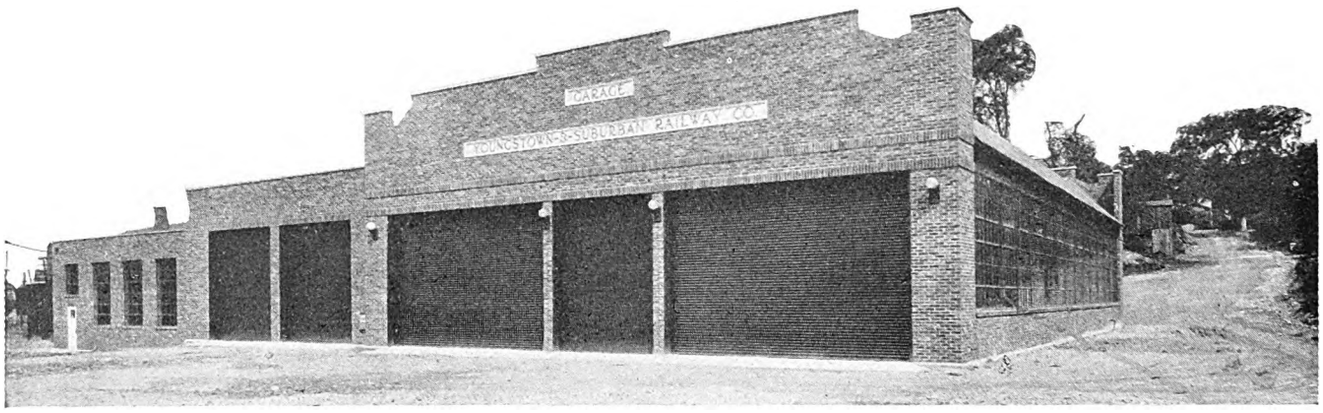
NEW EQUIPMENT

puts Youngstown & Suburban on paying basis



Exterior of the recently completed garage for the Youngstown & Suburban Railway

By E. O. SHRYOCK

General Manager Youngstown & Suburban Railway

New equipment and extensive bus operations continue to make greatest gross in company's history—In first year of Fitkin management $125,000 was spent for four new cars, two new buses and a new garage—combined property now earning all charges

REDUCED operating expenses and a distinct upward tendency in revenue have marked the first half-year operation of four new light-weight, one-man cars on the Youngstown & Suburban Railway. While the new cars have hardly been in service long enough to give a real account of themselves, the reduced expense of operation is assured and the increased passenger revenue is encouraging. Except for a few tripper cars all equipment now used is new since 1922.

Co-ordination of the bus and rail service with high-grade equipment has resulted in attracting new business to the interurban rail line, at the same time creating almost as much revenue on the buses. The combined gross today of all operations is greater than in the best previous year in the company's history.

Normally about 40 per cent of the gross revenue of this road is derived from freight haulage and switching. For the first five months of 1926 the curtailment of new building tributory to our line reduced our revenue from freight to the extent of nearly $3,700. Curtailed freight traffic generally marks a local depression which often affects the passenger revenue as well. Despite the freight situation during the early part of this year, however, the passenger revenue for the five months increased from $61,774 to $64,046, or $2,272. Possibly about $1,000 of this was because of an increase of 2 cents in city fares.

All Cars Are Now One-Man Operated

With the advent of the new cars the service to the city limits was increased to give a fifteen-minute headway for fifteen hours a day instead of ten hours a day previously operated. The light-weight features, however, have decreased the operating expense principally in maintenance, power and conducting transportation accounts, so that the total five months expenses have been reduced for all railway operations from $74,750 to $65,808. Increase in net revenue has been effected from $10,151 to $18,828, or more than 85 per cent as compared with the five months period of 1925.

In addition to the railway service over the 20-mile interurban between Youngstown and Leetonia the company operates extensive bus service, paralleling the railway and extending beyond the railway points, covering 93 miles of highway routes in all. This bus service is of an interurban nature, a de luxe type of parlor car bus being used. Except for some service rendered by our subsidiary bus company prior to the time our competitive operations were taken over the service was the same during the first five months of 1925 and 1926. During this period in 1926 the bus revenue was $59,195, as against $53,257 the preceding year, and the net revenue after operating expenses, taxes (except federal) and depreciation increased from $8,931 to $11,879, or 33 per cent.

From these results it is evident that the company as a whole has developed a bus business in its own territory and that adjacent to it nearly equaling the passenger gross of the rail lines.

Expenditures Necessary to Accomplish Results

With the use of new and modern cars railway operating expenses have been reduced, and we believe the passenger riding on cars will increase, due to the better facilities offered. But it takes money to make money. In September, 1922, the first two light-weight cars were put in service. These two cars were among the first of the light-weight interurban type to be put in opera-

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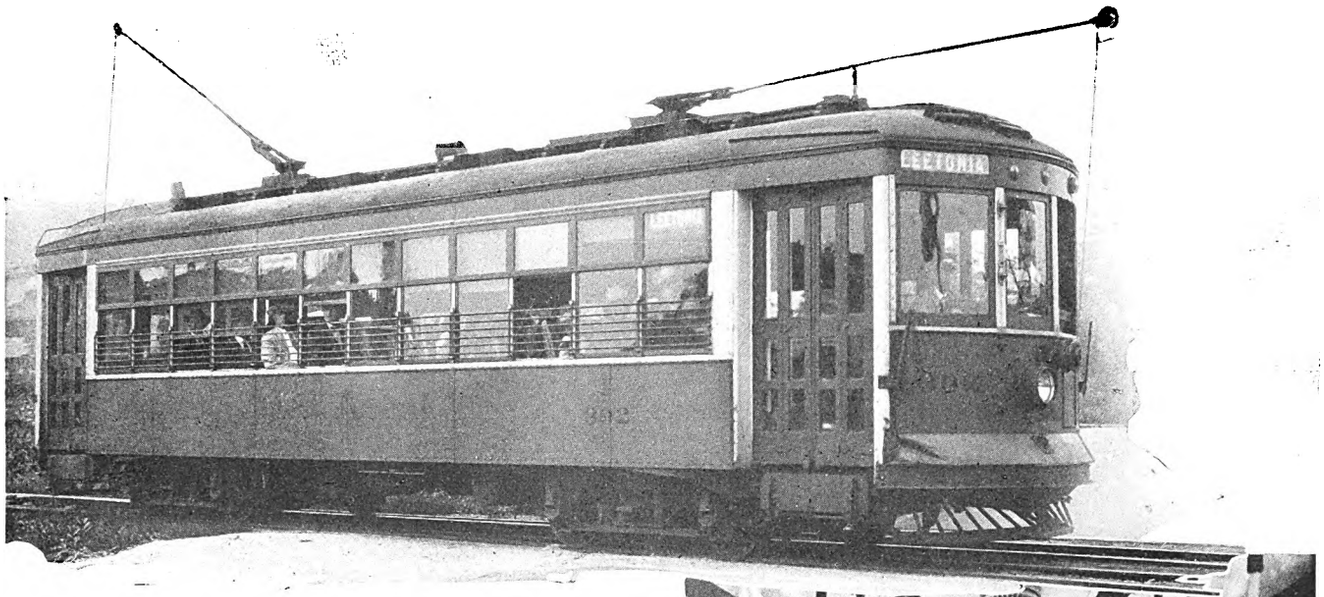

One of the light-weight, one-man cars recently purchased for the Youngstown & Suburban Railway to replace 40-ton, two-man cars. The savings produced turned a deficit into a small profit. Linoleum floors, together with leather-upholstered seats, spaced with ample knee room, make the cars attractive. This has been an important contributing factor in the increase in railway passenger revenue

tion and in a measure helped to blaze the trail for this type of car, at present so extensively used.

Beginning January, 1926, four more cars were placed in operation. The first two cars permitted one-man operation on the short line between Youngstown and Boardman. Heavy cars of the old type, weighing approximately 70,000 lb., performed the interurban service to Leetonia. The new cars enabled us to scrap these and operate the whole system on the same schedule with the modern one-man equipment. Old cars are now used for a few single trips in the morning and evening rush hours.

Table I—Summary of Railway Operations

	First Five Months 1925	1926
Railway gross revenue (passenger and freight)*	$84,901	$84,636
Operating expenses, including taxes (except federal)	74,750	65,808
Net after operating and taxes	$10,151	$18,828
Operating ratio	88 04	77.6
Per car-mile:		
Railway gross revenue, cents	44.93	42.29
Railway operating expense, cents	39.56	32.88
Revenue passengers	514,027	534,605
Car-miles operated:		
Revenue passenger	182,535	192,837
Total, including freight and non-revenue	188,969	200,123
*Passenger revenue alone	$61,774	$64,046

Table II—Summary of Bus Operations

	First Five Months 1925	1926
Gross bus revenue	$53,257	$59,195
Bus operating expense (including taxes and depreciation)	44,266	47,316
Net revenue after taxes and depreciation	$8,991	$11,879
Operating ratio	83.23	79.93
Bus revenue per mile, cents	29.14	31.06
Bus operating expense (including depreciation and taxes)	24.25	24 83
Revenue bus passengers	72,393	79,235
Bus-miles	182,753	190,571

$125,000 Spent for Betterments This Year

The budget of expenditures for the past twelve months, embracing the period of the Fitken management, included the four cars mentioned, two new buses and a modern garage and paint shop, totaled $125,000. The paint shop, just completed, will be used for all equipment, both cars and buses, and for that reason it was placed adjacent to the present repair shop and equipped with a track connecting with the yard track system at that point. The garage will not only provide housing facilities for the de luxe coaches but it will provide a well-equipped shop for making inspection and repairs.

With the completion of the new bus garage and paint shop other savings will be possible and the company will be enabled to keep in service more attractive equipment.

The Youngstown & Suburban, along with many other interurbans, lost revenue steadily for many years, and this, in common with mounting costs, put the operating results in red. With the establishment of the bus operations and improvements made in the rail

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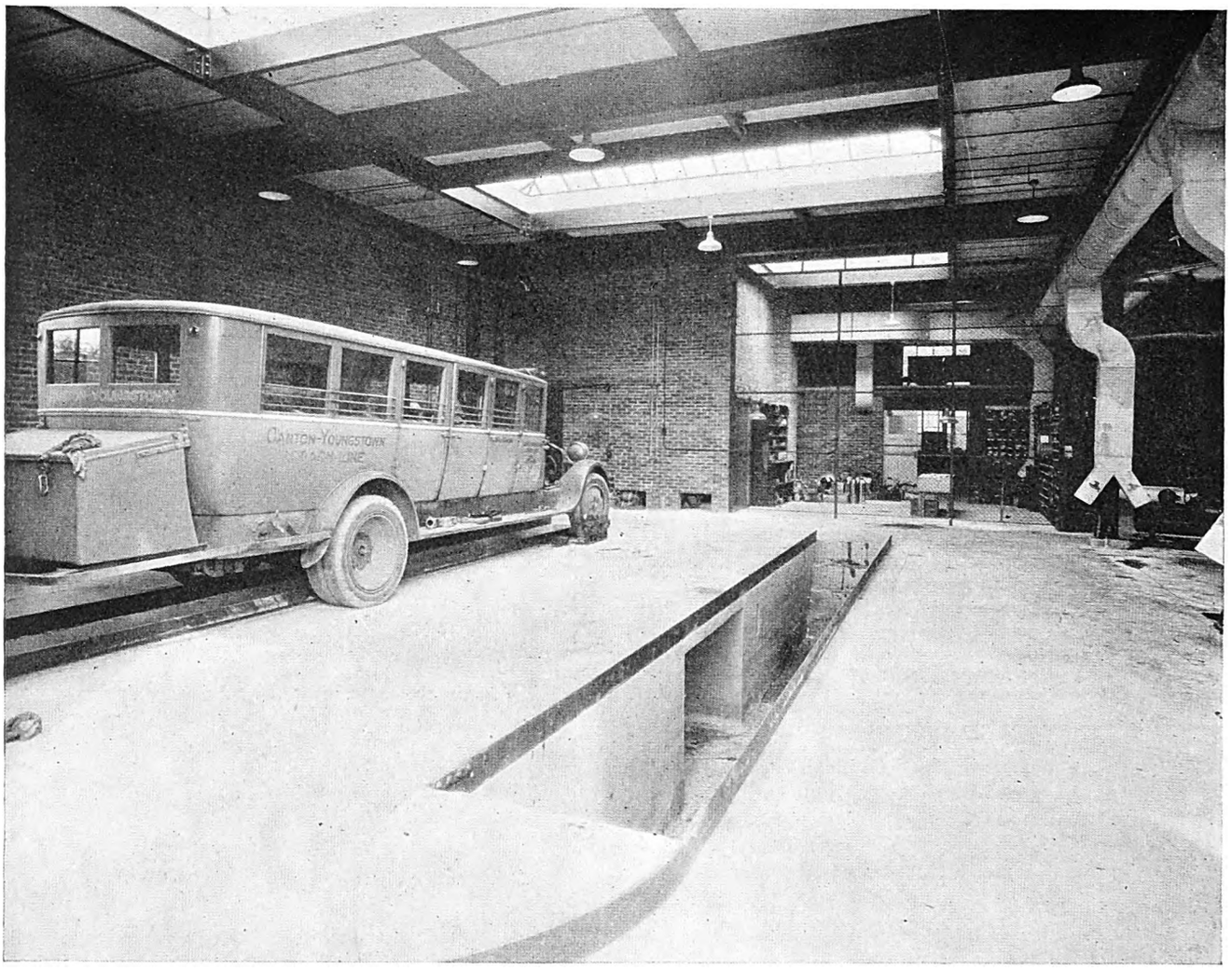

One of the interurban coaches of the Youngstown & Suburban Railway ready for inspection in the recently completed garage

system the deficits became less, and so far this year the operations about paid fixed charges, despite the serious slump in freight. May, June and July have shown surpluses after paying all charges, which marks a great improvement over conditions existing for five years.

Better Public Relations Follow in Wake of New Equipment

We feel that there is nothing that will promote public good will as quickly as good service. First safety, then courtesy and dispatch are prime elements. If this service can be supplied with new and modern cars, so much the better. A tangible result of our own endeavors to establish good will was the successful effort this spring to secure an ordinance granting an increase in city fare from 5 cents to 7 cents per ride. This will probably continue to show an increase in revenue of about $500 per month.

Table III—Comparison of Passenger Revenues

	First Five Months 1925	1926
Railway Passenger Revenue:		
January	$13,785	$13,742
February	11,956	12,104
March	12,683	13,019
April	11,873	12,443
May	11,377	12,728
Total five months	$61,774	$64,046
Increase 1926	2,272—3.7 per cent	

Several years ago this company changed over its power system from 25 to 60 cycles. Three new substation equipments were purchased, two automotive, and one manual station installed in the car shop, where it did not require extra attendance. One of the automotive station equipments is installed in a portable car, and while serving in a chosen locality it can be shifted to act as a spare should either of the other stations fail.

By this change the power situation was much improved. A more reliable source of power supply was obtained at a reduced cost. This change also enabled the company to purchase power at a more central point, thus saving line losses.

About four years ago the open track was completely reballasted, using more than 400 cars of granulated slag. Other improvements recently made in the small amount of paved track on the system have placed it in excellent condition. Movements in and out of the wye at the Youngstown terminal have been facilitated by the installation of an electric track switch.

All of these betterments taken together have placed the property in excellent operating condition.

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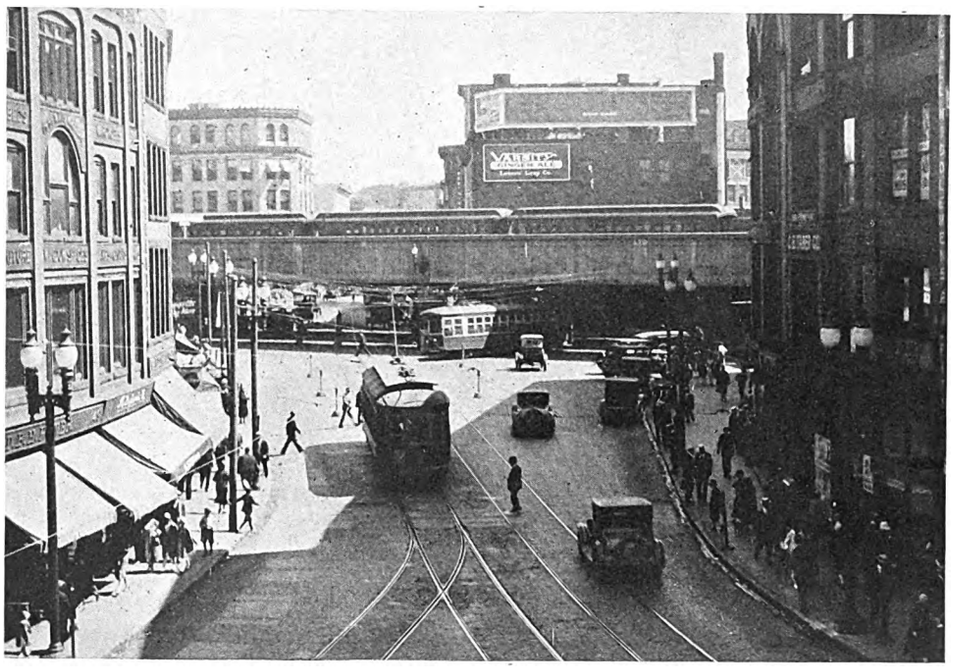
Eastern Massachusetts Stems the Tide of Competition



Rolling stock used in Lynn, Mass., is typical of that on all divisions

Operating conditions however, differ in this and other communities served

Modern one-man cars, improved maintenance practice and well-cared-for trackage have paved the way for an aggressive merchandising campaign—Net earnings have remained practically constant, although the gross income has decreased—Present efforts are directed toward increasing car riding

MAINTAINING a practically constant level of net earnings in the face of a steadily diminishing gross income during the past six years, the Eastern Massachusetts Street Railway has come truly to merit the appellation "A Street Railway Success," which it has adopted as an operating slogan. They have been years of strenuous efforts, putting every possible economy into practice, in thoroughly modernizing rolling stock, trackage and shops and in generally preparing the ground for an intensive campaign in merchandising transportation which has now been inaugurated. A large amount of unprofitable trackage in sparsely settled communities has been abandoned, bus operation has been substituted in a number of instances and the average fare for the entire system has been reduced from 10 cents to 7.1 cents.

Much credit must be given to the maintenance forces of the company for the excellent record of economy which has been established. Undoubtedly, however, the largest single saving must be attributed to the adoption of modern, one-man cars on all fourteen divisions of the system. The company first began its change-over to one-man operation in 1919, at that time purchasing 250 Birney safety cars, of a somewhat better type than at first developed, which were used to "sell" the idea of one-man operation to the riding public. For five or six years more than 96 per cent of all cars in active use have been equipped and one-man operated.

Prior to 1920, when the new era began to dawn for this railway, things were at loose ends. Matters which should have been under central control had been left to local jurisdiction, and vice versa. All that is changed now, for each of the fourteen divisions is autonomous in so far as is practical, while the general formulation of policies is left in the hands of the general management and of the public trustees appointed by the state. Further to intensify the effectiveness of the local divisions and to stimulate beneficial public relations in the various communities served, divisional "home rule committees" have been formed. These are made up of prominent local citizens who are appointed by municipal authorities and civic bodies to act in an advisory capacity with the local manager.

Table I—Mileage per Pull-in

1920	1,550 car-miles
1921	1,884 car-miles
1922	4,035 car-miles
1923	6,745 car-miles
1924	9,994 car-miles
1925	19,310 car-miles
1926 (first six months)	18,838 car-miles

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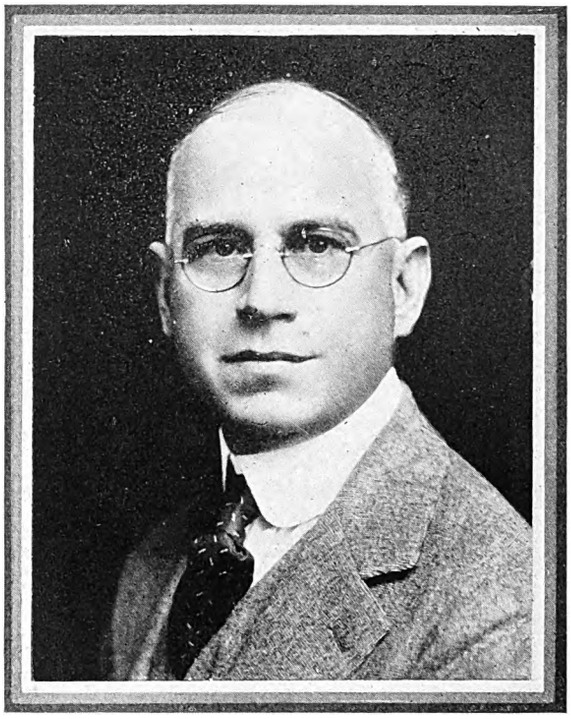
The effort is constantly made to render as satisfactory service as is economically possible and the home rule committees have been invaluable in presenting fairly to the public the railway viewpoint. The fare on each division is determined by the character of the service rendered in that particular territory and by the number of car riders there. The resulting condition is practically "service at cost," or service based upon the ability and willingness of the local population to support it.

Things had reached such a state in 1919 that if some radical step had not been taken it would have been impossible to continue operating the system. Thus it was that the Eastern Massachusetts Street Railway was among the first in the country to adopt for general use in a large way the one-man idea. Being somewhat of a pioneer in this field, the company had to educate the public to the merits of this new departure and to dispel the general impression fostered by the trainmen's unions that one-man operation was unsafe and generally inimical to the public welfare. This could not easily be done with old, double-truck rolling stock which had been equipped with safety devices and one-man equipment or even with modern double-truck, one-man cars. It was necessary, therefore, to purchase a large number of Birney cars for this educating process. Coincident with the purchase of these cars, however, the work of equipping existing rolling stock for the new method of operation was undertaken, this modernization being limited to cars of fairly recent origin and of good physical condition. Gradually these cars were placed in service, the process being so gradual that few individuals in the several communities seemed even cognizant that a change was being made.



ROBERT B. STEARNS

Nine years ago Robert B. Stearns, then vice-president of the Milwaukee Electric Railway & Light Company, was elected vice-president and general manager of the Bay State Street Railway. His task was difficult. The road was virtually bankrupt, after years of operation of a system loosely knit together from two groups of merged properties. Mr. Stearns played a large part in the preparation of a plan for relief, which included a reorganization of the system into the Eastern Massachusetts Street Railway under state control and a reduction of losses through curtailment of lines which never could be made to pay.

The success which has attended the operation of the road under the leadership of Mr. Stearns testifies to the soundness of the methods used and to his ability in making them effective.

Some 2½ years ago the company invested in 75 new light-weight, double-truck cars designed for one-man operation. These cars weigh approximately 32,000 lb. and possess many features which particularly recommend them for establishing finally the idea of one-man operation in the minds of the public. Among these factors of comfort and convenience were to be found: Especially large platforms, wide double folding doors, construction of vestibule involving but two large windows with one center post, thus insuring maximum visibility on the part of the operator; safety switch box with a safety panel, including all operating switches; a modern lighting system, consisting of four 94-watt lamps equipped with automatic compensating fixtures in series with the 94-watt headlight; air-operated slack adjusters, variable load brakes, staggered arrangement of seats to provide a maximum aisle clearance and control of rear door by the operator.

All of the cars destined for one-man operation, of whatever vintage, were supplied with automatic control cords in the centers of the passenger compartments, which may be used by passengers to stop the cars in an emergency. These cords fulfill the triple duties of cutting off the power, applying the brakes and releasing both front and rear doors. Complete standard safety device equipment was not applied to the cars as certain regulations of the state of Massachusetts made necessary a number of modifications. It was found possible to equip the cars with the emergency passenger control at a cost of less than $100 per car.

In addition to the 250 Birney cars purchased to inaugurate the one-man operation and the 75 new double-truck cars, 457 older double-truck cars were re-

Table II—Reduction in Personnel

One Week	Maintenance of Equipment: Supervisory	Maintenance of Equipment: Productive	Maintenance of Equipment: Total	Transportation: Supervisory	Transportation: Productive	Transportation: Total
1919	122	817	939	156	2776	2932
1920	92	532	624	111	1785	1896
1921	64	421	485	100	1149	1249
1922	63	364	427	98	1125	1223
1923	56	323	379	98	1114	1212
1924	53	273	326	90	1086	1176
1925	49	236	285	88	1050	1138
1926	51	253	304	86	1075	1163

NOTE—A week in November was chosen for the years 1919-1925 and the week June 19-26 for 1926.

Table III—Cost of Car Maintenance Exclusive of Fixed Charges*

1918	5.02 cents per revenue car-mile
1919	5.69 cents per revenue car-mile
1920	6.20 cents per revenue car-mile
1921	4.63 cents per revenue car-mile
1922	4.42 cents per revenue car-mile
1923	4.06 cents per revenue car-mile
1924	3.60 cents per revenue car-mile
1925	3.04 cents per revenue car-mile
1926 (six months)	3.20 cents per revenue car-mile

*NOTE—Includes overhauling and painting.

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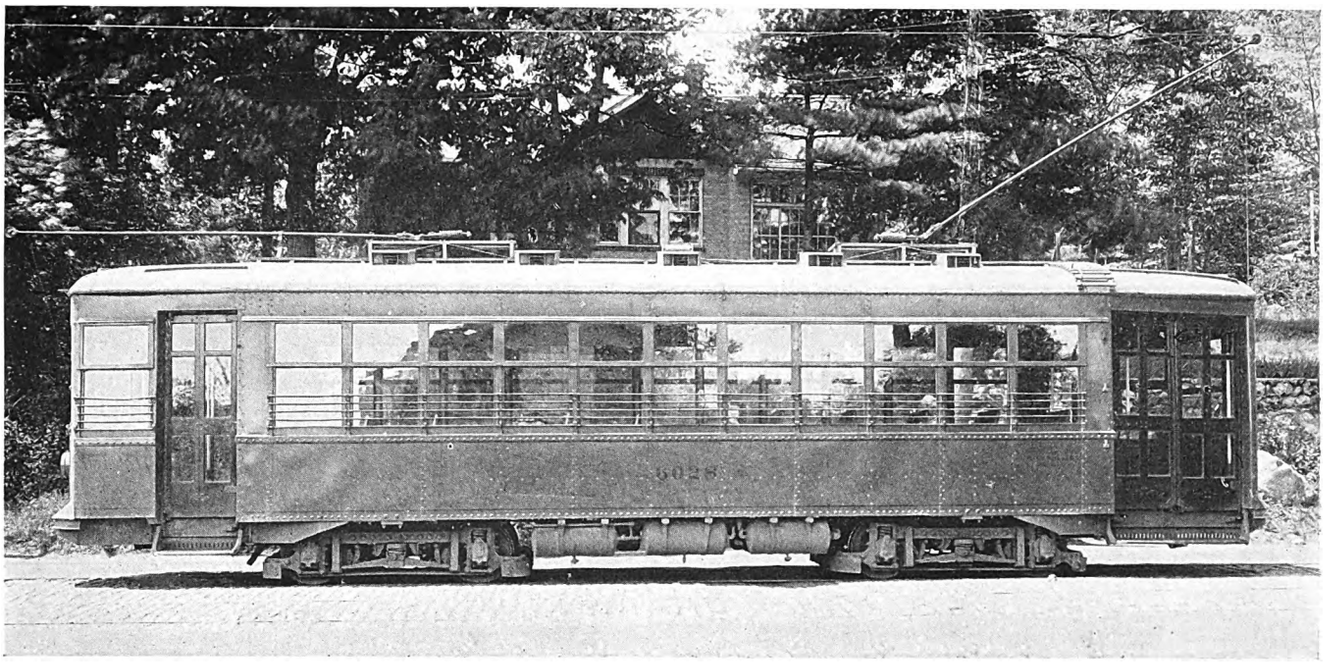


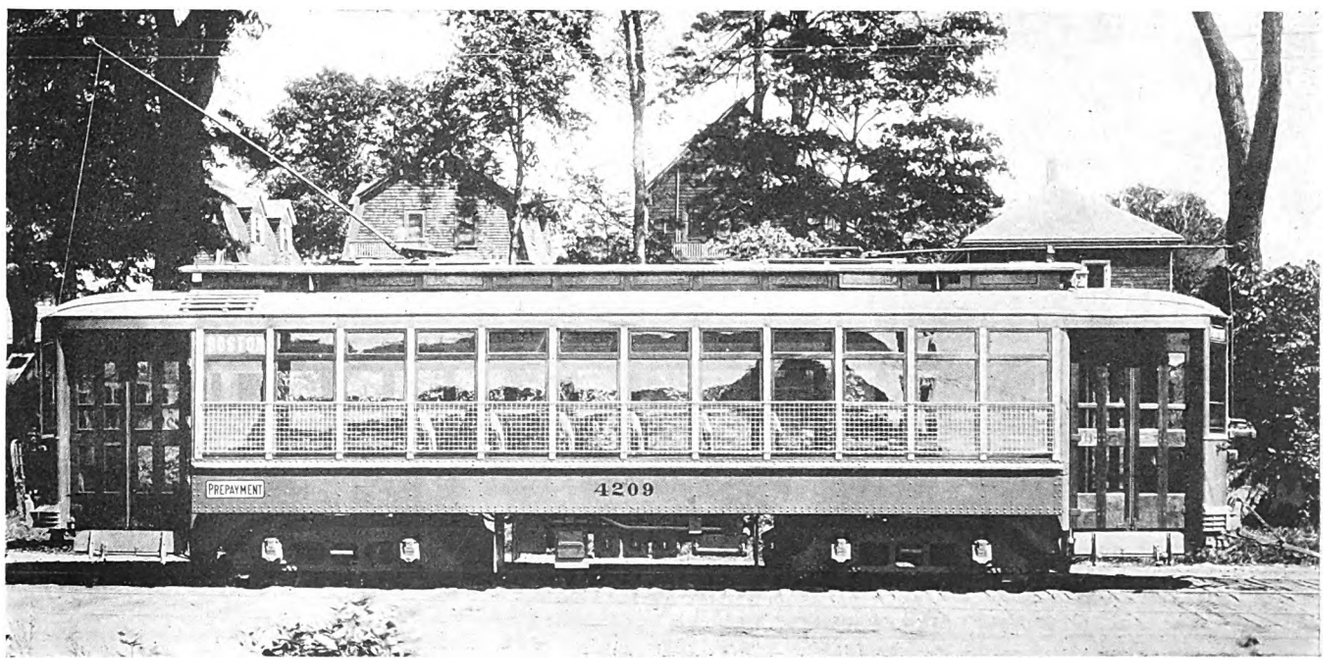
One of 75 double-truck, light-weight cars, some of which are now being re-equipped for improved interurban service

constructed. Thus it was possible ultimately to retire 400 double-truck cars of obsolete design and also to retire a great variety of trucks, motors and air equipments.

Air brake equipment on the property has been standardized to such an extent that at the present time only two types of compressors are used on active passenger equipment. These are the CP-27 and the DH-16. Automatic heat regulators have been installed on all cars to effect savings in current consumption and to improve the comfort of passengers.

Not only the passenger cars have been subjected to the modernization process—the service equipment has also come in for its share of attention. Twelve new double-truck Russell sweepers have been added to the snow-fighting equipment and extensive remodeling of existing plows and scrapers has been carried out, that the equipment might attain its greatest efficiency. Emergency and service cars have been rebuilt and re-equipped to render them effective for all types of service calls.

Having placed the existing rolling stock of the company in a condition of uniform efficiency and good physical appearance, it is now planned to devote considerable attention to the dressing up of a number of the latest double-truck cars for the de luxe suburban service. Leather-upholstered seats, with divided backs and spring cushions, are being constructed by the Heywood-Wakefield Company of Wakefield, Mass., along lines especially designed for the Eastern Massachusetts Company. It is planned to carry out the work quite extensively and to improve much of the newer rolling stock in this way. In addition to the special seats the de luxe



Semi-convertible car, approximately nine years old, which has been modernized for up-to-date service

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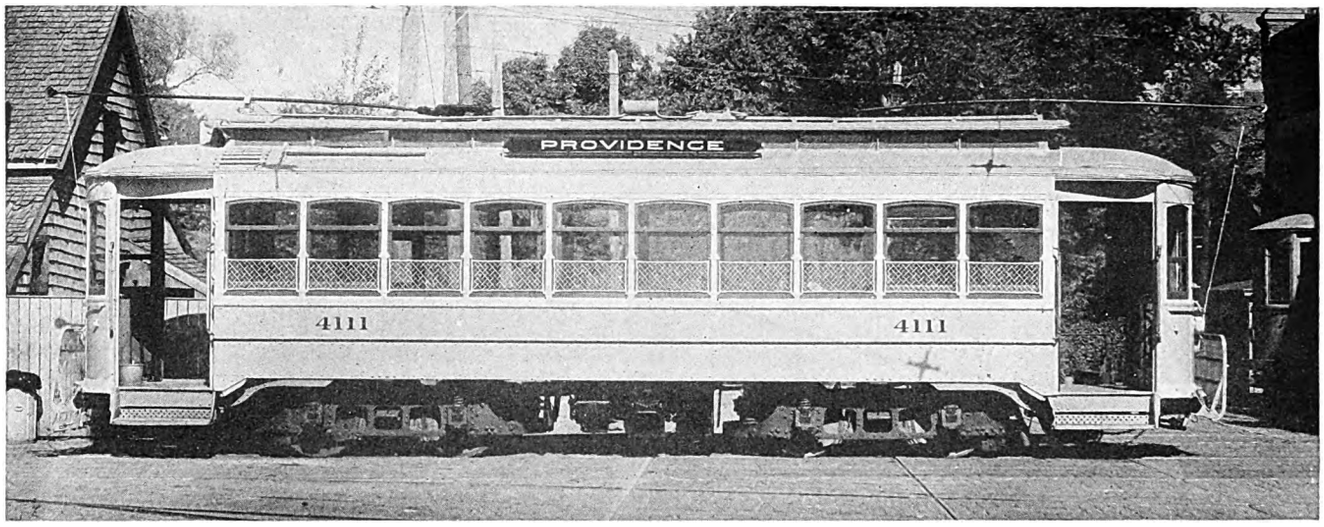


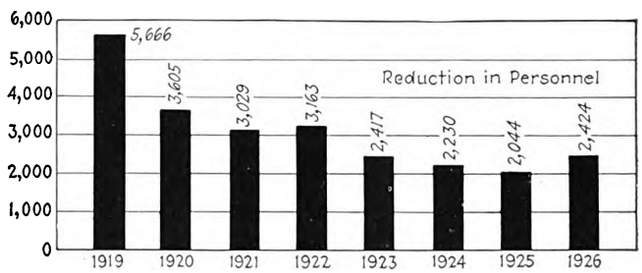
One of the older semi-convertible units which will be among the next cars to be replaced with new equipment Although in good physical condition their weignt renders tnem uneconomical for use

cars are to have battleship linoleum floor covering. Copper brass edging is to be placed around all of the trapdoors, to make a neat fit with the linoleum, and all of the piping at the ends of the cars will be inclosed in a wood partition with an aluminum casting over the top. The total cost of equipping each of the cars with these improvements will be approximately $1,500 per car. The use of the de luxe seats reduces the seating capacity of the cars from 42 to 40. When new cars are purchased to replace the older rolling stock now in service it is planned to have them equipped with the de luxe furnishings in the same fashion as the ones which are now to be prepared. Thus the entire system, both interurban and urban, will eventually be rendering an even higher grade of service to its patrons, both in mechanical excellence and in physical comfort and appearance.

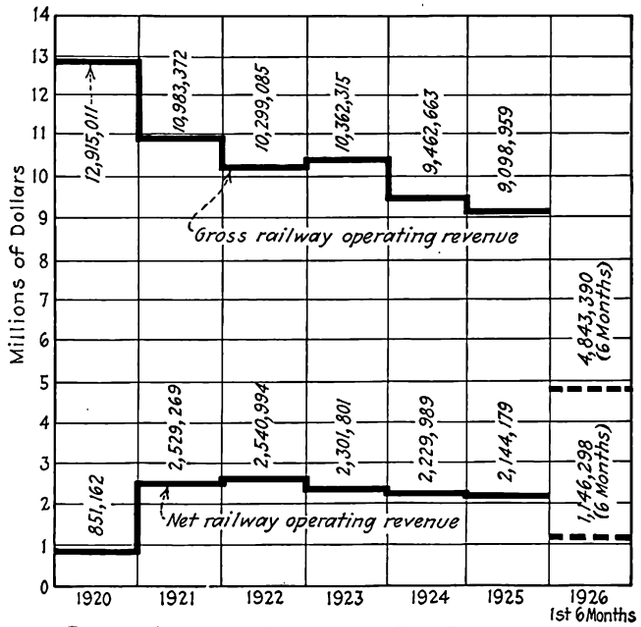
This work is all part of the campaign which the company is carrying on to meet the private automobile on its own ground by providing comfortable, convenient transportation. It has backed up the improvement of comfort by careful maintenance of headways and schedules, the placing of safety zones and staggered stops and the maintenance of the cars in a clean and sanitary, well-painted condition.

As has been stated, the company has lifted itself from a condition perilously near bankruptcy to a situation in which it may now go out in the open market and interest investors in its securities with an attractive array of figures. It is true that the gross railway operating revenue, exclusive of power sales, has been diminishing each year since 1920, when material slashes in fares were made, but the operating economies have proved so efficacious that the net has slumped but little. The falling off in gross hardly needs explanation; the same conditions which have confronted every street railway property in the country to a greater or less degree during the past few years have not failed to affect the Eastern Massachusetts. Some of the divisions have fared better than others, for the company serves communities of widely varying characteristics and local conditions frequently differ quite materially from the general economic status of the country. All, however, have felt the effect of the private automobile and it has required courage to rally to the fight and to carry the struggle into the very citadel of the foe. With the launching of the counter attack, which consists of carefully planned merchandising efforts to popularize street car travel and with a secondary line of defense made up of the maintenance and transportation preparations which have been described, both gross and net earnings have reacted encouragingly this year.

The abrupt rise in the net earnings in 1921 which is shown in the chart at the left was occasioned by the substitution of the 250 Birney cars for the obsolete,



Total personnel in all departments during a typical week in each year



Gross and net operating revenues from January, 1920, to June, 1926

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heavy, two-man cars which had previously been in service. From that time on the proportion of one-man operation increased rapidly until today practically 96 per cent of all cars are one-man operated. While every year since 1922 has shown a slight decrease in the net earnings, indications are that the tide has been stemmed with the present year and that the net earnings may be expected to show an encouraging total at the end of the fiscal year.

Another chart shows the reduction in personnel in all departments of the company since 1919, as indicated by a typical week in each year. The total number employed in 1919 was 5,666, a payroll which was literally "eating its head off" on the basis of the actual business done. This total was reduced to 3,605 in the week shown for 1920, as the one-man cars were placed in service toward the end of that year and prior to the week in November that was taken as the criterion. Since 1920 the reduction has continued slowly but steadily in all departments, the maintenance and transportation departments being the ones chiefly affected by the adoption of modern, light-weight, one-man cars. Table II gives the yearly progress in these two departments, and it is apparent from an examination of the detailed records maintained by the company that considerable credit must be given to departmental economies, in addition to the savings effected by the cars themselves, for the records which have been established.

Steadily decreasing cost of car maintenance is a direct result of two factors—modernized equipment and improved maintenance practice. Table III presents the yearly record for the cost of car maintenance per revenue car-mile, exclusive of fixed charges. The decrease from 5.02 cents per car-mile in 1918 to 3.20 cents in the first six months of 1926 represents an enormous saving on a property operating as many units as the Eastern Massachusetts company does. In 1918 a total of $1,361,000 was spent for maintenance requirements, while during the first half of the current year only $292,625 was expended.

Correlative to this diminution which has occurred in the maintenance account has been the decrease in pull-ins throughout the system. In 1919 a maintenance pull-in was necessitated on the average of once every 1,550 passenger-car-miles. The current year saw the mileage per pull-in increased to 18,838 miles during the first six months. Careful inspection and thorough overhauling have made pull-ins dependent upon unforeseen contingencies rather than a part of the daily routine. The fact that the entire rolling stock of the company has been placed in first class condition and that a large amount of it is of recent origin is of course significant.

Special leather-upholstered seat which has been adopted for the de luxe interurban cars

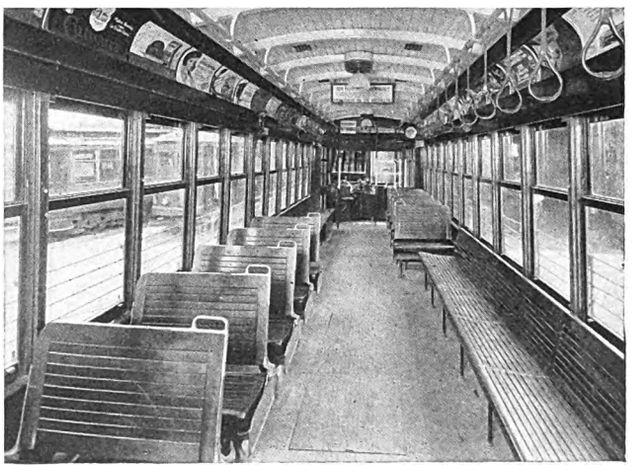
While the net operating revenue has remained at a gratifying point, however, the interest charges which must be met each year have declined materially. The total net earnings before depreciation have been equivalent to more than 2.3 times combined interest charges and rentals in each of the past four years, and in 1925 the earnings were 2.5 times rentals and interest charges, the best showing ever made by the company.

For several years the company considered it expedient to bend every effort toward placing its house in order. Now a determined merchandising program has been launched, with the boosting of the gross as a primary object. Following careful study of the various lines of the company and the local attractions which might be enlisted in a campaign to attract new riders to those lines, extensive excursion rates were established at many points. Reductions in round-trip fares and special arrangements with various steamboat companies for coordinated schedules and jointly reduced fares have been made.

Adding three coupons to excursion tickets on lines serving various amusement parks is another scheme which has been tried with good results. The coupons are each good for a single amusement at the parks which have concurred in the plan, being redeemed by the railway company when presented by the concessionaires. The coupons are valid only on weekdays, from Monday to Friday inclusive, and exclusive of holidays.

A further ingenious plan was the sale of tickets at $1 each in Lowell. These tickets were in two parts, one being good for a dollar's worth of merchandise at any co-operating store, while the other section entitled the bearer to two rides on Tuesday, the "free riding day." The railway redeems the ticket at 90 cents.

As a result of these and sundry other schemes which have been tried out by the company a marked increase has already been apparent in the number of car riders and, correspondingly, in the gross operating revenue. Strong efforts are being made to increase pleasure riding and, by rendering attractive service, to encourage new riding by persons who have hitherto relied upon an automobile. The campaign to merchandise trolley riding has only begun and company officials are encouraged by results already obtained to go ahead with more extensive plans.



Interior of one of the newer light-weight cars which are being equipped with de luxe seats and other features

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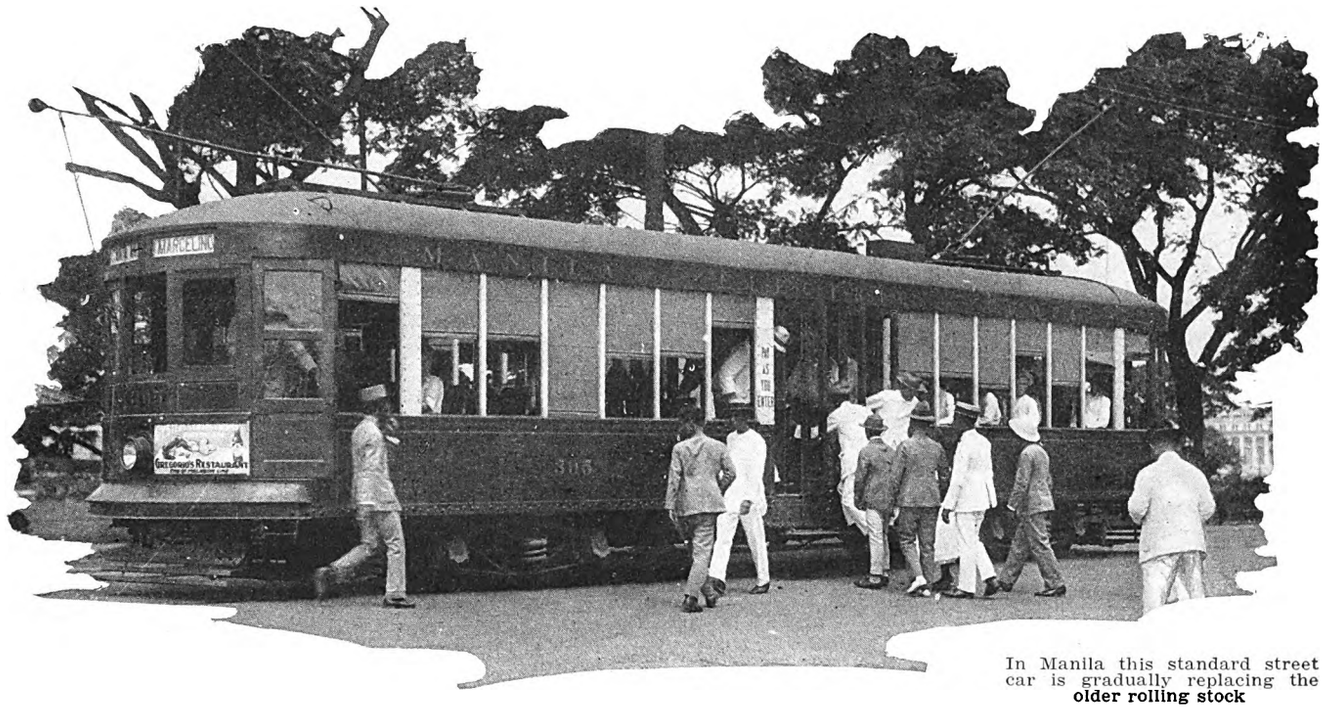

In Manila this standard street car is gradually replacing the older rolling stock

Manila Finds Car Replacement More Profitable Than Rebuilding

Rather than rebuild its old rolling stock two years ago the railway adopted a new design as standard and commenced to retire the old equipment from service. Results have been extremely satisfactory

By J. C. ROCKWELL

Vice-President Manila Electric Company, Manila, P. I.

STREET railway service in the city of Manila and its suburbs, with a total population of 360,000, is furnished by the Manila Electric Company. To the original rolling equipment with which operations were begun in 1905, additions were made from time to time until in 1923 the company found itself with nine different types of cars. It was then necessary to rebuild or replace a large number of them. Replacement, while more costly, was thought likely to be cheaper in the long run and a new light-weight car was designed. Forty have been built and placed in service during the last two years. They have proved to be satisfactory in every way and it is planned to continue the replacement of old cars by new cars of this type.

That hardy old perennial "local conditions," probably the most potent preventive of standardization of car design at home, develops new characteristics in foreign climes and attains a luxuriant growth in the tropics. Manila, the "Pearl of the Orient," is both foreign and tropical, so the company has its own local conditions and resulting problems. Chief among them affecting car design are: Character and psychology of the traveling public, climate and weather conditions and remoteness from sources of supply.

Our clientele consists almost entirely of Filipinos, with a small number of Chinese and other Orientals. Other foreigners are few in number and for the most part they have their own conveyances. Filipinos, being small in stature, do not take kindly to high steps, and being leisurely by nature, respond not at all to the exhortation to "step lively." According to franchise requirements, provision must be made for two classes of passengers.

Dryness is the rule for six months out of the year, during which two to three months of very hot weather is experienced. During the remaining six months rains are frequent and a few typhoons pass over the islands, bringing with them wind velocities from 60 to 80 m.p.h. and heavy precipitation. This varies from a few inches to as high as 20 in. in 24 hours. The streets are paved with water-bound macadam to a large extent, and in wet weather quantities of grit and water are thrown against underframings by the wheels. In conjunction with the tropical climate, this causes rapid deterioration of steel parts, especially in the case of small members.

Longitudinally opposite Cape Breton, Nova Scotia, and having the same latitude as San Salvador, Manila is about as far from American manufacturing centers as possible. Receipt of supplies is from six to eight months removed from the date of order. A ship goes aground near Panala and there is a shortage of brake-

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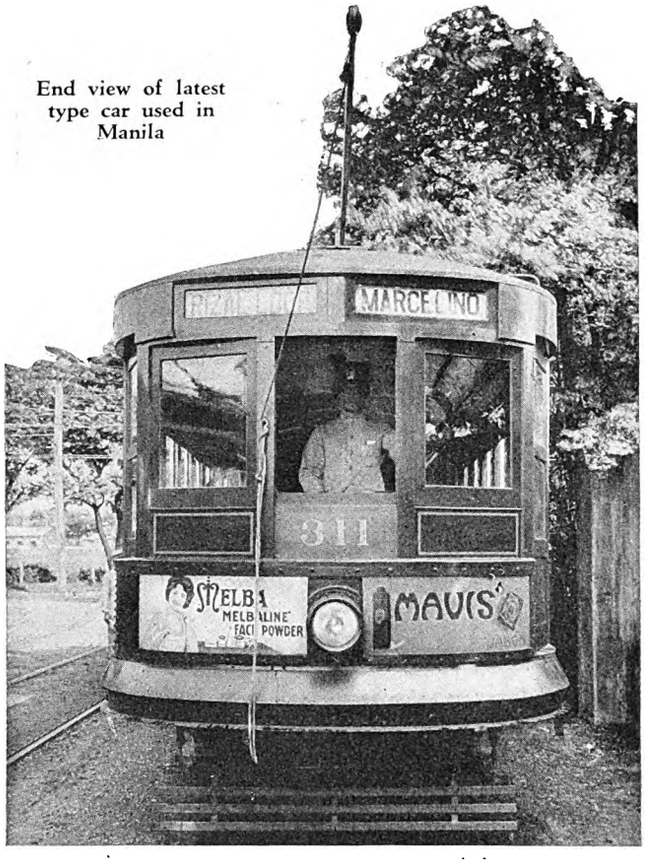
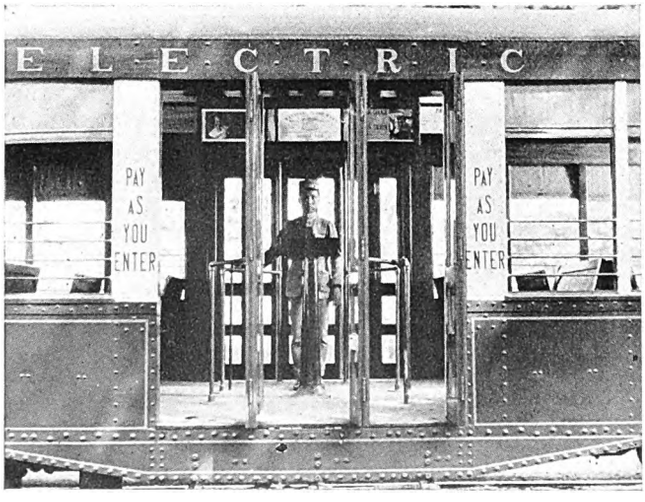


End view of latest type car used in Manila

shoes unless stocks are ordered well in advance of requirements. A trolley pole wraps itself lovingly around a span wire and a car may have an enforced vacation unless such contingencies have been provided for. Because of the great distance between Manila and the United States, the Manila Electric Company builds its own cars.

In an attempt to obtain least possible weight per passenger, it was decided to use the smallest wheels and axles practicable; the lightest truck obtainable; the smallest motors that would do the work and to put on the trucks the largest, lightest weight body that would meet our requirements. Due to the limitations of the Filipino as a motorman or conductor, single-truck, one-man cars were considered impracticable. A body large enough to utilize the full capacity of the lightest truck obtainable could not be built on account of clearance at corners of old Spanish streets, which are quite narrow. Nevertheless the satisfactory result of 574 lb. per passenger seat was obtained.



Provision is made for two classes of passengers. Entrances at the center lead into each end of the car

The Atlas truck was chosen because in addition to being as light as any then available, it can be repaired to a large extent with standard shapes. The GE-247-B motor was adopted because the company already had a number of them in service.

Use of Standard Shapes Has Simplified Design of the Car Framing

The most outstanding feature of the car is the construction of the body framing entirely from standard shapes. Investigation showed that special shapes would have resulted in very little saving in weight and the resultant energy saving would not have paid the interest on the extra cost. Aside from the obvious advantages of standard shapes and the fact that they are generally available in Manila, it should be pointed out that they called for a very simple design. This is important because the cars are built in the company's shops with native labor, which at best is unskilled as compared with that at home.

Experience has convinced us that the center-entrance car is desirable for handling two classes of passengers, and a stepless car is preferable for facilitating loading and unloading. The latter, however, had to be abandoned reluctantly because of complications in design and resultant higher costs. By using small wheels and a slight ramp the floor level has been brought sufficiently low so that only one step is necessary. By having this a folding step rather than built in, a break in the side sills has been avoided.

While closed cars had proved satisfactory in all kinds of weather, it was decided to build center-aisle open cars and save weight. Previous experimentation had demonstrated that it was possible to keep cars dry with well-battened curtains properly fitted in deep grooves. Extra weight would have been involved to give the rigidity required by glass windows. The curtain grooves are $\frac{5}{8}$ in. deep on the outside and $1\frac{1}{4}$ in. on the inside so that battens cannot spring out of them in hard blows.

The battens extend from the bottom of one groove to the other with very little clearance, and the curtains are cut the full width of the battens. While only mild typhoon weather has been experienced during the two years these cars have been in operation, they have been effectively tested by squalls and heavy rains. In really severe typhoons, which fortunately occur but once in several years, it is impossible to keep even closed cars dry. On these occasions, however, service is reduced more than half, since passengers are few and all ordinary business comes to a standstill until the storm has abated.

Safety Interlocking Devices Have Reduced Accidents

Our new standard cars are equipped with pneumatic safety interlocking door and step controls. This feature has been very successful and has saved us considerable expense. Filipinos are even more prone to "flip" cars than Americans, and with the older equipment boarding and alighting accidents are frequent. This class of accidents has been practically eliminated by the new car.

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Many innovations in these new cars have proved popular with the public. They are featured by attractive appearance, interior comfort and quiet operation

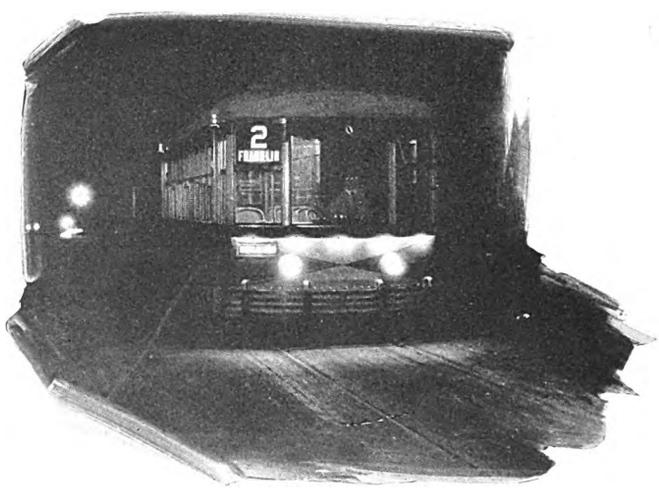
RAIL COACHES
win their way in Grand Rapids

Increased revenue and reduced operating costs follow immediately the introduction of improved cars—Their effect on the public's attitude toward the railway is even more important from the standpoint of future earnings

By L. J. DeLAMARTER
Vice-President and General Manager
Grand Rapids Railway

EVERY progressive railway manager is primarily concerned with the subject of making transportation pay. He realizes at the outset that public co-operation is vital to the successful accomplishment of that objective. Our general policy in dealing with present-day street car problems in Grand Rapids has been directed to the end of making it easy for the public and public officials to co-operate with the railway company. That, in a nutshell, is the key to the several steps taken by this property during recent years. It has been our object to make the people of the city proud of their transportation system and interested in its continued growth and development. Once that is accomplished, many other difficulties disappear. Public officials in themselves can help little if the people they represent are disinterested or antagonistic. Our purpose has been so to popularize the street railway as to make it easy for public officials to lend that co-operation which is so essential to progress.

The new cars which we recently obtained are an important means to that end. In addition they have in the short period of approximately three months demonstrated that they are a profitable investment, both from the standpoint of revenue and operating expense. On June 12 of this year our operations showed a decrease in revenue of approximately 1 per cent for the twelve-day period as compared with the same period last year. On June 13, 27 new coaches delivered to us by the St. Louis Car Company were put in service. Despite the continued operation of approximately 100 remaining old cars on the system, the figures for the month showed a net gain in rev-



A visual invitation to ride. Rail coaches in Grand Rapids are winning their way with the public

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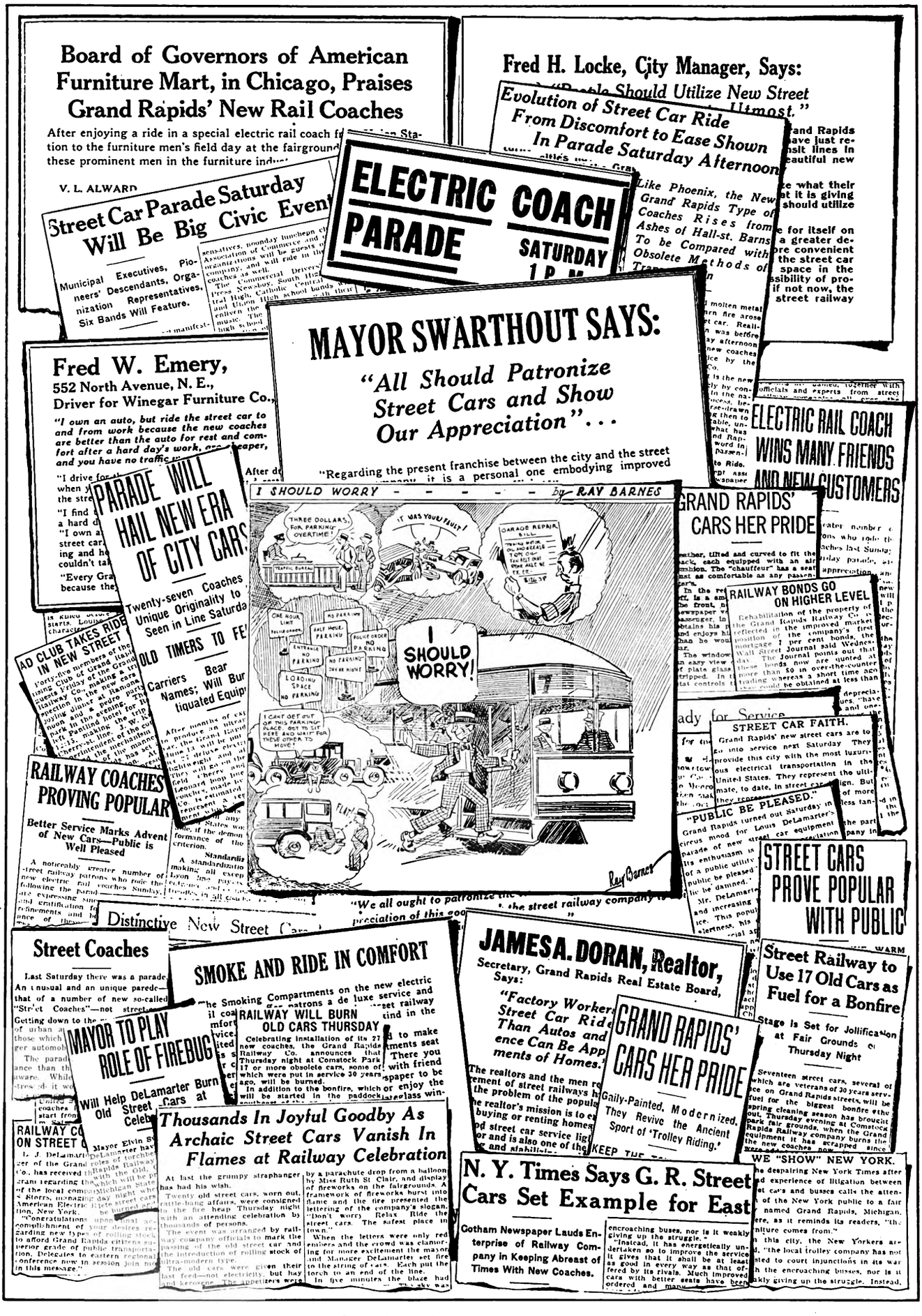

Newspaper clippings reflect the public's reaction to improved railway service

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enue passengers of 2.03 per cent. From the time that the new coaches were put in operation until Aug. 21 they were responsible for increasing revenue on the lines over which they were operated 6.22 per cent—the net increase for the system being 3.3 per cent. This period covers the middle of the summer season.

Platform cost has been reduced 13.5 per cent from June 13 to Aug. 21. This has come from the extension of one-man operation on the new cars. Trainmen are delighted with their performance and take a new pride in their operation. This in turn has produced a marked improvement in their relations with car riders.

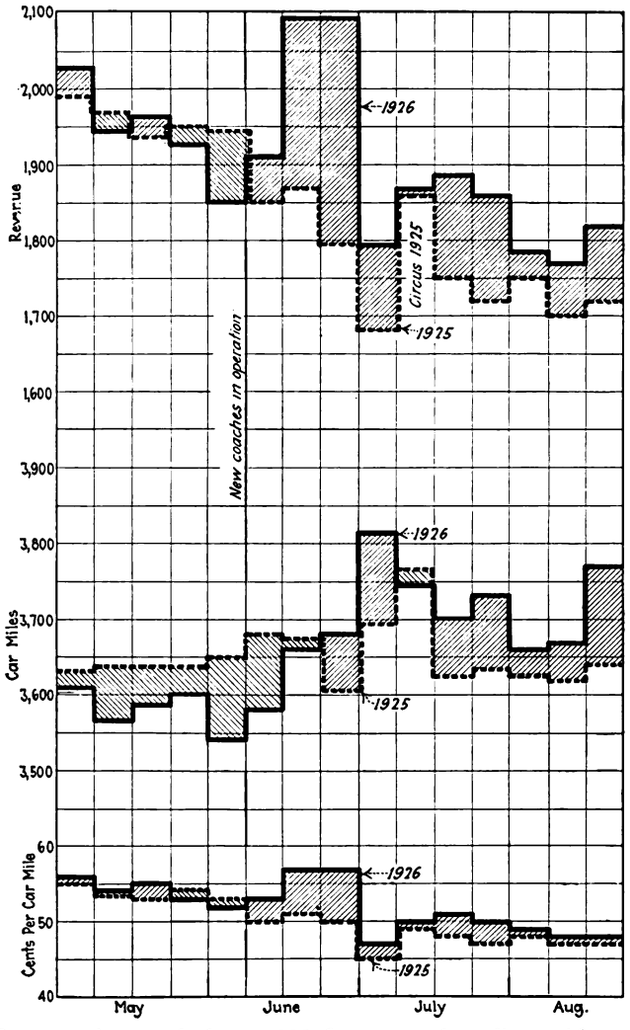
Average consumption of power per mile for the new rail coaches is 2 kw.-hr. as against 3.5 kw.-hr. for the older equipment which was supplanted. Actual reduction in power used on the system for the month of July, 1926, compared with the same month in 1925 was 56,829 kw.-hr. or 6.39 per cent. From meter readings to date we anticipate a reduction of approximately 6.5 per cent in August compared to the same month last year.

Maintenance of the new equipment has been 0.59 cent, 0.68 cent and 0.53 cent per car-mile for June, July and August respectively compared to 2.54 cents, 2.05 cents and 2.28 cents during the same months for the total of 127 cars operated on the property. This large reduction cannot, of course, be maintained, but it is reasonable to expect a substantial saving over a number of years.

Following the war, the Grand Rapids Railway found itself in the same condition as many other street railways—a run-down physical property, this condition being brought about by heavily increased operating cost, inadequate revenue, burdensome taxes and a public which had to a large extent lost interest. During recent years we have endeavored to win back that public interest, for without it the average street railway system is foredoomed to failure.

From public interest grows appreciation of the essential nature of the service rendered, public friendship, public patronage, fair franchise terms, adequate rates of fare, and relief from burdensome taxation. All of these have not been accomplished in Grand Rapids, but we are making progress in that direction. We have won a fair franchise and a reasonable fare structure. Public officials are taking a constructive view of the tax situation and we are hoping to obtain further relief in that direction, particularly in the matter of obviously unfair paving charges. We have sought the public's interest by offering the people of Grand Rapids a form of street car transportation of which they can be proud. We have sought increased patronage by endeavoring to increase the attractiveness of our product. We have endeavored to provide a common carrier vehicle on rails on which the average citizen could ride without feeling consciously or unconsciously associated with an obsolete service that is behind the times.

Our results so far indicate the wisdom of the policy followed. There is a cordial spirit of co-operation between public officials and the company. There is an appreciation of the mutual interest which both city and company have in the development of a high-grade prosperous transportation service. All questions affecting the railway are approached in this spirit of mutuality of interest. In bringing about that condition we feel that we have made the first all-important step in making transportation pay. And as the result of our experience to date with improved street cars, we feel assured that electric railways generally may well give increased attention to the condition of their cars. Attractive new cars properly operated go a long way toward building public friendship, increasing earnings and reducing operating costs.



Revenues increased above 1925 figures on three lines with new cars. Before their installation, 1926 was running behind 1925

The results accomplished from the operation of our new cars are clearly set forth in the accompanying curves and tabulations. There had previously been a wide public interest in our plans following a year of experimental work in the attempt to develop an improved type of car. The public, understanding that we were making a sincere effort to provide the best

Grand Rapids Railway Comparison Operating Statistics 1926 and 1925—Total System*

Month	Per Cent Increase or Decrease 1926 over 1925 April	May	June	July	Aug.
Total operating expenses—cars	*2.35*	*0.57*	*5.69*	*6.68*	*10.44*
Gross income after taxes	16.23	*1.22*	18.19	25.14	33.29
Kilowatt-hours used — All power at d.c. buses	7.95	0.36	*1.39*	*6.39*	*9.0*

*Note—Thirty new cars in operation June 13 out of total of 127 cars on system.
Decreases shown in *italics*.

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form of street car that we knew how to obtain, was extremely patient and forbearing during this protracted period of waiting. To understand fully the degree of co-operation accorded on the strength of our expressed intention to provide new cars, it must be remembered that the system had been badly crippled by the loss of 58 cars in a disastrous carhouse fire on July 14, 1924, and that there were being operated on the streets of Grand Rapids such old and worn cars as could in the emergency be borrowed or rented from other railway properties, regardless of their physical condition.

IN THE ATTRACTIVENESS and popularity of the new cars put on the streets of Grand Rapids by its railway company lies the key to building public interest and friendship. That alone will enable railway companies to win adequate rates of fare, relief from paving burdens and unfair franchise terms. Without popular support, public officials are powerless to deal intelligently and fairly with the problems of improving street railway service.

EDWIN F. SWEET

Grand Rapids City Commission,

Formerly Vice-Chairman Federal Electric Railways Commission.

(Statement by prominent member of city commission indicating public reaction obtained from new cars)

When the new cars were finally obtained and placed in service, there was a most favorable public reaction. Officials, business men, newspapers and citizens generally were loud in their praise of the improvement effected. Grand Rapids took a new pride in its street railway system. Visitors to the city were generous in their commendation. The community and the company were drawn closer together by a new bond of common interest. The state of the public mind and the delight of public officials reached its climax when Mayor Swarthout said freely that Grand Rapids had such cause to appreciate its local transportation system that it might well afford to subsidize the operation of the lines if that became necessary to continue the program of improvement thus auspiciously started. In interpreting the results accomplished with these cars, it is well to bear in mind that there are only 30 new cars, including the three sample cars initially obtained, out of a total of 127 operated on the property. Inauguration of the new equipment was appropriately introduced with a parade. So popular were the new cars that prominent descendants of early settlers after whom they were named were highly complimented at the honor bestowed on their ancestors. Many other prominent people, civic and community organizations urged the company to do them similar honor in naming future new equipment.

What a contrast there was in this condition! The street railway became something to be proud of—not a disreputable necessary nuisance to be kicked about as a political football. It is now looked on as a valuable and desirable service that offers Grand Rapids a necessary agency for continued development. There is a growing sentiment in favor of curtailing the privileges of individual vehicles in order that street car service may be further improved. But it was only a few years ago that a city official felt uncomfortable and politically shady if seen talking in public to the manager of the railway!

The groundwork for our improved relations in Grand Rapids was laid several years ago. There has been worked out a service-at-cost franchise mutually advantageous. The spirit of cordial relations between the public and its railway was in process of development. But that was brought about by the same demonstration of sincerity on the part of the company which led to the acquirement of the new rail coaches. The community did its part under the guidance of broad-gaged city officials. But upon the company lay the responsibility for demonstrating to the people themselves its own sincerity and worthiness.

When the new cars were placed in service the response on the part of the public in the form of increased riding was almost instantaneous. This was not a wild, mad rush to ride the cars, to be sure. But there has been a steady week by week increase in riding over the corresponding week last year. This is a reversal of the trend during the weeks preceding the introduction of the new cars. Up to that time there had been a steady decrease in riding this year over corresponding periods of last year.

There has been, in addition, a very encouraging reduction in operating costs for the new cars in comparison with the old equipment previously operated on the same lines. It is interesting to note that the costs for June and July, 1926, were lower than for the same periods in the last eight years. Both the increase in revenue and the reduction in cost have been obtained during the height of the summer season when use of automobiles, vacations and other summer attractions keep riding at a minimum. There is every reason to believe that the improvement shown during the first three months of new car operation will be materially increased during winter months and that the car riding habits established during the winter will in many instances be continued in the summer following. We are convinced that the new cars in Grand Rapids are paying—and paying well.

Two steps are no small part of the convenience offered in the Grand Rapids car

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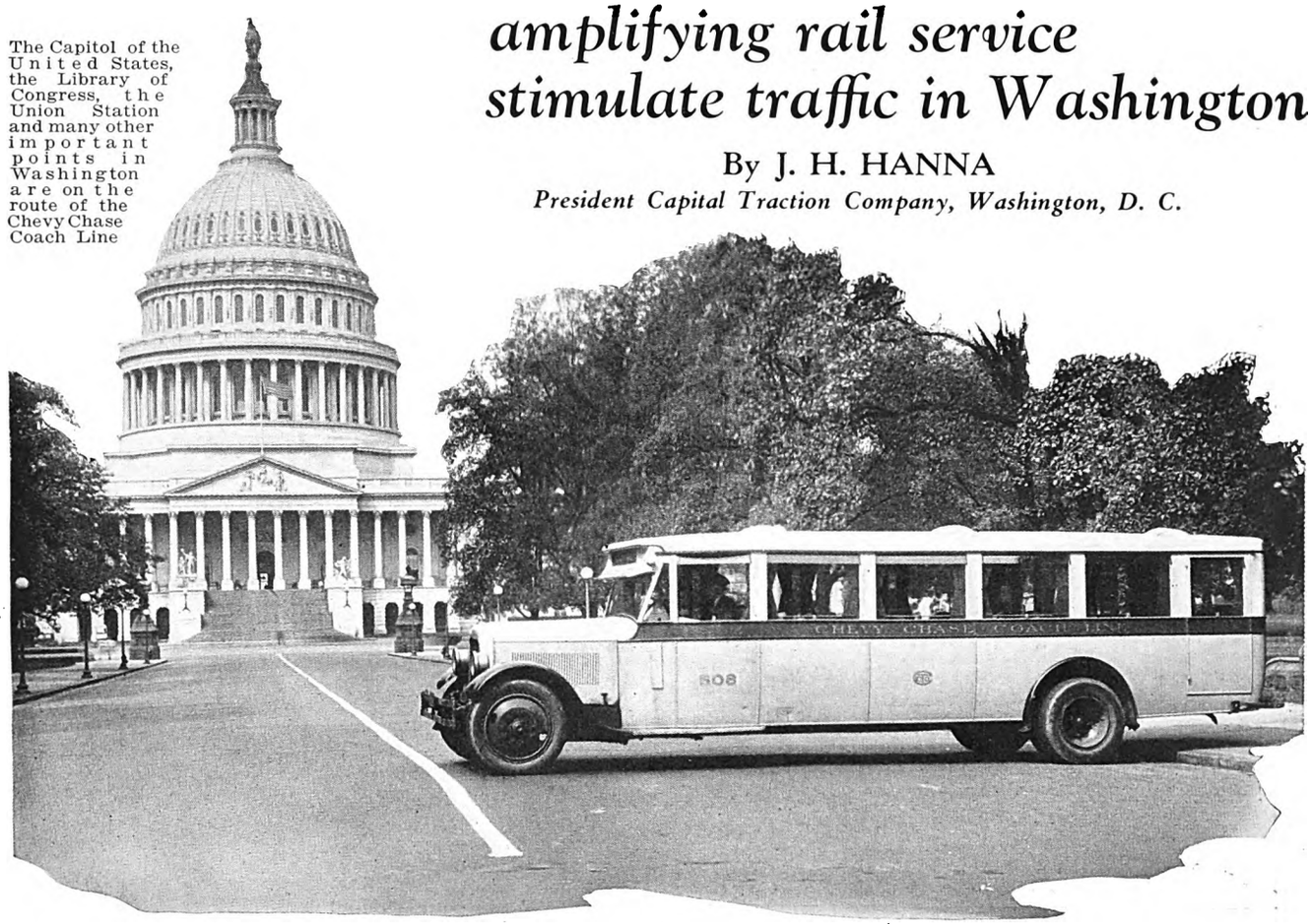
LUXURIOUS BUSES

amplifying rail service stimulate traffic in Washington

By J. H. HANNA

President Capital Traction Company, Washington, D. C.



The Capitol of the United States, the Library of Congress, the Union Station and many other important points in Washington are on the route of the Chevy Chase Coach Line

De luxe buses operated on Chevy Chase line of the Capital Traction Company give superior service at a fare higher than that of the street cars—Revenue increased steadily during the first eight months of operation

ALREADY a year has rolled around beneath the smooth spinning wheels of the Chevy Chase coaches, the parlor car bus line of the Capital Traction Company in Washington. Let us review the working out of the company's idea concerning the use of buses by electric railways to give special service at a fair price.

On Sept. 15, 1925, after much study and thought, the Chevy Chase Coach Line was established. The route begins at Chevy Chase Circle, which is the boundary of Maryland and the District of Columbia, and the center of the finest residential section of suburban Washington. It follows Connecticut Avenue in a southeasterly direction across Rock Creek Valley through the heart of the city and thence to the Union Station, the Capitol and the Library of Congress. The length of the route one way is a little over 8 miles, which is too long for the fare of 25 cents considering the type of service rendered. One way running time is 34 minutes, making the schedule speed 14.5 m.p.h.

Along the entire length of its route the coach passes or goes within one block of fifteen hotels, seven clubs, six schools, half a dozen churches, many government buildings, innumerable apartment houses and the principal office buildings, theaters and stores of the city. The company has posted framed schedule cards of the lines in many of the hotels, clubs and larger apartment houses. In addition to this, metal stop disks giving the time when coaches pass have been installed at practically all street corners along the route.

When service was first inaugurated on this line six type "Y" Yellow coaches were purchased. During the winter it was necessary to increase this number to eight. They are painted with a dark gray lower panel and light gray upper panel, separated by a belt line of the Capital Traction Company's standard light green.

Interiors are of polished walnut and each window post is equipped with a mirror, an innovation which has found much favor with the women, who constitute a large part of the traffic. Sliding window curtains of brown cloth are mounted on nickel fittings. The rear of the coach has a smoking compartment, divided from the main compartment by a glass partition with a door. This smoking compartment has one cross seat for five persons at the back and two double longitudinal seats.

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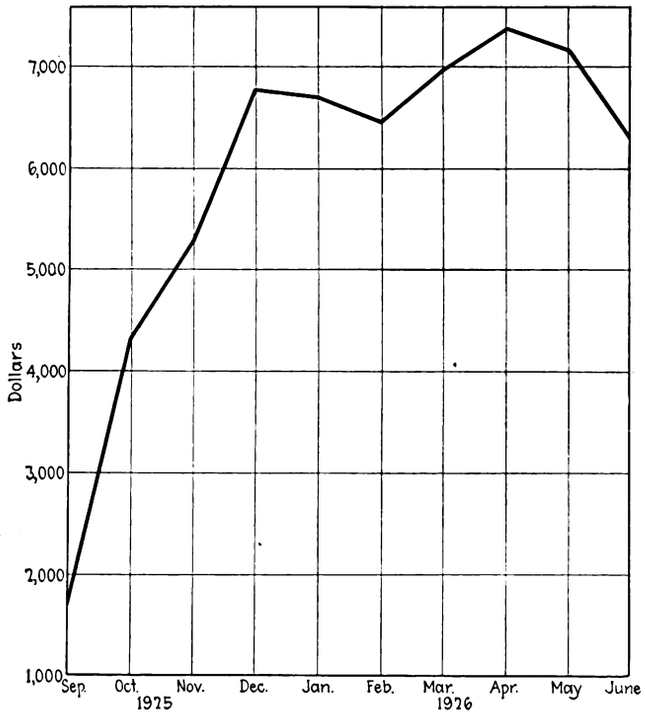
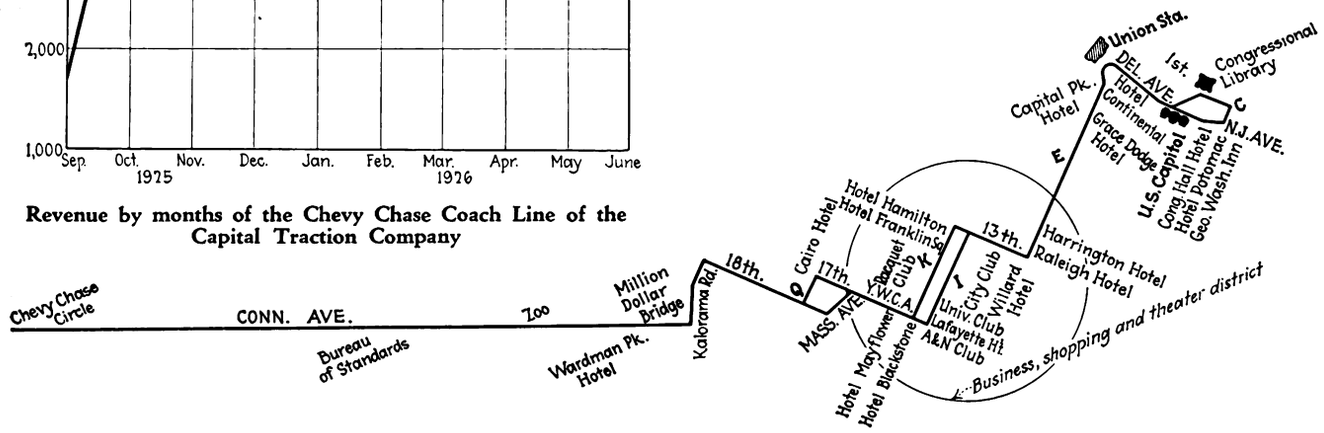
Mechanically the coaches have been all that could be asked for. During the year they have operated approximately 350,000 miles, or more than 40,000 per bus. During this period there have been only two occasions when a coach was tied up for more than a few hours on account of mechanical trouble. There have been delays along the route, of course, on account of tire trouble, but delays from mechanical failures have been few and far between. In eleven months only twelve road delays have occurred from this source. The coaches are extremely quiet in operation and smooth in acceleration. In fact, the only complaint heard against them came from a lady who said that they are so quiet they cannot be heard approaching and consequently are a danger to pedestrians.



Revenue by months of the Chevy Chase Coach Line of the Capital Traction Company



The route of the Chevy Chase Coach Line connects the center of the business and shopping districts with the most high-class residential districts in Washington

Operators for the coach line are picked men. Selected for their neatness, courtesy and affability as well as driving ability, these men know they must give special service and do everything possible to satisfy the passengers. They assist with luggage, help ladies with children, stop between blocks for patrons, greet the passengers with a pleasant "Good Morning" or "Good Evening." These men understand that all automobilists are prospective patrons of the coach line and they are instructed to operate their vehicles so as not to incur the enmity of motorists. They gladly pull over to one side to let them pass. They try not to delay traffic when stopping for passengers. They keep up to the speed of general traffic so as not to be a hindrance in any way. Numerous words of praise for the line and many reported instances of such special services lead the company officials to believe that their ideas have been carried out and that the public appreciates this fact.

The company furnishes and maintains special tailored, olive green, whipcord uniforms with its monogram woven in red on the collars. As a newspaper man expressed it, "These men are not drivers, they are operators and resemble dashing aviators." For summer wear the operators have been furnished with special light tan sateen shirts which may be worn without coats. These shirts are purchased by the men, but the company pays for their laundering.

From early morning until midnight the coaches maintain a twenty-minute headway and between 8 and 9 in the morning and 4:30 and 5:30 in the afternoon a ten-minute headway. No standing passengers are allowed. The company experienced a little difficulty in maintaining this rule at first, as the operators did not like to pass up their regular riders, and people were perfectly willing to stand. The objections came, however, from those who had seats and over whom some one was standing. This difficulty was overcome by supplying more coaches, making a rigid rule that operators must not allow standing passengers and referring patrons desiring to stand to a neat card in the front of the coach politely requesting them not to ask for a violation of the rule.

Revenue increased steadily for the first eight months, as shown in the accompanying chart, reaching a peak in April. It was expected that patronage would drop off perceptibly in the hot summer months. This has happened and is attributed to the closing of Congress, as many of the patrons are Senators, Representatives and their assistants. To some extent also it is due to the flow of the people away to summer resorts, which is especially true of the class of passengers which the coach line carries. However, the year's operation will show that the pay load factor of 33⅓ per cent has been maintained.

During the year there have been only six cases of personal injury to any of the 276,000 passengers carried. All of these were slight, there being no serious accidents of any kind.

Early in the spring of 1926 the Capital Traction Company asked permission of the utilities commission to inaugurate similar service along Massachusetts Avenue. Permission for this operation has been denied, but it is hoped that it may be granted at a later date.

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Transportation Service Keeps Pace with Atlanta's Growth

One of the new 3,000-kva. substations recently built by the Georgia Railway & Power Company to give higher voltage and permit faster operation of cars

New capital intelligently expended by the Georgia Railway & Power Company in improving its transportation facilities has been a sound investment

By FRANK L. BUTLER

Vice-President Georgia Railway & Power Company

NOT SO many years ago the executives of the street railway industry were being forcefully impressed with the necessity of making radical changes in the operation of their properties in order successfully to meet modern requirements in urban transportation. No longer would cars built fifteen and twenty, and even 25, years ago offer the mode of transportation to which the riding public had become accustomed by the almost universal use of the private automobile. An industry that had considered itself an inherent monopoly awakened to the fact that it was faced with keen competition. While this realization was disconcerting, it has served to bring to the forefront those qualities of initiative, foresight and courage that are a heritage from the pioneers in the street railway industry.

It was not a hard problem to find out what the public wanted. The class of service they demanded and the only kind that would prove attractive to them and meet their requirements had to be reliable, frequent, attractive, fast and economical. Service, to be reliable, means not only that the cars shall run day in and day out, every day in the year, but also that the cars shall run on regular schedules, evenly spaced headways and not be subject to undue delays caused by equipment failures, current failures or traffic congestion. While we do not believe that at the present stage of development of the industry it is possible to furnish a seat for every passenger, yet some reasonable car loading should be decided upon as standard and maintained.

To make the service really attractive to the riders embraces an even wider field. Not only should the cars and equipment be considered as coming under this head but also the track and trolley wire and the trainmen themselves. To meet modern transportation requirements the speed of the cars had to be increased, and this result had to be accomplished without any increase in accidents and in face of increased street congestion and the installation of numerous traffic signals. These things had to be brought about without any large increase in cost to the users of the service. While we in Atlanta have many improvements yet to make, certain definite progress along the above lines has been achieved by the Georgia Railway & Power Company.

Before any large investments for the rehabilitation of the property could be made the jitney had to be

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eliminated. This was a long, hard fight. After an extensive publicity campaign through newspaper advertising, car cards and dash signs the city was canvassed by our employees. These employees, working in pairs, visited the homes and carried the company's story direct to the people. With them they had petitions asking the City Council to eliminate the jitney. More than 37,000 signatures were obtained in this manner, and by action of the City Council the jitneys were ruled off Atlanta's streets in March, 1925.

Improvement in Power Facilities Has Speeded up Service

Previous to this the Council had authorized the company to abandon several lines that closely paralleled others and served no useful purpose in the transportation scheme. The elimination of this trackage had been recommended in a report made by the Beeler Organization. Also the rearrangement of car stops with the elimination of the unnecessary ones had been approved. Thus, with the decks cleared for action, the company proceeded with its plans for modernization. These plans affected a number of the company's facilities. Water-power plants in the course of construction in the mountains of northern Georgia were rushed to completion and new plants begun, additional 110,000-volt transmission lines were built and a large number of oil switches installed. This part of the country is subjected to severe lightning storms and the system had suffered from several bad shutdowns during these storms. Since the installation of these oil switches all trouble is localized and a dependable source of power is assured. Three 3,000-kva. modern railway substations have been built at load centers, and these, in addition to our older stations, have improved voltage conditions very materially and made possible higher speed of the cars.

Anticipating the Council's action, the company had placed an order in 1924 for twenty modern 48-seat, low-floor, city type cars for two-man operation, so designed that they could be converted later for one-man operation. These were delivered in the spring of 1925. Later 40 cars of a similar type, designed for one-man operation, were ordered and placed in service before the end of that year, being installed on five lines in place of 28-seat, two-man cars, giving these five lines an average of 47½ per cent increase in seats during rush-hour periods and saving the company $100,000 per year on platform wages alone.

Fifteen double-deck, gas-electric drive safety coaches were also ordered and placed in service on arrival. This coach service met a much-needed demand for transportation in two newly developed residential sections and more nearly met the requirements than would have been the case had the street railway lines been extended in this territory. When this service was started a straight 10-cent fare was charged with no transfers to the cars, it being the company's idea that a de luxe service, with a seat for every passenger, running to the business center of the city would be appreciated by these residents.

The operation of this new equipment, while by no means completing our plans, relieved the situation and gave us a chance to look around and perfect other plans for the future. Traffic conditions immediately after the elimination of the jitney were somewhat abnormal. By this I do not mean that the cars were unduly crowded, because this was not the case. The elimination of the jitneys confirmed our belief that they were furnishing no necessary service. They simply duplicated service already available. Just as soon as traffic on the cars had a chance to settle down to a stable basis careful riding checks were made on each line. These data were plotted to give the number of riders by 30-minute periods during the morning peak, the noon rush hours, the afternoon peak and at night. Estimates were then made of operating expenses of types of cars varying in capacity from 32 seats to 52 seats. This study was made to determine the most economical car for this system. The study showed that to meet the conditions on our lines we could standardize on two types—a 40-seat car equipped with four 25-hp. motors and a 48-seat car equipped with four 35-hp. motors.

These two types of cars were studied on each line and the estimated operating expenses compared. The lines themselves were next considered, as it was desirable to place the new cars on routes most subject to competition from private automobiles. The result of this study was the placing of an order for 60 cars for delivery in August and September of this year. A description of the cars is as follows:

Length over dashers	45 ft. 4 in.
Length over body	33 ft. 1 in.
Length of platform	6 ft. 1 in.
Height, rail to trolley board	11 ft. 2 in.
Height, rail to first step	15½ in.
Height of step to platform	14½ in.
Ramp in platform	3¼ in.
Post centers	29¼ in.
Clear height inside	7 ft. 11⅜ in.
Type	Double end, double truck
Seating capacity	48
Motors	Four 35-hp.
Wheels	26 in.

The color scheme on the 40 cars placed in service in the fall of 1925 and on the 60 cars now on order, which were to be delivered in August and September of this year, has been changed from our standard green to a lighter green under the water table with cream above and with an orange roof. This was done in order to distinguish the one-man cars from the two-man cars and to make them more visible and attractive on the street.

New Cars Are a Good Investment

That these cars will pay for themselves we are assured from very careful estimates that have been prepared. The expected annual saving from the operation of the 60 new cars is $210,142. This is nearly 25 per cent on the investment. This total is the sum of the savings due to lighter weight, larger capacity, increased speed and one-man operation.

While the purchase of this equipment was warranted solely from operating economies, we should not lose sight of the fact that new cars offering improved service will build up revenue and help to improve public relations materially.

The purchase of new equipment has given the mechanical department an opportunity to bring the older cars up to a high state of repair. That it has taken advantage of this opportunity is shown by the car-miles operated per pull-in:

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Pull-in Record Since 1921

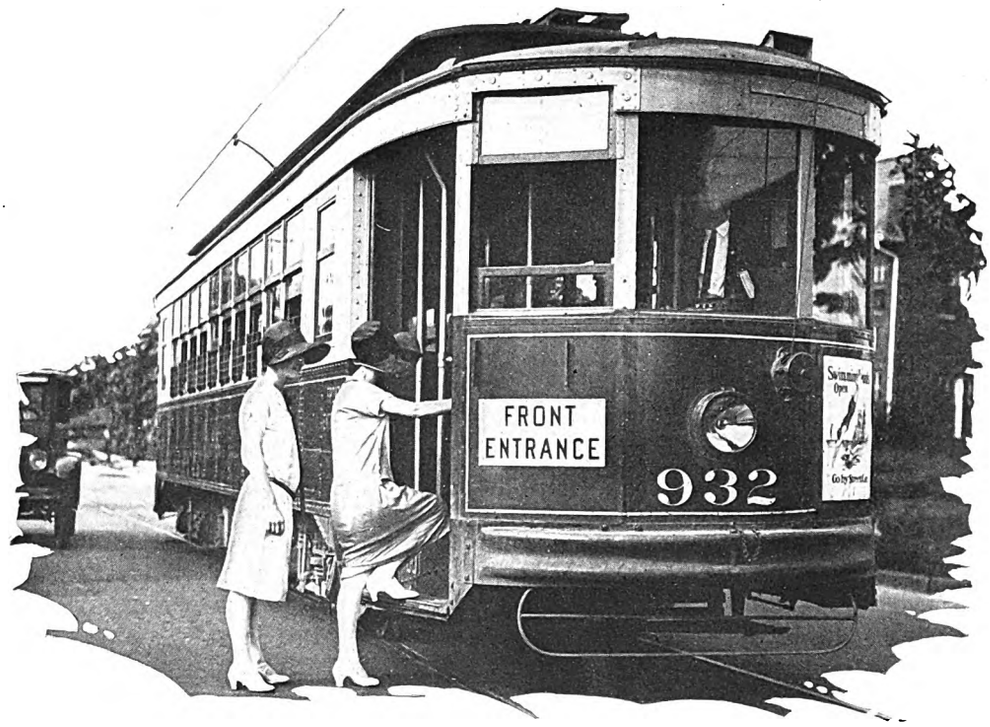
Year	Car-Miles per Pull-in	Average Pull-ins per Day
1921	3,002	13.2
1922	3,820	9.9
1923	5,859	6.5
1924	9,341	4.04
1925	12,226	2.95
First six months, 1926	21,461	1.68

The report for June, 1926, shows that the daily pull-ins averaged only slightly over one. The average car-miles per pull-in increased to 36,398 miles, or more than twelve times the average only five years ago.

jobs of special work have been installed to make the system more flexible.

In the report of the Beeler Organization to the city the rearrangement of car stops with the elimination of unnecessary stops was recommended. This report was approved by the Council and the Public Service Commission was then petitioned for authority to rearrange the stops in accordance with the Beeler recommendation. The request was referred to the commissioners' engineer and on receipt of his report public hearings were held on each stop affected.

While there was a certain amount of opposition to the elimination of a number of the stops, it was from purely individual motives, and when the commission's



Latest type car used in Atlanta by the Georgia Railway & Power Company. It is estimated that new rolling stock on that system is yielding a return of approximately 25 per cent on the investment

This gratifying result was accomplished only after continuous effort. Some of the physical improvements made include reboring and centering G.E. 80 and Westinghouse 101 motors, working over motor leads, axle jumpers and cables, correcting defects in bar spacing of brush-holders, rewiring lightning arrester circuits and doing all work in a more complete and thorough manner. Periodic overhauling on a definite mileage basis has been a big factor in eliminating the weak spots. A general overhaul of the relations with the men was also a large factor. A greater interest was taken in their training and education. That they have responded is attested by the results of their work.

Way and Structures Improved

Track and roadway in Atlanta have always been kept in a relatively high state of efficiency. While there was a certain amount of maintenance put off during the stress of the World War and also during the lean years following the business depression in the fall of 1920, we have practically caught up with this deferred maintenance. Also during the last few years many new

order was handed down many of the unnecessary stops were eliminated. Before this change the average distance between car stops was only 492 ft., while under the new location this has been increased to 657 ft. When this order went into effect the company purchased new signs and installed them throughout the system. These signs are enameled with black letters on an orange background. Their visibility is much better than the old signs. Many of these are placed on "one-minute anchor posts" and all are located so as to be opposite the entrance door where the car stops. The public has been told that the cars will stop with the door opposite the car stop sign and that riders can help speed up the service by gathering at the sign. They have responded well and very little time is now lost while a passenger walks the length of the car to board.

Many favorable comments have been made on the appearance of the trainmen in Atlanta. The men are encouraged to present a clean and neat personal appearance by being able to have their shoes shined and clothes pressed free of charge at all carhouses. There

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is a full-length mirror at each starter's office, above which are the words "Look at Yourself and See if You Properly Represent Your Company." A white shirt, white linen collar and a dark four-in-hand tie are required along with the regulation uniform.

In connection with the Georgia School of Technology and the State Department of Vocational Education a foremanship course is given all supervisors and foremen. This course is offered to the men free of charge. but is not compulsory. The last classes, however, were attended by many men from the mechanical and roadway departments and the attendance from the division superintendents and supervisory force was 100 per cent.

Somewhat similar meetings are held by our safety director. At these meetings safety and courtesy are stressed. In an endeavor to reduce the number of accidents the trainmen have been divided into teams of about twenty men, and the team with the least number of accidents in each of the four divisions is given a banquet at the end of each month. There is also a banner that is kept in the headquarters of the division with the best accident record for the previous month.

The men are also privileged to wear the following emblems on their uniforms: A gold star to be worn on the collar presented for each five years of service; an embroidered "E," representing efficiency, to be worn on the left sleeve, given to conductors who maintain a certain record on Ohmer registers; a similar "E" for efficiency in power saving is awarded to all motormen and safety operators who maintain a predetermined record.

Realizing that all work and no play is a poor policy, while well, healthy and satisfied men are good employees, and better men to handle their work and the public, opportunities for pleasure and wholesome recreation and opportunities for providing against sickness, distress and old age are necessary. The company has the following organizations, all of which, except the annuity or pension plan, are maintained and controlled by the employees without cost to the company: Power club, social and athletic club, women's auxiliary of the transportation department, dental clinic, credit union, relief association and an annuity or pension plan.

Financial Returns Are Favorable

So far the financial returns from modernization have been favorable. There has been an increase in revenue, which we hope will continue to grow and expand as we more nearly meet present-day requirements. There has also been a decrease in operating expenses, which is due to having passed the peak of high maintenance by catching up with all the work that had been put off during past years.

The operating results for the first five months of 1926 compared with the same period of 1925 show that the total revenue has increased from 0.3799 cent to 0.3996 cent per car-mile. Operating expenses, in dollars, per car-mile have been as follows:

	1925	1926
Way and structures	0.0232	0.0211
Equipment	0.0220	0.0208
Power	0.0495	0.0495
Traffic	0.0004	0.0006
Conducting transportation	0.1355	0.1350
General and miscellaneous	0.0515	0.0545
Total	0.2821	0.2816
Net operating income	0.0978	*0.1180

*An increase of 20 per cent.

The fact brought out in ELECTRIC RAILWAY JOURNAL for July 3, that in the country at large only 802 new passenger cars were bought during the first half of 1926, is disconcerting. That article sounds a significant note of warning and deserves the careful consideration of all street railway executives. From our own experience I am convinced that new capital intelligently expended in modernizing a street railway property is a sound investment.

Service to newly developed residential districts of Atlanta is given by fifteen gas-electric buses

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Complete substitution of cars of this type in place of older rolling stock in Huntington, W. Va., has materially reduced operating expenses of the Ohio Valley Electric Railway

Huntington

SAVES FIFTY PER CENT

By complete replacement of old rolling stock the Ohio Valley Electric Railway has reduced operating and maintenance costs nearly 6 cents per car-mile during the past three years—Savings have been more than returned to public in increased service

By W. R. POWER

General Manager Ohio Valley Electric Railway
Huntington, W. Va.

AFTER three years' experience with 100 per cent new passenger rolling stock in Huntington, W. Va., the Ohio Valley Electric Railway is maintaining this equipment for half the former cost. From an accompanying chart it can be seen that from 3 cents per car-mile in 1921 the costs have steadily declined to 1.266 cents in 1925. The jump to 1.55 cents for the first three months of 1926 is due to an abnormal condition that will disappear as the year advances. The decrease in the maintenance of the old cars in 1923 and to some extent in 1922 was in anticipation of the 40 new cars that were put in operation in January, 1924.

Not only in equipment maintenance was money saved, but in energy cost as well. An analysis of the energy consumption figures is necessary, however, to illustrate this point, since a change was made from coke heaters in the old cars to all electric heaters in the new. The cost has been materially increased thereby, and the energy consumed in the winter months has been just about offset by the saving due to the lighter weight cars. An analysis for the summer months of June, July, August and September for the years 1922 and 1923, before the new cars were started, and 1924 and 1925, after they were in operation, shows that the average energy consumption of the system was reduced from 3.41 kw.-hr. per car-mile to 2.7, making a saving of 0.64 kw.-hr. per car-mile, equaling 18.75 per cent. All energy is measured at the direct-current bus at the substations.

Track maintenance is effected only after a period of years. From an examination of the accompanying chart a decided tendency to fall off is observed from the high point of 4.64 cents per car-mile in 1921 to 3.616 in 1925 and 3.48 cents per car-mile for the first three months of 1926.

Conducting transportation, of course, reflects the change to one-man operation, except on the interurban line between Huntington and Ashland. Formerly all city cars required two men per car. Now about half of the operation is one-man, reducing the conducting transportation cost from about 12 cents per car-mile to 9.28 for the first three months of 1926.

As may be seen from the charts showing maintenance of track and equipment, the company policy relative to depreciation was changed. The amount set aside for renewals has been gradually increased to about $55,000 annually, or 2.59 cents per car-mile. This increase in depreciation reserve is shown as follows:

Depreciation by Years

	Cents per Car-Mile					
	1921	1922	1923	1924	1925	Threes Month 1926
Way and structures	.508	.432	1.014	.942	1.014	1.110
Equipment.....	.713	.542	.983	.942	1.304	1.480
Total depreciation....	1.221	.974	1.997	1.884	2.318	2.590

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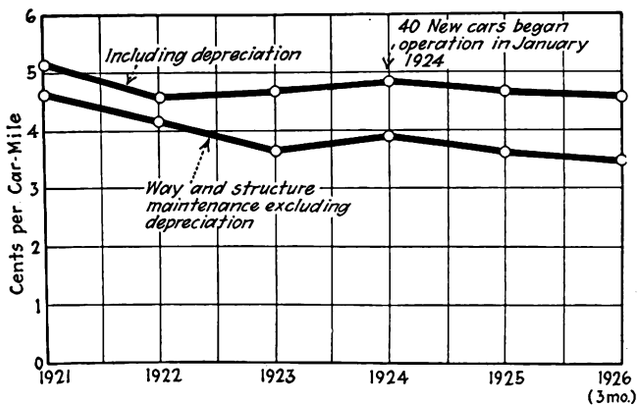


Way and structures expenses in cents per car-mile. The maintenance cost is shown separately to give the effect of increased depreciation charged during latter years

In analyzing the maintenance figures taken from the operating statements, it is only proper to segregate the depreciation because of the coincident increase in depreciation charges that were added in conformity to the changed policy of the company. The charts, therefore, have been made up to show the costs with and without this item.

Despite the low city fare of 6 cents, the company has returned more than the savings effected in increased service to the public after the new cars were brought on the property. Headways have been increased on all city lines and the same schedule on the interurban was maintained with ten of the new cars as against twelve of the old.

In all, the mileage operated has increased from 2,000,000 annually to 2,368,000 in 1925, an increase of 18.4 per cent. Patronage, however, has not followed suit. The company has been able to just about hold its own in riders, ranging in number from 13,000,000 to 14,900,000 annually. The increased mileage, however, has had a marked effect on the revenue per car-mile. These combined causes have reduced the net revenue earned from about 10.5 cents per mile to less than 8 cents.

Revenue, Operating Costs and Net by Years

	Cents per Car-Mile					
	1921	1922	1923	1924*	1925	Three Months 1926
Receipts per car-mile. . .	43.8	41.07	41.03	37.71	34.87	37.01
Operating Expenses:						
Way and structures . .	5.15	4.6	4.63	4.83	4.63	4.59
Equipment.	3.64	2.98	2.86	2.27	2.57	3.03
Power.	3.60	3.67	4.11	3.74	3.57	4.49
Conducting transportation.	13.17	11.93	11.90	10.85	9.54	9.28
Traffic.	.09	. . . . .	.01	.01	.14	.01
General and miscellaneous	4.03	3.95	4.20	4.35	7.50	7.74
Total operating expenses per car-mile.	29.68	27.13	27.71	26.05	27.95	29.14
Net	14.12	13.94	13.32	11.66	6.92	7.87

	1921	1922	1923	1924	1925
Revenue passengers. . .	14,920,609	13,761,389	14,390,548	14,318,920	13,805,203
Passenger car-miles operated	1,958,566	2,004,798	2,098,207	2,271,589	2,368,160
Kw.-hr. per car-mile.	3.46	3.52	3.86	3.44	3.28

*Forty new cars purchased in January, 1924.

Maintenance Costs with Depreciation Segregated

	Cents per Car-Mile					
	1921	1922	1923	1924	1925	Three Months 1926
Way and structures:						
Maintenance	4.642	4.168	3.616	3.908	3.616	3.48
Depreciation	.508	.432	1.014	.942	1.014	1.11
Total way and structures.	5.150	4.600	4.630	4.850	4.630	4.59
Equipment:						
Maintenance	2.927	2.438	1.877	1.328	1.266	1.55
Depreciation	.713	.542	.983	.942	1.304	1.48
Total equipment. . .	3.640	2.980	2.860	2.270	2.570	3.03

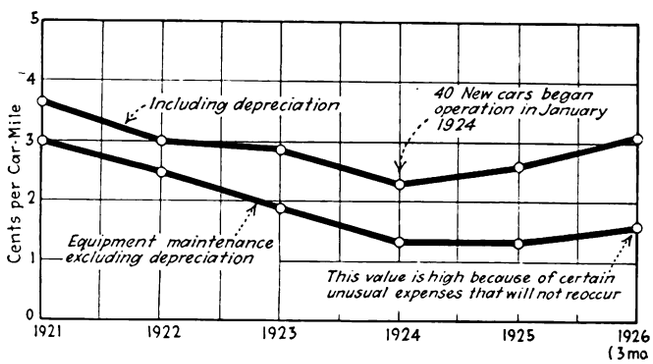
The population of Huntington has increased from 50,000 in 1920 to 80,000 at present and the city is in the transition stage between the small and large city. As population increases still further the transportation system will become more a basic necessity.

The 40 new cars put in service early in 1924 are 47 ft. in length, 8 ft. 4 in. wide over all and weigh 34,000 lb. They were built by the G. C. Kuhlman Car Company and are equipped with Brill 79-E trucks with four Westinghouse 510 35-hp. motors and K type control.

Seats are provided for 48 passengers and are constructed of wood. Contrary to many designs, the seats are spaced 33 in. apart and conform to the window spacing, thus giving plenty of room and good visibility. The floors are at one level from platform to platform, except for an imperceptible ramp at the ends. Entrance and exit can be made at the front end as the doors are 46 in. wide in the clear. However, the pay-enter inbound and pay-leave outbound system, about to be put in effect, will allow the use of the rear door when necessary to expedite loading and unloading in the downtown section. The rear door is under the control of the operator from a separate pneumatic valve. All doors must be closed before the line switch is made ready to operate, but otherwise full safety car equipment is not used.

Longitudinal seats at each end give wider aisle room and prevent excessive crowding when loading and unloading. Stanchions placed in front of the longitudinal seats eliminate the necessity of hand straps and have proved a popular substitution.

The 35-hp. motor equipment allows high acceleration rates and, with the wide streets in Huntington, permits the relatively high schedule speed of 10 m.p.h. for our city lines, including layover, and 13 m.p.h. from terminal to terminal on the interurban line between Huntington and Ashland.



Equipment maintenance costs in cents per car-mile. The increasing charges to depreciation apparently offset the true saving due to operation of the 40 new cars purchased in January, 1924. In 1925 and 1926 the maintenance charge is about equal to the depreciation

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ROLLING STOCK IMPROVEMENT

saves a small interurban

Light-weight cars have reduced operating expenses 16.5 per cent on the Northampton Transit Company —Accidents have been greatly reduced

By W. O. HAY
General Manager
Northampton Transit Company
Easton, Pa.

New cars of this type have been the salvation of the Northampton Transit Company, operating an interurban electric railway through hilly country in the eastern part of Pennsylvania

DUE to ever-growing bus competition and increased use of privately owned automobiles, with their natural effect on the gross revenue of the Northampton Transit Company, our officers realized about four years ago that a reduction must be made in operating costs. It was thought this could best be obtained by the substitution of modern light-weight cars in place of the older equipment previously used. In April, 1923, we received six new one-man, two-man safety cars built by the Cincinnati Car Company. We were so pleased with these cars that we subsequently ordered two more, making a total of eight.

The new cars are 44 ft. 8 in. over all and weigh 30,000 lb. complete. Seats are provided for 52 passengers. Each car has four GE-265 motors. The old cars were equipped with GE-67 and Westinghouse 101-B motors, and with standard straight air brakes. Their weight was 45,000 lb. complete. This comparatively heavy weight was a serious disadvantage in the hilly country through which we operate, with grades as steep as 10 and 12 per cent.

With the new cars a reduction of 5.2 cents per car-mile has been made in operating expenses. This is subdivided as shown in the accompanying table.

	Cents per Car-Mile	
	New Cars Year 1925	Old Cars Year 1922
Way and structures	5.8	7.0
Maintenance of equipment	0.6	0.7
Power	9.0	10.0
Conducting transportation	8.8 (*a*)	11.5 (*b*)
General and miscellaneous	2.3	2.5
Total	26.5	31.7

(*a*) One-man. (*b*) Two-man.

Substantial savings have been made in the power account. Economy meters to register the consumption of energy by each operator have been installed on all the new cars. Although we have an extremely hilly road, our men are averaging less than 2 kw. per car-mile.

One-man operation has replaced two-man operation over the entire road. Ohmer registers are used and fares are collected when the passenger boards the car for as many of the six zones as he may intend to ride.

We are just now beginning to feel the effect of the operation of light-weight cars on our maintenance of way costs. In replacing ties we are installing two new ties where three old ones were used. Our original spacing was on 2-ft. centers, but we find that with lighter equipment we no longer need ties spaced so closely.

During the three years we have been operating the new cars we have not had a single boarding and alighting accident, whereas these were of common occurrence while the old cars were in use. Trainmen much prefer the new cars.

We feel that if it had not been for the new equipment, which has greatly reduced operating costs, we would have had difficulty in making both ends meet, with the falling off in traffic due to automobile and bus.

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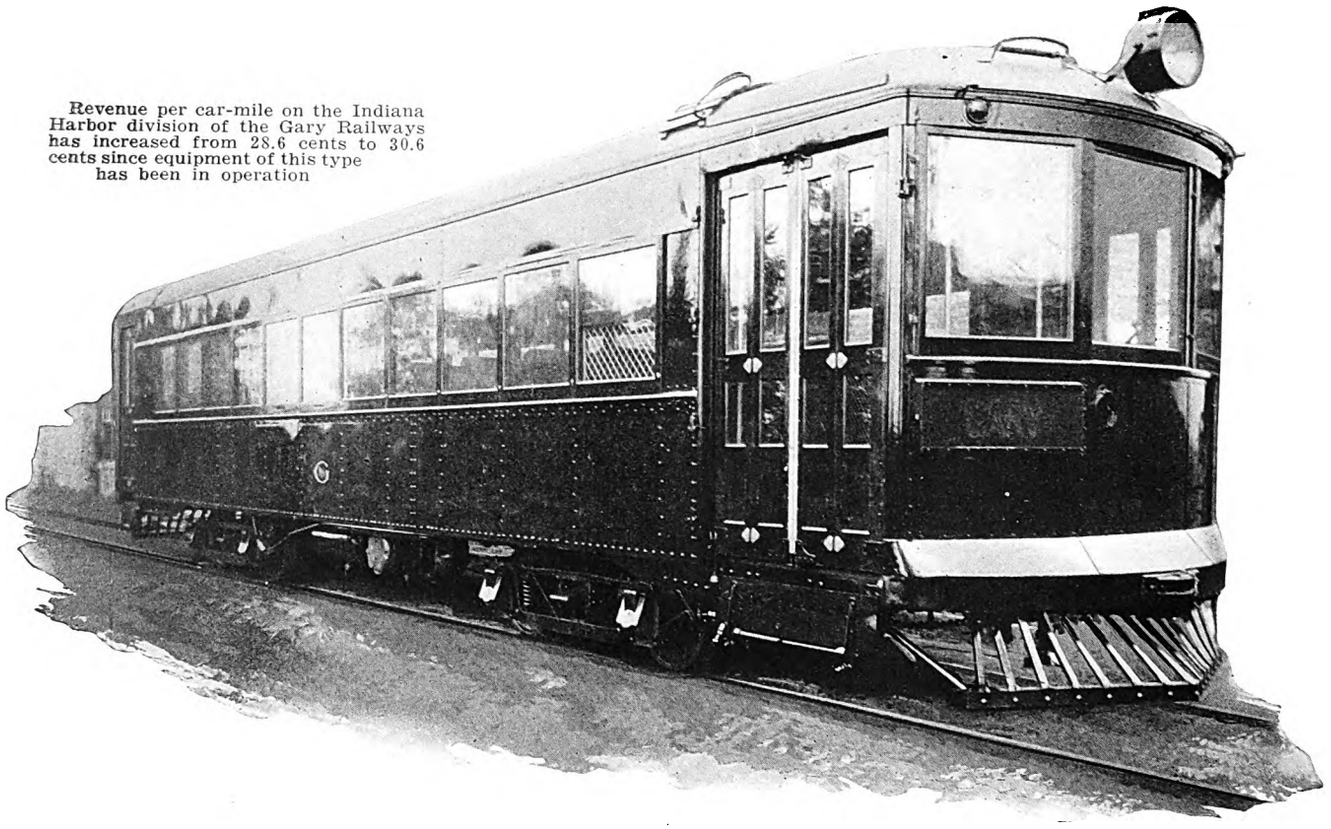

Revenue per car-mile on the Indiana Harbor division of the Gary Railways has increased from 28.6 cents to 30.6 cents since equipment of this type has been in operation

LIGHT-WEIGHT CARS

pay well at Gary

By C. W. CHASE
President Gary Railways, Gary, Ind.

Gain in revenue on Indiana Harbor division amounts to nearly three times the interest requirements on the new equipment—Operating costs have been greatly reduced

IN A GREAT industrial community such as Gary, Ind., where from 8,000 to 10,000 working people must be transported between home and factory at three different periods of the day, the first requirements of street railway service are adequate equipment and convenient schedules. Back in 1918, before the popular mind had become so completely intrigued by the gasoline vehicle, the need for modern street cars, comfortable and attractive in design, were considered as all very well in their way. But as an inducement to riding their use was considered very little, if at all. This attitude prevailed in the old Gary Street Railway organization before the present management came into control. During the past eight years, however, this viewpoint has been entirely altered and in consequence the rolling stock has been thoroughly modernized.

Increasing costs of labor and materials, combined with the ever-growing menace of private automobile and bus competition shortly after the reorganization, began to offset the advantage the company enjoyed in serving one of the fastest-growing cities in the country. Under the attack of unrestricted jitney competition, the railway's traffic fell off and earnings, once highly satisfactory, showed a serious decline. The first attempt to remedy the situation was made in the summer of 1919, when eight one-man, single-truck, safety cars were placed in regular service over a 3-mile route on Broadway, the main business artery of Gary. The fifteen-minute headway previously provided on this line by heavy, two-man, double-truck cars of 1911 vintage was decreased to five minutes, and later to three. This improvement in service won the co-operation of city officials, and six months later an ordinance was voted to exclude all jitneys from the streets.

Which of the two factors—the more frequent service or the adoption of the light-weight equipment—had the greater effect in bringing about the increase in revenue which immediately followed the change could not be accurately determined. It is worth pointing out, however, that an operating expense of 31 cents a car-mile on this and other city lines of the company was reduced to an average of 28 cents by the substitution of the lighter, one-man cars.

A heavily losing 23-route-mile division between Gary and Valparaiso was the next objective in the company's modernization campaign. Serving a large summer population at inland lake resorts near Valparaiso, there were but two or three months of the year when this line was able to show a favorable operating ratio. For the better part of the year, earnings were hopelessly deficient. With the operation of the old-type, 55,000-lb., two-man cars, monthly revenue that amounted to

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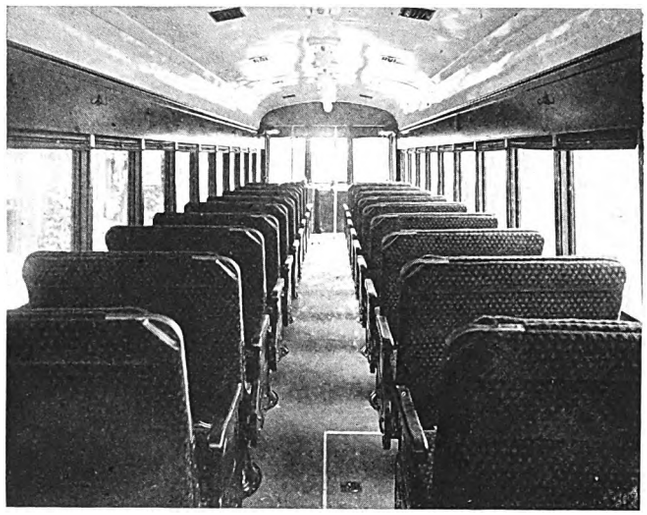
$11,099 in July, 1923, and to $7,100 in October of one year had fallen to $9,659 and $5,989, respectively, in the same months of the following year.

In November, 1924, the management replaced this obsolete, debt-incurring equipment with the same number of light-weight, one-man cars, attractive in design and weighing only 42,500 lb. each. The same hourly service and the same running time were maintained. Operating expenses per car-mile, which had averaged 28.4 cents for the last ten months of operation with two-man equipment, was straightway decreased to an average of 21.8 cents for the first ten months of one-man car operation. In the first 30 days of one-man operation the cost of conducting transportation was reduced from $1,400 to $984, or 29.7 per cent. Maintenance of equipment costs for corresponding periods likewise dropped from 2.13 cents per car-mile to 0.80 cent. The wage scale paid to operators of the new equipment was advanced to 71 cents an hour, or 5 cents more than motormen of the old two-man cars received.



Comfort and attractive appearance are believed by the present management to be prime requisites

In spite of a loss of some $1,800 a month in revenue from the transportation of milk, and the diversion of a large percentage of traffic between the two communities to the highways, particularly during the summer months, the year-around business on this line is picking up slowly. Revenue per car-mile is displaying even more encouraging tendencies. To protect this line and the Gary and Hobart division from independent bus competition, the company operates its own buses between Gary, Hobart and Valparaiso over highways closely paralleling the rails.

5,000 inhabitants, at an average cost of 33.1 cents per car-mile. When one-man operation was initiated in August, 1925, the headway was reduced to 40 minutes, the resulting car mileage showing an increase of approximately 40 per cent. The average car-mile operating expense, at the same time, was lowered to 26.0 cents.

Perhaps the most impressive illustration of the value of modern light-weight equipment to the Gary Railways is that of the 10-mile interurban line from Gary to Indiana Harbor, on which three new double-truck, one-man, safety cars were put into operation just a few months ago. The territory lying between Gary and Indiana Harbor, the latter being a section of the city of East Chicago with a total population of 65,000, is singularly undeveloped, and on this account most of the revenue earned by this line comes from through and long-haul traffic. Paralleled for much of the distance by the famous Dunes Highway, this division was probably the hardest hit of all the company's lines by the bus competition which has become rife in this territory in recent years. At the present time two motor coach lines—one of them an allied company under the same Insull management as Gary Railways—are being operated in competition with the Indiana Harbor cars.

As a result of this intense rivalry for business and the phenomenal increase in private motor traffic, total revenue that in March, 1924, approached $13,000, had fallen in a little less than two years to a scant $7,000. The success which had attended its efforts to put new life into other divisions, however, led the company to

Effect of New Car Operation on Revenue and Costs of Valparaiso Division

Month	Total Revenue	Operating Expenses, Cents per Car-Mile
February, 1924	$5,870	35.1
July, 1924	9,659	28.8
October, 1924	5,989	27.6
November, 1924	5,936	19.5
February, 1925	6,432	22.3
July, 1925	8,283	22.0

Effect of New Car Operation on Revenue and Costs of Hobart Division

Month	Car-Miles	Total Revenue	Operating Expenses, Cents per Car-Mile
July, 1924	10,918	$4,110	31.2
August, 1924	10,918	4,024	35.1
July, 1925	11,338	4,483	....
August, 1925	16,644	5,083	26.0
July, 1926	16,402	5,450	....

Some ten months after the modern equipment remedy was first administered to the struggling Valparaiso division, a similar experiment was tried on the Gary and Hobart division in the form of three light-weight, double-truck, one-man cars of the same type. Unlike the thinly populated district traversed by the Valparaiso line, this division, some 7 miles in length, serves a fairly well developed suburban area. The old-style two-man cars, excessive in weight and unattractive in appearance, had been rendering a 90-minute service between Gary and Hobart, the latter a community of

decide last spring to do away with the antiquated 50,000-lb., two-man cars on the Indiana Harbor line, the continued operation of which augured nothing but constantly increasing losses.

An order for five new light-weight, double-end, one-man interurban cars, weighing but 37,000 lb. each and closely adhering in design and appointments to the type proposed in the recent report of the A.E.R.A. committee on essential features of modern cars, was subsequently placed with manufacturers well known for their successful construction of this type of rolling stock

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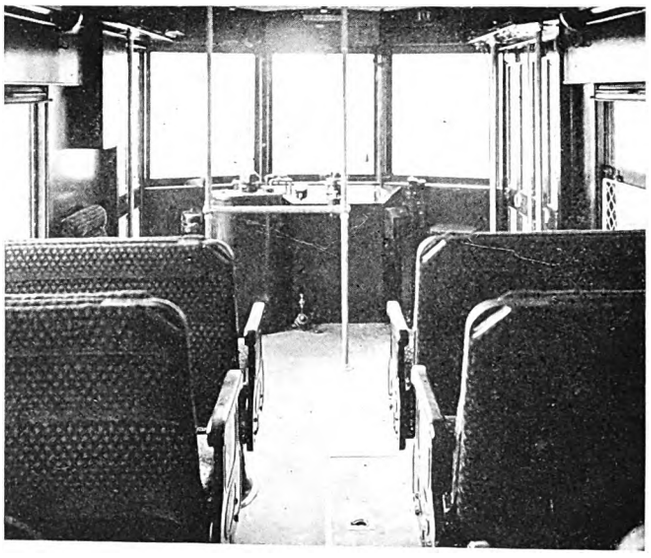
The handsome new orange-colored cars, built at a cost of $16,800 each, were delivered on July 15 last and immediately assigned to service, three of them on the Indiana Harbor division and two on the Gary-Hobart line. No increase was made in headway.

The cars are equipped with every modern safety device, including line breakers, low 12-in. steps and specially constructed windows, green plush seats with linen-covered backs for 46 passengers, battleship linoleum floors, and attractive dome lighting fixtures. They have been in use for such a comparatively short time that complete operating figures are not yet available, but from studies that have already been made, there is every indication that traffic on both divisions will be greatly stimulated and many operating economies induced by their adoption.



Piping and other equipment on the front platform have been inclosed in a simple cabinet

Results noted in the brief period of their operation make it seem likely that over a full twelve-month period the savings in platform expense on the Indiana Harbor line alone will aggregate $1,500 a month. Reduced kilowatt-hour consumption will probably effect a power saving of another $800 monthly.

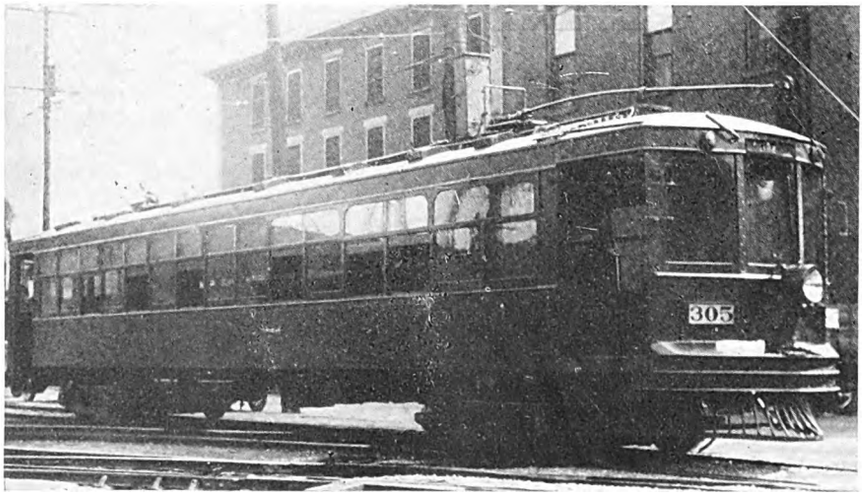
The average revenue per day earned by the new Indiana Harbor cars for the first 30 days of their operation was $204, as compared with the $191 earned in an average day by the old equipment during the 30-day period prior to its displacement. For the entire month of August, the average daily revenue had amounted to $215, or a gain in revenue amounting to nearly three times the interest requirements on the new cars. Revenue per car-mile operated for the 30 days preceding the change was 28.6 cents. This figure was increased in the first 30 days of operation with the light-weight rolling stock to 30.6 cents.

Experience thus far in the operation of this modern equipment sets to rest the old charge that one-man operation is dangerous. Since the inauguration of the service in July, the accident record of the new equipment is nearly 30 per cent better than that established by two-man cars on the Indiana Harbor division, there being seven accidents of all kinds on this line in the six weeks prior to one-man operation and only five in the six weeks immediately following their introduction. The ratio of cost of accidents to gross income, which in the four-year period from 1921 to 1925 has decreased from 4.49 per cent to 1.38 per cent, likewise testifies to the superior safety of one-man operation.

The greatly improved financial condition of Gary Railways at the present time is regarded by officials of the company as being due in large measure to the progressive application in the past seven years of these modern principles to the operation of its properties.

Modern Interurban Cars Lower Costs

ON THE Springfield-Lima division of the Indiana, Columbus & Eastern Traction Company $19,000 a year is being saved through the operation of six light-weight interurban cars. This equipment was purchased three years ago for service on the unprofitable Dayton-Union City division. Despite a resultant substantial reduction in operating cost, it was decided to discontinue operation of the line at the end of last year. Management of the property is in the hands of J. H. McClure, receiver, and under the general direction of Day & Zimmermann, Inc. The new cars were designed by the latter organization and built by the G. C. Kuhlman Car Company. A description was published in ELECTRIC RAILWAY JOURNAL Dec. 1, 1923.



On Jan. 1, 1926, these six light-weight cars were transferred to the 66-mile division between Springfield and Lima. Energy consumption dropped from 4.3 kw.-hr. to 3.5 kw.-hr. per car-mile measured at the point of purchase. The cars by this time had worn off their newness and had reached a condition of normal maintenance. Costs, which had previously been 4.15 cents per car-mile for the heavy 40-ton steel and wood cars of the vintage of 1907-08, however, dropped to 2.01 cents per car-mile for the 25-ton all-steel cars.

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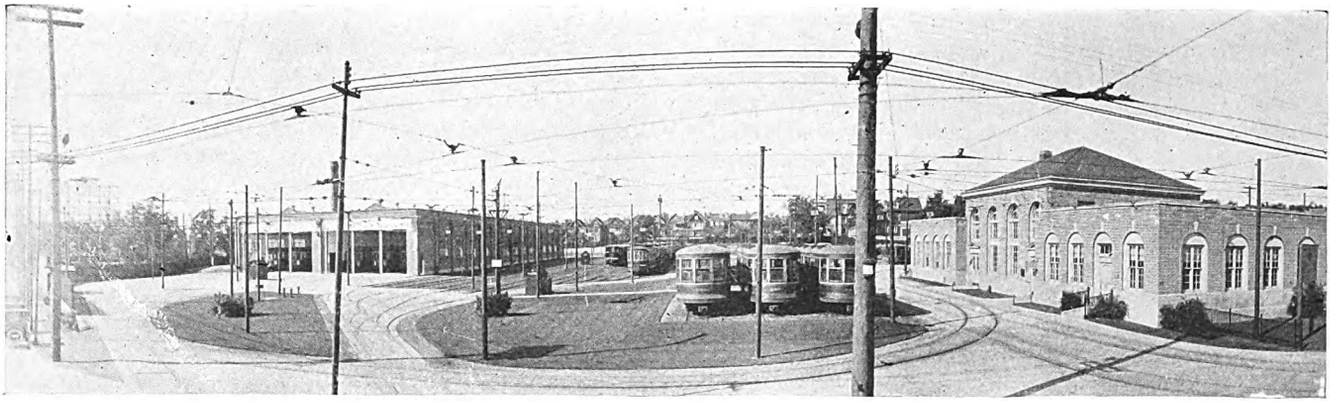

Modern steel cars for Toronto's heavy traffic ranked before one of the new carhouses

Toronto finds

MODERNIZATION PROFITABLE

By D. W. HARVEY

General Manager Toronto Transportation Commission

MODERNIZATION of transportation service in Toronto started on Sept. 1, 1921. On that day practically all electric railway services within the city's limits were merged into one unified system, serving the entire area with one-fare transportation. Complete rehabilitation of the unified system and its extension to districts formerly unserved were started immediately. The result has been to establish safe, efficient and economical transportation service which has won the support and good will of the citizens in such measure that the success of the system is assured. This experience leads to only one conclusion — it pays to modernize.

Safe, efficient and economical transportation service has won the support and good-will of the public—575 new cars have been added in last 5 years and 490 old cars scrapped

The first step in modernization was the unification of all services operating within the city limits into one system. The single-track mileage of the lines amalgamated was:

	Miles
Toronto Railway	142
Toronto Civic Railway	22
Interurban lines	13
Total	177

Since the unification of these lines, rail extensions and addition of bus lines have brought the present mileage of the unified system to

Single-track miles of rail	227
Miles of bus routes	12
Total miles	239

Five bus lines, the first inaugurated in September, 1921, are operated as part of the universal fare system and serve districts which do not justify rail extensions. Cars and buses now serve the entire area of the city and travel to any point on the system requires payment of only one fare, free transfers for a continuous trip being issued between all electric and bus lines of the system.

Immediately following unification, rehabilitation was begun. This proceeded simultaneously in all departments. Track rehabilitation, rerouting of car lines, introduction of new types of cars, building new carhouses and shops, readjustment of stops, installation of automatic electric switches and other work progressed at the same time.

Due to the war and other conditions that contributed to the postponement of necessary repairs and renewals, the roadbed and track were in a bad state of repair. An extensive rehabilitation of the track was undertaken and was completed late in 1922. At the peak of the rehabilitation period 3,500 men were employed on track construction. A summary of the work done is given in the following table:

	Miles
Completely rehabilitated	57
New extensions	90
Double tracking	13
Loops constructed	31
Carhouse yards, reconstructed	3
Carhouse yards, new	4
Special track-work units, reconstructed	133
Special track-work units, new	339

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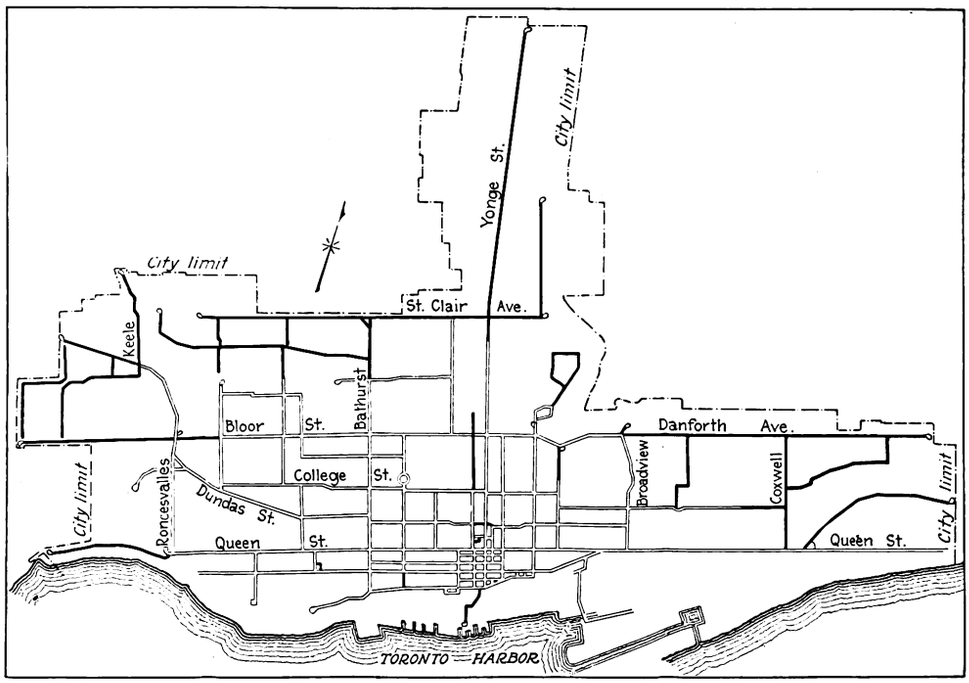
New special trackwork laid during track rehabilitation was planned having in mind the complete rerouting of the unified system to make possible the provision of more convenient and efficient service. Included in the track program was the replacement of Y's with loops at practically all route terminals. Today there is only one Y on the whole system at a route terminus. The advantages in safety and efficiency of operation accruing from the use of loops have amply justified the cost of their construction. Similarly the 106 automatic electric switches installed have contributed in safety and efficiency at the busy intersections.

New Cars Bought—Old Cars Scrapped

Because they are so intimately associated with the personal comfort of the traveling public, the new cars which were placed in service late in 1921 carried a strong conviction that the transportation service was being thoroughly modernized. All new cars were painted red—a bright red with gold striping. It was decided that no longer would street cars slink along apologetically or unnoticed in nondescript colors. They do not make as much noise gliding smoothly along on the rehabilitated tracks as did the old cars on the old tracks, but they attract more attention—and, more important still, more passengers.



Extensions totaling 90 miles of track have been made during the past five years to the railway system in Toronto to meet the demands for its high-class modern transportation service

There are 350 of these cars now in service. They are of the Peter Witt front-entrance, pay-as-you-pass type, of steel construction, with pneumatic door controls, modern heating, lighting and ventilation and all details of modern design and equipment.

Obsolete single-truck trailers, many of them converted horse cars, with all the public prejudice they inspired as they bobbed along loosely coupled, were banished from Toronto in the modernization process. They were replaced with 225 new double-truck steel cars of the same type as the new motor cars, but with center entrance and exit. The three-door arrangement with convertible double-entrance, double-exit device was originated in this organization and applied on 165 of these cars with most satisfactory results in service. These cars also were painted bright red.

Something had to be done about the old cars on the system; 490 of them were scrapped. Of those retained, 215 cars of pay-as-you-enter type, wood and steel construction, were converted into front-entrance, pay-as-you-leave type, in which process they were completely remodeled and equipped to conform as near as possible to the standard of the new cars. They, too, as they re-entered service, were painted red. One hundred more of the old pay-as-you-enter cars were similarly modernized and remodeled into one-man "treadle" motor cars with front entrance and rear "treadle" exit door. Thirty-three of the old pay-as-you-enter cars were remodeled into "treadle" cars with front entrance and rear "treadle" exit—and red paint—for operation as the second car on six-motor two-car trains. With the completion of the remodeling of the former 348 pay-enter cars, every motor car on the system is a front-entrance type.

Emphasis has been placed on the red paint in telling of the modernizing of Toronto's rolling stock to call attention to two points—first, that people today like to ride in vehicles of smart appearance; and, second, that bright colors force them to notice that the cars are attractive in appearance. Those are the reasons why Toronto's street cars are painted bright red and kept bright and red. Incidentally, our experience indicates that brightly painted cars reduce the collision hazard.

The effect of the general modernization of the system is shown in the record of pull-ins of cars in service. During the past three years the car-miles per "pull-in" has trebled.

Up-to-Date Shops a Necessity

An adequate and efficient service cannot be operated without adequate and modern shops and facilities. The experience here is that the new shops effect savings sufficient to cover all carrying charges and to pay off the cost of the shops well within their economic lifetime. Our general shops were built on a site of 22.24 acres, formerly the Hillcrest racetrack, in the center of the territory served by the system. On this property are the general car shops, stores building, way department shops and materials yard, construction equipment sheds, buildings, maintenance shops, bus garage, overhead emergency garage, central heating plant, and general office building for the departments having headquarters at Hillcrest. All of the buildings are new and were designed for the purposes they now serve. They were first occupied in March, 1924. The buildings cover a ground area of 10.40 acres. Detailed descriptions of

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these shops have appeared in previous issues of the JOURNAL. More eloquent than a thorough description of the shops are the results they have helped to achieve.

Five of the seven divisional carhouses, situated in outlying districts of the city, are new and are, like the general shops, of most modern design and equipment. Approximately 25 per cent of the cars are stored under cover at the divisions.

The overhead, the substations, and all other branches of the system were also completely rehabilitated.

RESULTS SEEN IN BETTER SERVICE

The proving ground of all this modernizing of the system is in the service. Has the result been a more attractive service to the public?

Unification, extensions and new special trackwork combined to make possible a complete rerouting of the system. Main trunk lines extending across the city from eastern to western city limits, a distance of more than 10 miles, were established. In the past, passengers not only had to travel on two or three cars but also had to pay two or three fares. "Dipper," crosstown lines, originating in the northeast and northwest residential districts, crossing the city with a "dip" down into the central area of the city, were designed to give direct service for industrial, commercial, amusement and other traffic. North and south lines were established to intersect the crosstown lines at convenient intervals. Rerouting and a modern system gave a modern service, convenient and economical.

Rerouting time was an opportunity for readjusting stops. In some sections of the city the cars had been stopping almost at every post. The big new steel trains could scarcely get going between stops. Stops on each route were studied. Many were cut out and others were moved. The general average of stops was reduced from nine to seven to the mile.

Some of the 490 cars which were scrapped during the work of modernizing the T. T. C. system

With modern equipment correctly routed, and with unnecessary stops eliminated, another requirement of modern service was achieved—namely, speed. Schedule speed during rush hours has been increased over the system by 9 per cent to 9.43 m.p.h. and during normal hours by 7 per cent to 9.86 m.p.h.

NO MORE "PUSHERS IN"

Here is an interesting sidelight on the effect of modernization. Five years ago 75 uniformed men, politely called "groundmen," but more descriptively known as "pushers in," whose duties were to jam passengers into the cars and close the doors, were employed at heavy loading points during rush hours. Today no men are employed for this purpose, the modernized cars and service having eliminated conditions requiring high-pressure loading methods.

Of particular significance are figures showing the comparatively small miles per car per year as shown

Significant Figures of Toronto's Transportation System

Cost of amalgamated properties	$15,374,122.19
Expenditure for rehabilitation and modernization	$29,222,639.44
Present fixed assets	$45,579,966.01
Area served, square miles	35
Population served	550,000
Miles of single track owned	227.40
Miles of bus routes	12.29
Passenger rolling stock—electric cars	984
Buses (not including motor coaches)	23
Miles operated per car per year	27,674
Revenue passengers per track-mile per year	794,986
Passenger car-miles per track-mile per year	108,431
Riding habit	333
Operating revenue per mile of track	$50,344
Operating income per mile of track	$17,877
Operating ratio, per cent	63.93
Average fare per revenue passenger, cents	6.16
Income from advertising, rental of equipment and other miscellaneous sources	$301,873.36

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in the accompanying table. This is due to the extraordinarily acute peak traffic situation in Toronto. During normal hours the city is completely served with 300 cars on 27 regular routes, on none of which is the headway greater than six minutes, during the lightest hours of travel. During the morning rush hours 750 cars are operated, and at the peak of the evening rush 900 cars are in service. This peak traffic is due to the concentration of practically all of the downtown industrial, commercial and theatrical districts in an area of only 400 acres, with almost universal 9 to 5 business hours. Some 64 per cent of the daily riders are bound to or from or pass through these 400 acres. Out of this congested area the street cars carry 55,000 passengers every business day between 5 and 6 p.m.

The system owns 150 cars that make only one trip a day for five days of the week. The 5 o'clock peak is so acute that these cars do not have time to take a load to the outlying residential districts and return downtown for another load before the rush subsides.

A throat check, taken at the limits of the 400 acres, comprising the concentrated downtown area, indicates that there are 149 outbound passengers to every 100 seats available to them between 5 p.m. and 5:30 p.m., the maximum half-hour period. The modernization and increase in passenger equipment now provides 70 per cent more seating capacity for rush hours than was offered five years ago.

Traffic counts, taken on all streets—with and without car tracks—establish the fact that street cars carry 81 per cent of all persons transported into and out of the central business area.

Flattening of the "peak" is being studied and definite plans are in preparation to secure the co-operation of factories and business places in the adoption of staggered hours. A move made in this direction was the adoption in June last of staggered hours for all of the system's own shop, way and office employees. Publicity given to the commission's example has prompted others to follow suit without being requested to do so; however, an organized effort will be required before real results are obtained.

Motor Coach Service Inaugurated

While the modernization of the universal-fare transportation system was in progress, the organization kept in close touch with the development of special services which might be supplied. The motor coach presented a new field of service and revenue. We differentiate between the bus, as used in the universal-fare system, since September, 1921, and the motor coach, the more luxurious vehicle used in special services. The color line is drawn between the two classes of vehicle, the buses being of the bright red hue of the street cars, while the motor coaches are of a distinctive pyramid gray exterior.

Investigation indicated that here, as elsewhere, the motor coach would win popular favor in the services to which it was adapted. Early in 1925 the first lot of fifteen motor coaches was ordered. Subsequent additions have brought the total of buses and coaches operated by the system to 75.

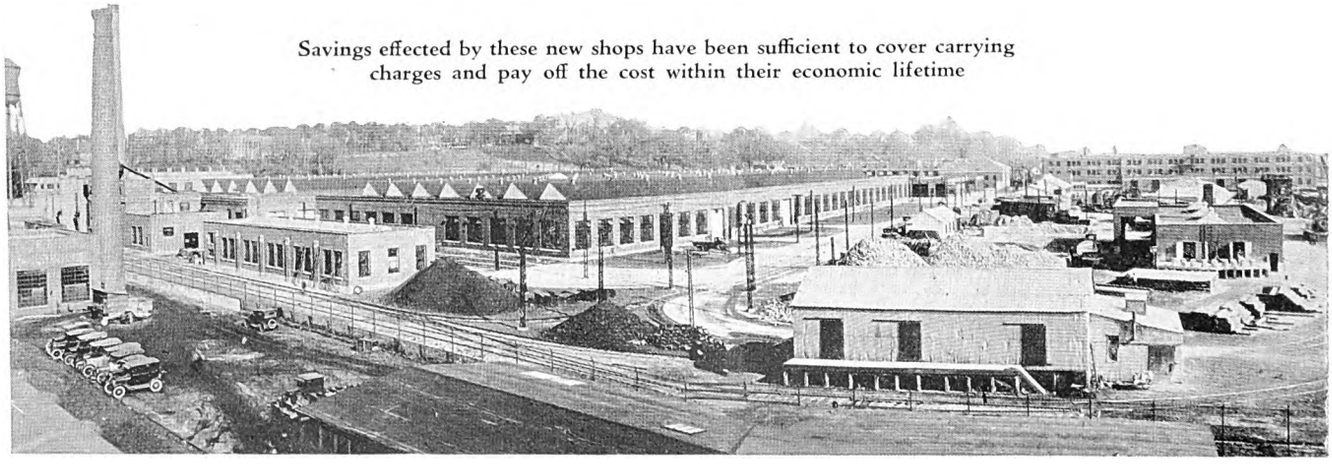
The motive in the adoption of motor coaches was to provide all forms of public transportation for which there was a demand that could be met and justified on economic grounds. The coaches have secured new revenue for the system. A policy which has governed the various motor coach services is that each must be self-sustaining. The variety of services operated makes possible a satisfactory year-round load factor for the coaches. Sightseeing tours, chartered trips, and long-distance excursions are operated, as well as regular scheduled service in the city.

Modernization Spreads to Neighboring Towns

The modernization of Toronto's transportation system has had a marked effect on the municipalities immediately adjacent to the city. Several of these have employed the services of the system's traffic study department, which deals with matters that are a combination of traffic and engineering, to study their transportation needs and submit advisory reports. As a result of these relations 15.4 miles of electric railway lines are being operated by the Toronto system in two adjacent municipalities under special arrangements whereby the Toronto system operates the services at cost with its equipment on a rental basis.

Resulting from public appreciation of the modernization of the Toronto transportation system and its improved service, it has been accorded a most encouraging measure of public support and good will. A great factor in winning public favor to the system is the constantly safe, courteous and efficient performance of their duties by the trainmen, responding to their improved working conditions in the modernized cars and a natural pride in their association with the system.

Savings effected by these new shops have been sufficient to cover carrying charges and pay off the cost within their economic lifetime



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The News of the Industry

New Ordinance Advanced in Kansas City

In accordance with a rule of the local City Council which provides that public utilities seeking a franchise with the city shall pay for copies to be distributed generally, it was agreed at a meeting of the Council of Kansas City, Mo., on Sept. 20 that 500 copies of the ordinance proposing an extension of twelve years of the present 33-year railway franchise will be printed and used for general distribution at the expense of the Kansas City Public Service Company, the new operating company seeking the extension. The present franchise has run for twelve years and the new company is seeking to restore the franchise to its original period of effectiveness.

It had been previously predicted that the final vote on the proposed ordinance would be taken by the Council at the meeting on Sept. 27, but it is now believed that the printing of the extra copies will prevent the ordinance from being voted upon finally at that time.

Councilman Gossett says that the proposed ordinance has provided the Council with something on which to build an acceptable plan and that the Council desires very much to arrive at a plan which will be fair to the public and to the new operating company.

Every effort will be made to bring the franchise ordinance to a point where it can be passed before the election in November, but it is thought improbable that this can be done.

The ordinance was returned to the committee without comment by the Council during the week ended Sept. 25, to be held for a second reading.

Key Route Rate Case Adjourned to January

After a brief hearing in Oakland Sept. 14, the California Railroad Commission adjourned the rate case of the Key System Transit Company until Jan. 11, to give the company an opportunity to permit completion of a physical inventory of its properties and a revaluation of its holdings.

The company is seeking to make permanent the temporary raise in rates granted last year as an emergency measure. The Railroad Commission increased the street car rates from 6 to 7 cents and ferry fares from 18 to 21 cents. There have been two adjournments granted of the hearing to fix permanent rates.

Witnesses for the company testified that following the rate increases patronage fell off more than was expected and that revenues did not show the increase that had been estimated. According to figures submitted by Richard Sachse, consulting engineer of the company, there has been a decrease of 4,300,000 in the number of passengers carried on street cars and ferries since the new fare schedule was put into effect.

Mr. Sachse and C. C. Vargas, assistant to President Miller, declared that since the new rates went into effect traction line revenues have increased $139,420 and ferry revenues $12 504 instead of the $750 000 anticipated The percentage of shrinkage in the number of passengers was set at 7.70.

H. P. Bell, chief engineer, declared that since Jan. 1 last a total of $6,000,000 has been expended by the company in improvements and that more improvements are contemplated. Investments made include, he stated, the purchase of 40 new cars at a total cost of $621,164; two new ferryboats, $1,752,994; the building of 12 steel center-entrance cars, $250,610, and the equipment of all Key cars with air brakes and electric couplers, $187,868.

In addition, it was pointed out, the company has been saddled with an extra expense of about $400,000, representing the cost to the company of an increase in wages which was awarded to the platform men.

Leon Gray, Oakland city attorney, assailed the company's figures, bringing out on cross-examination of witnesses that some of the proposed new construction cannot be undertaken within a year. He mentioned particularly the proposed overhead crossing at Emeryville and the extension of the Key mole.

Small Destruction of Florida Utilities

Cessation of Car Service in Miami While Rebuilding Work Begins—Loss on West Coast Slight Also—Buses Perform Valuable Service

INFORMATION coming to hand from Florida about the injury to utility property there indicates that the loss has been comparatively small. The facts are still fragmentary, because first of all attention is turned to rendering human succor. It appears, however, that the storm caused little damage that cannot be quickly repaired just as soon as men and materials in sufficient quantity are available. Tracks and overhead are gone here and there and buildings are demolished, but that appears to be the extent of the havoc. From Miami and its immediate environs, the area on the coast worst stricken, authentic reports on utility destruction are slow in coming in. So far as the magic city itself is concerned street car service had not been restored on Sept 22, but business was fast being resumed. It takes time to rebuild track and restore wires. Tampa and St. Petersburg, the two cities on the west coast of Florida having electric railway service, escaped Saturday's storm with comparatively light damage, officials declare. Shut-downs made necessary by broken circuits and damage to lines and poles constituted the discomforts of the storm to the railways of these cities.

Railway service in Tampa was discontinued at 10 o'clock Saturday night, when the wind reached a velocity of 52 miles an hour. At the same time about half of the cars in the city were moved to Tampa Heights from the carhouse, which is in a low section of the city, when it was feared water blown out of the harbor might return in the form of a tidal wave. This did not materialize, and by Sunday afternoon some of the cars were running. Service was normal Monday. Damage to Tampa Electric Company property, which included light and power, was not more than $15,000, officials say.

Service at St. Petersburg, which is under municipal management, was discontinued early Saturday evening, but cars were in operation in the city and on some suburban lines late Sunday. Service to Gulfport has not yet been completed because of a damaged bridge. Losses here were not great, and it was said that city service could have been continued but for the danger of short circuits from broken high-tension wires of the Pinellas Power Company.

A survey at Coral Gables indicates that the hurricane spent its force there to a lesser degree than in many other regions of the storm. The total property loss is put at about $1,500,000. The service on the local electric railway was interrupted by damage to overhead and track that can be repaired at small expense. Meanwhile, however, buses are covering the city on schedule.

Reports trickling in indicate that everywhere in the storm area buses performed valuable service. Many of the interurban bus services continued uninterrupted, but particularly in the Miami area was the bus requisitioned for emergency transportation. The Miami terminal of the Florida motor lines, a Stone & Webster organization, was damaged slightly. At Tampa there was very little damage to the company's property. No serious damage to buses was sustained by the Gulf Coast Transportation Company and the Tamiami Trail Tours. Weeks must intervene, however, before the facts can all be brought together from which the full story of the utilities in the storm area can be written.

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Des Moines Men Lose Wage Claim

The claim of trainmen to $56,744 in back wages alleged to be due from the Des Moines City Railway, Des Moines, Ia., under an arbitration award made in 1920 was denied by the United States Circuit Court of Appeals in a decision handed down at Denver, Colo., on Sept. 20. The opinion was by Judge William S. Kenyon. It affirmed the ruling of Judge Martin J. Wade of the Federal District Court of Southern Iowa.

The litigation grew out of an arbitration award made by J. Edward Kirbye and J. Ben Wiley in April, 1920, allowing members of the Amalgamated Association a wage increase from 60 to 70 cents an hour. The award was to be retroactive to March 1, 1920, under a working agreement signed between the men and the company in 1915.

Payment of the full Kirbye scale of 70 cents was not made until after Aug. 1, 1920, the carmen being paid the old scale by order of the federal court upon representation of the receivers that revenues were insufficient to pay the new award.

On Aug. 21, 1920, the court ordered fares to be increased from 5 to 6 cents, and stipulated that the additional revenue should be used to pay the increase of 10 cents an hour provided in the Kirbye award, the rest, if any, was to be used to pay back wages of approximately $80,000, which had accrued since March 1. After $24,000 had been used for this purpose passenger traffic fell off to a point where there was no longer a balance.

The men then demanded payment of the remaining $56,744. The court refused to order payment and appeal was taken to the Circuit Court of Appeals.

In opposing the claims of the employees, the company contended that the Kirbye award was never accepted unconditionally by the court, but purely upon the basis that it would be paid if funds became available. The company also set up a counter claim against the union in the sum of $59,727. This amount it alleged was due the company from the men under the terms of a later wage arbitration in June, 1921. Under this award the arbitrators reduced the wage scale from 70 cents to 59 cents an hour. The company contended that this award should also have been retroactive to March 1, 1921, under the 1915 working agreement, and that the workmen should have been required to return the $59,727 overpaid to them.

Judge Scott M. Ladd, who represented the men in the appeal, said application for a rehearing may be made.

Writ to Stop Vote on Five-Cent Fare in New York Denied

The application of Frank J. McCabe for an injunction restraining the Board of Elections from submitting to the voters at the coming election the Municipal Assembly proposal for a referendum on the 5-cent fare was denied on Sept. 22 by Supreme Court Justice Valente. The decision was made almost entirely on the right of the Municipal Assembly to enact the law in question and the authority of the courts to interfere with the legislative branch of the government.

Former Comptroller Craig appeared as special counsel for the city, designated by Mayor Walker to act partly because he offered the resolution later enacted by the local legislature, and for the Tammany Hall law committee which appeared to aid in upholding the proposed referendum. The case will be appealed immediately.

The local law in question makes it unlawful for the Board of Estimate to authorize or effect any change in any rapid transit contract for the purpose of increasing the fare above 5 cents, or for granting any bonus or subsidy, or from considering such a proposal until after it has been submitted to the voters upon a referendum and has been approved by a majority, and such referendum cannot be submitted to the voters unless a petition has been filed signed by 15 per cent of the voters at the last state election.

The Appellate Division Justices may arrange to hear the appeal before their regular session on Oct. 5, but in any event the case will reach the Court of Appeals before the election on Nov. 2.

Rapid Transit Plan for Seattle to Go Before Council

William Pitt Trimble's plan for a rapid transit system for Seattle, Wash., will be laid formally before the City Council at a meeting, at which members of the Council will meet in committee of the whole with members of the Rapid Transit Club and the City Planning Commission for a general discussion of the plan. The transit committee has spent more than a year in research of urban traffic problems. The plan the committee agreed upon calls for construction of tunnel and trestles at an estimated cost of between $3,000,000 and $4,000,000.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Oct. 1—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.

Oct. 1-2—Public Utilities Association of West Virginia, annual convention, Kanawha Hotel, Charleston, W. Va.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

November 16-19—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.

Rerouting in St. Louis Way to Traffic Improvement

The rerouting of several of the railway lines in St. Louis, Mo., including the merging of some and elimination of others, is being considered by Director of Streets and Sewers Brooks as a means of improving traffic conditions in the city. He plans to make all streets in the downtown section of the city one-way thoroughfares. The basic idea back of his tentative plans is to reduce the number of cars using the congested streets to a minimum, without incapacitating carriers in handling peak traffic, and straightening of lines, thus assuring quicker and better service. Some new tracks would be laid, but old tracks will remain for emergency use.

A Symposium of the Best Ideas in Railway Publicity and Advertising

From more than 5,000 advertisements and posters which have been used by electric railway companies in making contact with the public the American Electric Railway Association has selected 2,000 which it considers to be the best and possessing the strongest selling appeal. The 2,000 chosen have been assembled for presentation in a convenient looseleaf folder. Copies of this folder will be exhibited at the Cleveland convention and later each member company of the association will receive one of the books.

More than 200 pages of copy will appear in the folder at the outset and it is planned to add to these in the future as further examples of good railway publicity are received. The association thus assumes the rôle of a clearing house for publicity copy, passing on to the member companies outstanding contributions produced by individual railways or original material prepared by the association itself.

The contents of the folder will be arranged for use by member companies.

Minnesota Commission Makes Separate Appeal in Duluth Case

The Railroad and Warehouse Commission and the Attorney-General of Minnesota have joined in a separate appeal to the United States Supreme Court from a decree on fares in Duluth, granted to the Duluth Street Railway by the United States District Court in 1925. The city of Duluth had already appealed the case.

The commission and attorney general leaving all else to the separate appeal of the city of Duluth, have brought up for decision two claims:

1. That the district court of the United States for the district of Minnesota had no jurisdiction at the time this action was commenced; and

2. That, in any event, this action was prematurely brought and should have been dismissed.

The court also is asked to decide whether Chapter 278, Session Laws of Minnesota, 1921, offered by the Minnesota Legislature to appellee and others similarly situated and said to be accepted by the Duluth Street Railway as offered, is a binding agreement between Minnesota and the company.

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Recent Bus Developments

Competitive Bus System Seeks Rights in Omaha

Petitions are being circulated in Omaha, Neb., asking for the submission of the question of granting a franchise to the bus interests headed by Russell J. Walsh, permitting them to operate within the city limits in competition with the Omaha & Council Bluffs Street Railway. It is considered unlikely that a sufficient number of signatures can be secured in time to file the petitions so that the voters may pass on the question at the November election. This means no action until next May.

The Council has been enjoined by the railway from granting permits for the operation of competing buses. The company contended that a franchise was necessary and that there should be a vote of the people first. The Supreme Court took the contrary position and the injunction was dissolved. Before the mandate of the higher court reached the City Council, the Guaranty Trust Company, New York, representing the bondholders, invoked the injunctive powers of the federal court, on similar grounds, and this tied the Council's hands.

Mr. Walsh proposes to obviate the necessity of litigation by conceding that a vote of the people is required, and so will ask for one. Meanwhile the railway is adding buses in newly developed portions of the city.

Bus Lines Out of Buffalo Sanctioned

The Public Service Commission has approved a declaration of abandonment by the International Railway, Buffalo, N. Y., of that portion of its route known as its Buffalo, Kenmore and Tonawanda line and that portion of its route known as its Military Road line in the villages of Kenmore, the town of Tonawanda and the city of Tonawanda. In the commission's order the railway is required to protect the rights of holders of bonds issued under an indenture of mortgage dated May 25, 1898, by depositing with the trustee of the mortgage $2.500 semi-annually until ten payments have been made.

The Public Service Commission has granted to the International Bus Corporation, a subsidiary of the International Railway, permission for the operation of bus lines from the city of Tonawanda to the Buffalo city line and between Kenmore and Tonawanda.

Fight Likely Over New York Bus Grant

According to the *Wall Street Journal* there is likely to be a split in the Board of Estimate on the granting of bus franchises in New York City and although it may be that Mayor Walker favors the Equitable Coach Company's application it is by no means a certainty that it will be the successful applicant. That paper said:

> The sponsors of the Equitable Coach Company have kept as much as possible in the background. But it is generally understood that its backers include the engineering firm of J. G. White, William H. Woodin, president of American Car & Foundry Company and vice-chairman of the Mayor's Committee on Reception of Distinguished Guests, and Grover A. Whalen, acting chairman of the Mayor's Committee on Reception of Distinguished Guests, general manager of the Wanamaker stores and formerly Commissioner of Plant and Structures under former Mayor Hylan. At present the Equitable is operating a line of buses between the Wanamaker stores of New York and Philadelphia. Presumably if the company is successful in securing city-wide franchises it will be operated and managed by the J. G. White Company.

Bus Service Under Charter Plan at Toledo

The Community Traction Company, Toledo, Ohio, has entered the field of furnishing private bus service under charter arrangements to parties traveling to conventions, parties and outings. An announcement has been made through a regular display space newspaper advertising campaign in Toledo newspapers. James Ashton Greig is in charge of the new business. Already he has had a number of inquiries and believes that a profitable sideline business may be developed through the chartering of buses.

The Company's Message to Week-Enders

The company recently placed a fleet of buses in operation on its Front Street route, from which tracks were removed during repaving of the street. Several feeder lines are also in operation and the company has lately taken over this business itself, doing away with the old plan of farming it out.

Competitor Denied Rights in Milwaukee

Downtown Milwaukee from Grand Avenue and Sixth Street east to the North Western depot is adequately served by the railway and bus lines of the Milwaukee Electric Railway & Light Company, and another transportation line would only add to the city's growing traffic congestion problem, according to the Wisconsin Railroad Commission. So that body has denied the application of the American Bus Lines, Inc., for a permit to extend its service from its Sixth Street terminal east to the North Western depot at the lake. The city opposed the extension on the ground that it would increase traffic difficulties and it also asked that no further certificates be granted for the downtown streets pending completion of the transportation survey.

The commission declared that the city's attempt to avoid further congestion on Grand Avenue did not seem unreasonable. It held that a question of this kind is primarily of local concern and that where there is a difference of opinion between a bus company and a city over the route of interurban buses over city streets weight will be given by the Railroad Commission to the recommendations of a city.

Buses Between Lincoln and University Place

The Omaha, Lincoln & Beatrice Railway has been authorized by the Nebraska State Railway Commission to operate a bus service between the city of Lincoln and University Place, a college suburb of 5,000 population, that is shortly to become a part of the municipality. The bus line will compete for business with the Lincoln Traction Company for traffic between the State Agricultural College and the city as well as in a downtown business district loop. Three buses are to be purchased and a 10-cent fare is to be charged as against a 7-cent fare on the interurban.

The permission is granted upon the condition that the tracks in University Place, which city has been served by a spur from the main line to Bethany, another college suburb, are to remain in place until further action by the commission; that the electric service be continued until the bus service is started, and that approval be secured from the commission of the type of buses to be used.

Buses Withdrawn from Downtown Area.—The Louisville Railway, Louisville, Ky., under a new grant, has started combination bus and street car rides, with bus fares 10 cents, including transfers, and street car fares unchanged at 7 cents. Transfers can be made from bus to car or from car to bus, as desired, but a transfer and 3 cents in cash are needed upon entering the bus. Under the new contract the company is withdrawing its buses from routes which run to the downtown section of the city, and the buses will only be used for feeders to the car lines, operating from the terminals, through residence sections which have sprung up since any new car lines have been built.

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Financial and Corporate

Georgia Utilities Consolidation in Prospect

Following the filing of a petition for charter of the Georgia Power Company P. S. Arkwright, president of the Georgia Railway & Power Company, Atlanta, Ga., has announced that the purpose of the new company is to consolidate into one company such of the various electric light, power, street railway and gas companies in Georgia the stock of which has been acquired by the Southeastern Power & Light Company. The Georgia Power Company eventually will own and operate these various properties instead of having numerous separate companies as at present. The properties include, among others, the Georgia Railway & Power Company, Georgia Railway & Electric Company, Athens Railway & Electric Company, Rome Railway & Electric Company, Georgia Utilities Company, Macon Railway & Electric Company, and several other separate corporations, all controlled by the Southeastern Power & Light Company.

This consolidation of the various companies under one company will greatly simplify the situation, aid in financing the enterprise and result in a unification under one company of the various operations. The new company will be a Georgia company, incorporated under the laws of the state, controlled and managed as provided by the Georgia laws, with a board of directors, the majority of whom will be residents of the state of Georgia, and will be subject to the regulations of the Georgia Public Service Commission.

P. S. Arkwright is to be president and H. M. Atkinson is to be chairman of the board of directors. Other officers have not been announced.

D. & H. May Segregate Traction Holdings

Segregation of all the subsidiaries of the Delaware & Hudson Company is forecast in an official notice to stockholders of a special meeting to be held in New York on Oct. 26. It is stated that there will be presented for action at that meeting a recommendation of the board of managers that authority be conferred on that body "to transfer to a corporation or corporations, all the stock of which shall be owned by the Delaware & Hudson Company, all or any of the railroad properties, boat lines, traction lines, motor bus lines, hotels and other analogous interests belonging to it. . . ."

The principal traction lines owned by the D. & H. are the United Traction Company, Albany, N. Y.; Hudson Valley Railway, Glens Falls, N. Y., and the Troy & New England Railway, Troy, N. Y. The D. & H. also controls the Schenectady Railway jointly with the New York Central.

Conspectus of Indexes for September, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War High	Since War Low
Street Railway Fares* 1913 = 4.84	Sept. 1926 **7.36**	Aug. 1926 **7.36**	Sept. 1925 **7.29**	June 1926 **7.37**	May 1923 **6.88**
Electric Railway Materials* 1913 = 100	Sept. 1926 **154 2**	Aug. 1926 **153.1**	Sept. 1925 **150.9**	Sept. 1920 **247.5**	Oct. 1924 **148.5**
Electric Railway Wages* 1913 = 100	Sept. 1926 **226 1**	Aug. 1926 **225.9**	Sept. 1925 **222.7**	Sept. 1920 **232.0**	March 1923 **206.8**
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	Sept. 1926 **203 2**	Aug. 1926 **203 6**	Sept. 1925 **200.5**	July 1920 **256.4**	May 1922 **167.4**
Eng. News-Record Construction Cost (General) 1913 = 100	Sept. 1926 **208.3**	Aug. 1926 **208 3**	Sept. 1925 **202.1**	June 1920 **273.8**	Mar. 1922 **162.0**
U. S. Bur. Lab. Stat. Wholesale Commodities 1913 = 100	Aug. 1926 **149 2**	July 1926 **150.7**	Aug. 1925 **160.4**	May 1920 **246.7**	Jan. 1922 **138.3**
Bradstreet Wholesale Commodities 1913 = 9.21	Sept. 1 1926 **12.70**	Aug. 1 1926 **12 64**	Sept. 1 1925 **14.09**	Feb. 1 1920 **20.87**	June 1 1921 **10.62**
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	Aug. 1926 **155.7**	July 1926 **157.0**	Aug. 1925 **160 4**	July 1920 **219.2**	Mar. 1922 **138.7**
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	Aug. 1926 **165 3**	July 1926 **166 0**	Aug. 1925 **168.7**	July 1920 **204.5**	Aug. 1922 **154.5**
Steel Unfilled Orders (Million Tons) 1913 = 5.91	Aug. 31 1926 **3.542**	July 31 1926 **3 673**	Aug. 31 1925 **3 513**	July 31 1920 **11.118**	July 31 1924 **3.187**
Bank Clearings Outside N. Y. City (Billions)	Aug. 1926 **17 47**	July 1926 **19 18**	Aug. 1925 **17.05**	Oct. 1925 **20.47**	Feb. 1922 **10.65**
Business Failures Number	Aug. 1926 **1516**	July 1926 **1661**	Aug. 1925 **1353**	Jan. 1924 **2231**	Aug. 1925 **1353**
Liabilities (Millions)	**39 77**	**89 86**	**27 22**	**122 95**	**27 22**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads.

Milwaukee Company Heads Tax List in Wisconsin.—The Milwaukee Electric Railway & Light Company heads the list of utilities in Wisconsin with an assessment of $85,000,000 this year, compared with $74,750,000 last year. It will pay a tax of $1,897,691, compared with $1,571,561 in 1925.

Three Representatives Renominated.—The Transit Commission renominated recently Alfred E. Marling, Robert A. Shaw and Benjamin H. Namm as representatives of the public on the board of directors of the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., for another year. Their present terms expire this month.

New Directors in Nashville.—Berry S. Spain, assistant secretary and assistant treasurer of the Nashville Rai'way & Light Company, Nashville, Tenn., was elected a director of that company recently when the board of directors held a called meeting in the local office of President B. C. Edgar. John Conn Gui'd, vice-president of the Tennessee Electric Power Company, was also named on the board. The two new directors succeed H. A. Batchelor and W. R. Cole, resigned.

Consider Babylon Car Purchase.—Conferences are being held in Babylon. L. I., with a view to the purchase of the long defunct Babylon Railroad line which skirted the Long Island Railroad tracks through a large portion of the town. The village board has appointed a committee to confer with representatives of the company. The offer made to the town officials precludes the building of a new highway which would emerge at Lindenhurst. The trolley line owns a right-of-way extending 30 ft. in width to the western village limits. The entire length of the proposed roadway is about 3 miles.

Earnings Improve.—The gross earnings of the Interstate Street Railway, Attleboro, Mass., for the year ended July 31, 1926, were $177,225, compared with $171,333 for a similar period in 1925. The operating expenses, depreciation and interest fell off from $187,649 in 1925 to $136,786 in 1926. The balance, after the consideration of taxes, was $33.139, against a deficit in 1925 of $24,025.

Record of Passengers Carried Shows Gain.—For July, 1926, the number of passengers carried on the lines of the United Railways & Electric Company, Baltimore, Md., was 17,849,930, against 17,863,722 in July, 1925, according to a statement of the Industrial Bureau of the Baltimore Association of Commerce. For the seven months period ended July 31. 1926, the total number of passengers carried was 131,565.184, compared with 130,624,785 for the similar seven months period of a year ago.

Net Income Increases.—For the two months period ended Aug. 31, 1926, the total operating revenues of the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., were $8,002,457 against $7,638,705 for a similar period of 1925. Total operating expenses were $5,033,994 against $4,990,791 for the 1925 period. The net income after the consideration of income deductions was $1,246,569 compared with $1,008,175 in 1925.

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Personal Items

Berlin Traffic Expert Studies American Street Conditions

Dr. Leonhard Adler, member of the City Council and Commissioner of local traffic in Berlin, Germany, has been making a tour of a number of the principal cities of this country. The Berlin municipality, through stock ownership, controls the company operating all the street railways in Berlin, and it has recently also taken over the bus, elevated and subway services. The problem of the co-ordination of these services so as best to provide for the local traffic needs of Berlin has therefore become a very active problem in that city. It was largely to study American methods along this line that Dr. Adler came to the United States. During his trip he visited New York, Detroit, Chicago, Washington and Philadelphia, among other cities, and declared shortly before sailing on Sept. 21 that his visit had been very helpful on his problems.

In one important respect, he said, traffic conditions in Berlin differ from those in this country. There is nowhere near the number of private automobiles on the streets. The total registration or private automobiles in Berlin is only about 48,000, although the city has a population approximating 3,000,000. This difference can be explained by the higher first cost and higher operating expenses of cars in Germany, as well as by the lower average incomes of its inhabitants. Thus, while in the United States a new automobile of good make can be purchased by a workman for a price equivalent to about two month's wages, it would take a German workman two years to earn the price of a corresponding car. Gasoline retails for about 45 cents a gallon in Germany.

Dr. Adler said that while a number of buses were in use in Berlin, the street cars were being depended on to carry the bulk of the traffic. He thought this condition would continue on account of the much lower operating cost per passenger by the cars. Among recent developments on the street railway system Dr. Adler spoke of the new light-weight cars, described on page 285 of the issue of this paper for Feb. 13, 1926; also of recent carhouse construction in which the carhouse is in the center of a block and apartment buildings for the train service men on the street frontage. This is a great convenience to them and a help to the company.

Former Railway Man With Mack Trucks

William Whiteford, once vice-president and manager of the Twin City Rapid Transit Company, resigned to go into the truck business, is not to be lost entirely to transportation service, as he has been appointed manager of the northwest branch of the Mack Truck Company, which is erecting a headquarters building at University and Cromwell Avenues, St. Paul, Minn. The district is Minnesota, the Dakotas, Iowa, Nebraska, Montana, Wyoming and Colorado. Mr. Whiteford succeeds Thomas F. Egan.

R. L. Horsfield, general manager of the Cardiff Corporation Tramways, has been appointed president of the Municipal Tramways Association (Great Britain). Alderman J. Bowes, chairman of the Manchester Tramways Committee, has become vice-president.

C. E. Thorney, who has occupied the post for the last year as general agent of the Chicago, North Shore & Milwaukee Railroad, with headquarters at Milwaukee, Wis., has been promoted to general agent of the entire North Shore railway and bus systems. He left Milwaukee on Sept. 15 to take over his new duties at Chicago. Mr. Thorney went to Milwaukee as division passenger agent and later was promoted to general agent of the North Shore lines in Wisconsin.

R. S. Amis, general agent of the Chicago, North Shore & Milwaukee Railroad at Chicago, Ill., has been appointed successor to C. E. Thorney as general agent of the properties at Milwaukee.

Phil Litman, who has been in charge of the activities of the Wisconsin Motor Coach Association, as executive manager, has resigned from that post to enter the bus business in Davenport, Iowa. Mr. Litman was the first secretary of the association.

R. O. Quick has been appointed director of public relations of the Wisconsin Power & Light Company, Oshkosh, Wis., succeeding A. P. Gale, who was made manager recently of the Beloit properties of the company.

Ray K. Linsley, office manager of the Bristol & Plainville Electric Company, Bristol, Conn., has been transfered to the general offices of the Connecticut Light & Power Company at Hartford. Mr. Linsley has been connected with the Bristol company for 27 years. He joined the organization when it was the Bristol & Plainville Tramway.

Obituary

C. R. Huntley

Charles R. Huntley, a director of the International Railway, Buffalo, and president of the Buffalo General Electric Company, died on Sept. 17 after an illness of several months. He was 73 years old. Mr. Huntley also was a director of the General Railway Signal Company, Rochester, the Niagara Electric Service Corporation, Niagara Falls, and chairman of the board of the Buffalo, Niagara & Eastern Power Company, Buffalo.

Mr. Huntley started his business career as a clerk in his father's store in West Winfield, N. Y., but perhaps the most colorful periods of his life was spent in the Pennsylvania oil fields where he started as bookkeeper. Later he became an agent for a pipe line company and finally went into the oil exchange as a broker.

In 1889, when the electrical business was in its infancy, Mr. Huntley went to work for the old Brush Electric Company, Buffalo. Later he was made general manager and in 1892 the Brush company was merged with the Buffalo General Electric Company, and he became its first vice-president. He continued in this capacity until the death of Daniel O'Day in 1906 when he was elected president to succeed Mr. O'Day. He was a member of the executive committee of the Pan-American Exposition in Buffalo in 1901. He was a past-president of the National Electric Light Association and a member of numerous scientific and business organizations.

J. E. Allison

James E. Allison, for the last ten years head of James E. Allison & Company, St. Louis, Mo., consulting engineers, and former member of the now defunct St. Louis, Mo., Public Service Commission, died in St. Louis, Mo., on Sept. 19 at the age of 61 years.

In recent years Mr. Allison specialized as a valuation engineer. He served in that capacity on frequent occasions for the Interstate Commerce Commission and various state commissions and also represented public utility companies and municipalities in cases before state commissions.

Mr. Allison went to St. Louis prior to the opening of the Louisiana Purchase Exposition in 1904 as a civil and mechanical engineer. Upon the basis of his work for the world's fair he was later appointed to the city's public service commission by Mayor Wells and served in that capacity under Mayor Kreisman and in the first term of Mayor Kiel, when the commission was abolished.

He was born in Xenia, Ohio. He was graduated from Harvard University.

Robert Jemison, at one time the president of the Birmingham Railway Light & Power Company, Birmingham, Ala., died recently. Mr. Jemison was known not only as a railway promoter but he was a conspicuous figure in all industrial activities. He was recognized as one of the men who accomplished most for Birmingham. Besides being first among the pioneer real estate men of the city and one of the organizers of the original Birmingham Electric Company, he helped to consolidate various railways of the city. For twenty years he was connected in an official capacity with the electric railway system of Birmingham. He resigned the presidency in 1907 after six years in that position to become chairman of the executive board. The new position gave him greater powers but relieved him of the active duties of directing the local system. Mr. Jemison was born in Tuscaloosa 73 years ago. He was graduated from the University of Alabama. After his retirement from the railway he spent most of his time in travel and in philanthropic work.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Fewer Ties But More Poles Purchased in 1925

Data have been collected by the Department of Commerce in co-operation with the Department of Agriculture, to show the relative purchases of wood ties by electric and steam railways in 1925 and in 1923. Information has also been gathered on the relative purchases of wooden poles by railways, light and power companies and commercial telegraph and telephone companies for those two years.

In 1923 6,842,770 wooden ties of all classes were purchased by electric railways. Preliminary figures for 1925 give the total for that year as 6,187,959, a material decrease over the former period. Of the total for 1925, 1,174,312 were treated ties and the balance untreated. The largest number of any one class of untreated ties purchased were 1,558,129 heart white oaks, a wood which may readily be used untreated. Red oak ties to the number of 423,052 were reported as sold after treatment, in 1925. Figures are not available to show the relative number of treated and untreated ties sold in 1923 as no attempt was made to differentiate between them at that time.

An increase was shown for 1925 over 1923 in the matter of wooden poles purchased. The total last year was 3,291,514, while that for 1923 was 3,060,794. A majority of poles purchased in 1925 were treated, these totaling 1,768,522, while the untreated poles totaled 1,512,992. The two principal types of wood specified in 1925 were Western red cedar and Southern red cedar.

Tire Executives Comment on Rubber Situation

Bottom prices have been reached in the crude rubber market and stability of prices is assured for an indefinite period, according to the opinion of Harry T. Dunn, president of the Fisk Tire Company, who has just returned from England, where he has made a study of the rubber situation. He went on to say:

> First-hand contact with the English rubber market gives every basis for the belief that crude rubber prices have settled down to a stable price level, and I believe that every legitimate effort will be made by the planters to insure quiet, steady markets.

William O'Neil, president of the General Tire & Rubber Company, does not entirely subscribe to this optimistic forecast. He inclines more to the belief that a certain amount of fluctuation in the price of crude rubber will continue to make itself felt for some time to come. He stated that in his opinion good tires are cheaper now than they are apt to be again in the near future.

Commenting on a recent statement of the Secretary of Commerce, who attributes present rubber prices to a "rubber conservation campaign of manufacturers and consumers," Mr. O'Neil said:

> It it still true that you can't save rubber by using less of it. The consumer has not been helped by the tire manufacturer, who has taken to using more substitutes for real, new rubber in the last few months. What tire users want is mileage, and the net result of the increase in the use of shoddy, second-hand rubber and other substitutes in tires has been to lessen the wear of such tires. So the consumer, to obtain a stated number of miles from "substituted tires," must actually pay more per mile instead of less if he uses such products.

Transportation and Utility Earnings Above the Average

Transportation and public utility companies are rated somewhat higher than industry in general in the percentage of gross income applied to annual cash dividends, according to an analysis of corporate finances recently made by the National Industrial Conference Board, New York, N. Y. An average of only 3½ cents out of every $1 of gross receipts annually of all the corporations in the United States is applied to cash dividends, even in good years, it was stated. Cash dividends in 1923, the latest representative good year for which data are available, range from an average of 7 per cent of total receipts among corporations engaged in financial operations, such as banks, insurance companies and the like, to as low as an average of 1.2 per cent of total receipts in wholesale and retail trade. In the same year transportation and public utility companies disbursed 6.3 per cent of their gross receipts as cash dividends, while the manufacturing companies' total cash dividends were 3.6 per cent of their total receipts.

The total amount set aside in 1923 for improvement, expansion, making up previous losses and other capital reserves represented little more than 2 per cent of the total receipts of all corporations, and 2.6 per cent was charged to depreciation. This 2 per cent of gross receipts not disbursed in cash dividends also covered the item of stock dividends which loomed so large in creating a popular impression of great prosperity in the case of a few individual companies. But the relative importance of such surplus earnings, as regards the business of the nation as a whole, in the light of the Conference Board's analysis, obviously is very small, being only a fractional portion of 2 per cent of the total receipts.

By far the greatest portion of the gross income, 86.8 per cent, or nearly nine-tenths of the total receipts of all corporations in 1923, went into operating expenses, covering wages, cost of material, fuel, power and supplies, officers' salaries and similar items.

Irving Iron Works Holds Annual Sales Convention

More than a hundred members of the Irving Iron Works organization were present at the national sales convention of the company, which has been in session at the Hotel Astor in New York City during the past week. The attendance included officers of the company, department heads from the main office and factory at Long Island City and representatives from the 30 sales offices throughout the country.

The opening session, held on the morning of Tuesday, Sept. 21, was followed by an inspection of the factory and a baseball game between teams from the office and shop forces. A buffet supper at the plant and an evening business meeting completed the day. On Wednesday, after a morning business session and luncheon, the party traveled to Kearny, N. J., to inspect a notable installation of Irving "subway" flooring and "Safsteps" in the power plant of the Public Service Production Corporation. Returning to New York, the day closed with a banquet, presided over by Walter E. Irving, president of the company.

Thursday was given over entirely to a discussion of sales promotion and departmental co-operation. On Friday business was cast aside and the party was conveyed by private cars to Stamford, Conn., and entertained with a clambake and outdoor games at Mr. Irving's country place, Glenbrook.

Metal, Coal and Material Prices

Metals—New York	Sept. 21, 1926
Copper, electrolytic, cents per lb.	14.275
Copper wire, cents per lb.	16.25
Lead, cents per lb.	8.75
Zinc, cents per lb.	7.77
Tin, Straits, cents per lb.	70.00
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.55
Somerset mine run, Boston, net tons	1.95
Pittsburgh mine run, Pittsburgh, net tons	2.00
Franklin, Ill., screenings, Chicago, net tons	1.525
Central, Ill., screenings, Chicago, net tons	1.40
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, N. Y., cents per lb.	18.00
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.60
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.25
Turpentine (bbl. lots), N. Y., per gal.	$0.92

Track and Line

Manhattan & Queens Traction Company, New York, N. Y., plans to relocate the trolley tracks on Queens Boulevard from Jamaica to New York and the Eastern Construction Company, Brooklyn, the lowest bidder, has notified the Borough President that it is ready to start the work immediately upon the awarding of the contract. A request for an appropriation of $666,856 is to be made at the next meeting of the Board of Estimate. General Manager Duncan of the railway has stated that the work of relocating the tracks between Long Island City and Elmhurst would be completed within a period of 90 days, but during that time there will be no interruption to traffic.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

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Wider Recognition of Need for Parking Regulation

WITH admirable clarity the *American City Magazine*, in its October issue, suggests in a few brief words where we must look for a solution of the parking problem in our congested streets. "The right to move a car is superior to the right to store a car on the public ways." This is the outstanding statement in a set of principles formulated by that paper in behalf of rational city planning and sound municipal finance. A summary of these principles is given elsewhere in this issue.

Gratification will be felt by all transportation men that other influential agencies are thus aiding the fight for relief of congestion by means of parking restriction. Too often it has been left entirely to the local railway management to study the problem of congestion and suggest ways to improve the situation. No matter how fair the proposed solution might be, it usually fell under suspicion because it came from a so-called "interested party." Now, however, other agencies with no axes of their own to grind are coming to see the necessity for better regulation. In the final analysis, every citizen is an interested party, and the relief of congestion will be of benefit to all.

Taxation Relief Holds a Prominent Position Today

STUDENTS of economics have been giving much thought to the general subject of taxation, and have focused particular attention on methods that are applied to the regulated utility. For years innumerable the *ad valorem* principle has been the basic one on which most taxes were levied. Ability to pay has received but scant attention. This is not surprising when it is realized that the *ad valorem* method is not necessarily unjust in case the tax is uniform for all similar industries, and when it readily can be passed on to the ultimate user. Herein lies the difficulty in applying this principle to the electric railways. In this class of industry there are restrictions, known to all operators, that effectively limit the ability to pass on increasing costs by charging higher fares.

Recognizing this feature, tax economists have recently advanced a principle of taxation based partly on the gross revenue and partly on the net revenue. Leslie Vickers, in the article on the gross-net tax in this issue, likens this principle to that of rent. The use of facilities operated under the franchise that the state grants has a value based only on the ability of the industry to earn a profit. If the industry cannot earn a profit then it likewise cannot consistently be expected to pay more than a nominal tax. This principle is so fundamental that it should meet with whole-hearted support on the part of railway officials. One difficulty is that the electric railways may have to fight the battle single-handed, as this form of taxation is of primary value to them. Realizing this, a nation-wide effort to foster measures for taxation relief is being started by the American Electric Railway Association.

There is perhaps no greater or more important opportunity before the industry to-day to gain relief from crushing burdens than through creation of a sound and fundamental tax basis. It is to be hoped that through the effort of the association definite progress can be made during the year, and that at the next convention there will be at least one state which has recognized the gross-net tax in principle and applied it to the utilities under its jurisdiction.

Any utility regulated as to earnings is primarily a tax collector for the state. The tax thus collected should not place the utility in a position of jeopardy, as regards its ability to produce a thoroughly satisfactory service at a living wage.

A Noble Lord Is Taken to Task

ENGLAND, too, has its electric railway detractors no less virulent than those in the United States—detractors who pretend to see the passing of the electric railway. According to the *Electric Railway and Tramway Journal* of London a noble member in the House of Lords recently informed such of his colleagues in that august assembly as were present that "all progressive communities are suppressing the tramways." Of course that paper might be expected to know about any such development, but this startling statement came to it as news, just as similar statements have come to ELECTRIC RAILWAY JOURNAL on occasion. As it is that paper's obvious mission, just as it is that of ELECTRIC RAILWAY JOURNAL, to be keen and avid in its search for railway news, it lost no time in looking into the matter, lest movements of moment should be fructifying while it was under the influence of widely different impressions.

As a result of its search that paper not only failed to find any railway scrappings, but really found in many directions extensions of and additions to the pre-existing tramways. It says that this will doubtless be deemed sheer perversity by the noble lord and those of his fellow peers who take similar views. Still it ventures to draw the inference that the authorities who are thus adding to the mileage of their tramways know what they are doing and why they are doing it, whereas the noble lord and his friends have no actual knowledge of the traffic problem as a whole, of its complexities, or of requirements of the people who are neither peers nor the owners of motor cars. On the other hand, it charges them with considering themselves and their cars only, and with pooh-poohing the serious statements of highly experienced men like Sir Sam Fay, Sir Henry Maybury, and others, who categorically assert that tramways are absolutely necessary and that they

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cannot be adequately replaced by other means of transportation.

In its protest against the wild and inexact statements which are made so frequently by the enemies of tramways our English contemporary does not suppose for one moment that it will convince them of their errors. In this it is correct. That the paper, as a result of its inquiry, sees no reason to change its opinion will not affect the noble lord any more than would disproof offered in the United States with the idea of suppressing similar silly statements, made for that matter no less regally or lordly. As another contemporary said recently in comment akin to this, it is well to remember that logic would cramp the style of the man and the noble lord, too, who is given to talking through his hat.

Special Libraries Can Help Plan for the Future

KNOWLEDGE of any business, both in general and in all its details, is essential to success. Research workers are striving constantly to discover new methods, new materials, that will lead to better results in industry. They are telling the story of their accomplishments month by month and week by week in the technical and scientific press. Unfortunately, a great deal of valuable work is lost to industry through failure of others to find the published reports. Studies are made over and over, experimental researches are prolonged, and even inventions are duplicated on account of lack of access to the original publications or failure to locate the articles.

Writing in a recent issue of *Special Libraries*, C. A. Capper, director of research of the Los Angeles Railway, emphasizes the importance of reviewing the development of this industry. Quoting Jacques Loeb, "a new discovery is a combination of old ideas, and these combinations are most likely to occur to the mind of the scientist, not when he is handling material things but when he is brooding over the thoughts of other men and rethinking them himself."

Mr. Capper traces the history of transportation back to the year 1661 to find the prototype of the street car, and indicates the value of the special library in making it possible to show the tremendous changes made since that time. From this he argues that leaders in the electric railway industry should conduct researches to determine the social implications involved in the service they render. Here is a real field for the special library, and one that alone can justify its establishment.

Public Transportation— Builder of Realty Values

PUBLIC transportation has long been recognized as a builder of realty values. Placing a definite figure on the worth of the service in this connection is far more difficult. As a result, the average railway man has been content with making a general statement that a certain section has been built up through the agency of his system and let the statement be accepted for what it is worth.

Perhaps the most extensive survey ever made is that recently completed by the People's Motorbus Company of St. Louis. Prompted by increasing taxation, that company set out to show that its services had increased the taxable values of districts that had not been reached by public transportation prior to the inauguration of its services. An exhaustive research was made from public and private records assisted by specialists in the field of realty values. All the statements made were taken from official records or other authentic sources. As a result of the survey it was shown that realty values in the territory served have increased more than $36,000,000 in three years. This remarkable result was backed up by detail figures, along with photographs and maps showing the condition of the various sections before and after the development.

What is of even more value from the utility standpoint was the statement that this increase in realty values has brought to the city of St. Louis new tax revenue equivalent to more than $557,280 a year. That evidence should make it hard for even a hostile city administration to continue strangling the transportation line. Be it railway or competing bus operator, it is difficult to see the justification in levying taxes that make it impossible to give service that will attract residents to new territory, building up the city and making it a more valuable entity.

It is somewhat unfortunate that comparative figures were not given showing the values of real estate where public transportation was not furnished over the same period. That would set to rest any question as to a general rise in property values, or would give a yardstick in case there had been any material rise.

There is no reason why similar surveys should not be made in other cities where similar questions have been raised. True, it may not be so easy, for in many places the development has taken place over a long period of years. But with patience and persistence it should be possible to show, not in general terms, but specifically, just how much the transportation service has meant to the community.

The Increasing Hazard that Attaches to Street Work

CLAIMS men recently in session at a committee meeting kept getting off the subject that was up for discussion to comment on the hazards that attach to the men employed by their companies for street work. The concern of these men was deep, and well it might be. They were, of course, discussing the question informally, so that it is impossible to quote the figures of injuries and deaths sustained by their employees. These figures were distressing and the recital of actual incidents, not isolated by any means, was gruesome. These men admitted they were about at their wits' end to protect their trackworkers against the reckless automobile driver, many times a man of no means, against whom it is impossible to recover damages. Warning lights are ignored or misinterpreted and actual physical barriers intended to protect the workmen in the streets have been demolished.

Several of the men who were discussing the problem were agreed that conspicuous dress for the worker in the street was, perhaps, more potent as a preventive than were ordinary warning signs or barriers. Others felt that use should be made of both these precautions. Certainly the idea of the distinctive garb or insignia for the street worker is spreading. There is evidence of this on every side. Two notable instances in the news recently are the use of red coats by the track greasers of the Wisconsin Public Service Corporation and the addition of white belts to the raiment of the

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street workers of the United Railways & Electric Company in Baltimore. In thus attiring their men the companies are actuated by the same motives that prompted the conception of the White Wing, the creator of which sought for a garb that would differentiate the street cleaner from the pedestrian and accentuate his presence in the street. This was, indeed, an original conception at the time. It is still potent in the degree of protection it affords. No less ingenious and no less potent are the means to which railway men are resorting.

Just as the cities themselves have come to carry on at night more of their activities, such as street cleaning, ash and garbage removal, so the railways are doing more and more street work at night and in off-peak hours. There is, however, an irreducible minimum of this work that must be done when the hazards of the streets are greatest. Naturally there is no lack of a disposition on the part of the companies to afford their men the best possible protection. The problem really appears to be to discover the form or forms of protection likely to be most effectual. Nobody seems definitely to know just what this is. Undoubtedly there isn't any answer, in the mathematical sense of an exact answer, but the more the problem and the means taken to solve it are discussed the more likely is it that the hazard will diminish. As the meeting of the committee to which reference is made plainly shows, the disposition to discuss the matter is there. It is greater opportunity for such discussion that is needed, particularly as the effectiveness of all means of protection is put to a constantly increasing test as traffic increases and the automobile comes more and more into the hands of the reckless, the incompetent and the financially irresponsible.

The Fine Art of Saying Nothing at All

EARLY in the week just ended Mayor Walker of New York said that the "new subways, the independent subways, will be operated not as a losing proposition to the city and at a 5-cent fare." He assured New York that "this subway thing is going to be all right." But he was reticent about explaining, reticent to the extent that "I am not going to confide in you now the how and the why." Naturally this comment provoked an avalanche of speculation as to the how and the why. As the Brooklyn *Times* said, the how and why are very important. Indeed they are, particularly as the Board of Transportation has declared that the cost of carrying a passenger on the new lines will be 8 cents at least, and other authorities have put the cost higher. Moreover, if recollection is correct, legislative enactment provides that the new city-owned and operated subways may be run at a 5-cent fare for an experimental period only, after which they must be operated on a service-at-cost basis.

The Mayor's statement was intended to check penetrating remarks made by Stewart Browne, who "not infrequently nags the metropolitan rulers." Anyway, the comment has seemingly appeased nobody. It was agreed that the Mayor's speech was otherwise delightful, but that his remarks "sounded too much like the old, old applesauce," as one commentator said, seemingly not forgetting the eight years of Hylan rule. But that isn't all. Later in the week the Mayor said:

"The town needs a social Mayor and a business Mayor. The social Mayor would do all the social welcoming and attend all the dinners and make most of the speeches. The business Mayor would do all the work. Being the social Mayor would be one of the most delightful jobs in the world. Being the business Mayor would be one of the most responsible. But to be both would take a superman."

Still further along in his talk the Mayor said that he had been "criticised for talking foolishness, but it seemed to me that the safest compromise was to master the fine art of saying nothing at all." So far there has been little or no evidence that the Mayor is a superman, but judged on the basis of his remarks before the United Real Estate Board, the conclusion seems inescapable that in Jimmie Walker New York has a Mayor to whom the technique of saying nothing at all has no mysteries.

Electric Railways Are an Important Asset to the Electric Industry

COMPLETE disregard of the electric railway situation on the part of many of the light and power interests is one of the exasperating circumstances that face the transportation manager from time to time. There is a certain community of interest between these two utilities. In fact, they are often held under one ownership. The profits from transportation, however, have not in recent years been as high as the profits from the ever-growing electric power industry.

It is consequently disconcerting to read the recent announcement of the Society for Electrical Development in which campaigns have been planned for 33 electrical fields and to learn that electric railway transportation is not included in the list.

By referring to statistics, it is observed that the light and power industry generates about 65,000,000,000 kw.-hr. a year. To propel the electric cars in the United States it takes 12,500,000,000 kw.-hr., equivalent to nearly 20 per cent of the entire production of the light and power companies. Only about half of this electric railway energy is purchased from light and power companies, the other half being generated in railway power houses. There are thus two prospective markets for the light and power utilities: First, to take over the power supply of companies that are now generating their own, and, second, by helping to increase the use of the electric railways. And yet the Society for Electrical Development, with whatever importance may be attached to its 33 campaigns, ignores the field of the electric railways altogether!

While the electric street vehicle is not generally a competitor of the street railway, it is quite noticeable that two of the 33 campaigns are on delivery trucking and industrial trucking. It will be a long time before electric street vehicles other than the street cars can become as good customers of the light and power utility as the street cars are today. Every new passenger that the street car can get and every new extension of service that results from many new riders are a boost for both the railway and the light and power industry.

It is not so much the loss that might arise by not being included among the list of campaigns to be promoted, but the disregard of the railway industry on the part of another that should be its closest friend is certainly cause for astonishment. Electric railways are generally accepted as a basic necessity, but it is going to take a lot of hard work and hard thinking to make them a profitable necessity.

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What Is the Gross-Net Tax?

Undisputed as a Sound Method of Taxing Public Utilities, the Gross-Net Principle Is Yet Unapplied in a Single Case—The Value of a Utility for Taxation Purposes Must Be Based on Its Earning Power—The Principle of Rent Is Applied

By Leslie Vickers
Economist American Electric Railway Association

NEARLY every public utility man feels that the burden of taxation that his company is paying is a heavy one, and if it happens that he is in the street railway business he must face a host of imposts that are peculiar to his business and for the payment of which he has been singled out from other taxpayers. Here and there success has met his efforts to have these imposts removed as archaic and unreasonable—mainly relics of another transportation age—but practically nowhere has he been successful in changing a complicated and discriminatory tax system into a simple, just and scientific one. It is not that he has been lax in the matter of pointing out the shortcomings of most state taxing systems as they apply to street railways. In fact, he has pointed them out so often and nothing has happened that, in many cases, he has ceased to grumble and has settled down to bear his burden like a weary animal that realizes the load is heavy but must be borne.

But a revolt against such obvious tax discrimination and unfairness has been forming for years, and peculiarly enough it came not from the management of electric railways nor from stock for bond holders, but from impartial and disinterested students of the subject of taxation whose researches showed them the true state of affairs. The note of revolt has been sounded in economics textbooks for years and students of economics have been aware of the situation. But it seemed to be nobody's business in particular till the New York state committee on taxation and retrenchment came out with a scathing denunciation of the public utility tax law in its report of 1922.* After that it was taken up by the National Tax Association, which indorsed the findings of the New York state committee, namely, that the gross-net tax for public, regulated utilities was equitable, simple and efficient.

Almost every prominent economist and tax expert throughout the country has had something to say on the matter since that time, and the unanimity of opinion among these men is such as has seldom if ever been expressed with regard to any other taxation method. Not one dissentient voice has been raised—and yet the system which they so enthusiastically recommend is actually not in operation in any one state!

It is not the purpose of this article to relate the difficulties that beset the reformer in state taxation methods, for almost every executive has had experience in this field. Its purpose is to outline in brief the gross-net tax so that its provisions may be understood by everyone in the utility field to which we seek to apply its provisions.

In the first place, it is obvious that regulation has introduced an entirely new element into our business, and one that was not considered when most of the street railways came into existence. Of course the word "franchise" itself connotes some degree of regulation, but the operator of 30 or 40 years ago never dreamed of regulation as we have it today. The street railways in every state can now be classed as a thoroughly regulated industry, removed entirely from the field of business economics. That is, the economic laws that govern ordinary businesses have been suspended and in their place there have been substituted man-made laws that prevent the economic laws from operating. A merchant or manufacturer buys and sells in the best market he can find in open competition with others in his line of activity, and his profits are dependent on his business ability and the prevailing degree of prosperity. A street car operator is limited by franchise as to where he can operate, what service he must give, and what fares he can charge. Furthermore, the upper limit of his earnings is set as a "reasonable return" on the value of his property or his investment, as the case may be, and while he assumes all the risk that characterizes the business of the ordinary *entrepreneur* he stands none of the chances of making the profits for which the ordinary *entrepreneur* enters business.

In a word, he may be able to earn economic interest if his rates are sufficient, his traffic favorable and his management good; but he is excluded by the nature of his business from making economic "profits." This being so, the question naturally arises, how should his obligation to the state in the form of taxes be measured? Obviously the value of his property, if by this we mean his investment, is no criterion, for even if the rate of fare be adequate for the service rendered, his volume of traffic may be insufficient to produce a reasonable return.

The number of electric railways today that are operating under such conditions is legion. It is only when value is measured by earnings, or with earnings as the principal factor, that this becomes a satisfactory yardstick. To such a degree is this recognized that in

*ELECTRIC RAILWAY JOURNAL has at various times published results of this work. In the issue of Feb. 4, 1922, appears an abstract of the voluminous report to the New York State Legislature, submitted by a committee of the National Tax Association. This committee, appointed in 1920, was headed by Hon. Frederick M. Davenport, then member of the New York State Senate, as chairman. The report covered the utility tax situation in New York.

On Feb. 16, 1923, Senator Davenport delivered an address on the same subject at the midwinter dinner of the American Electric Railway Association in Washington, D. C. This address was abstracted in the issue of Feb. 17, 1923.

In the issue of the JOURNAL for April 7, 1923, an abstract of a report to the National Tax Association was given. The committee found that a utility tax on the basis of an equality with other business was sound. In its analysis the committee recommended a form of gross-net tax as perhaps the fairest to the utility and the government.

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almost every state where the so-called *ad valorem* method is in use, it is the earnings factor that is given the greatest weight.

Principle of Rent Applies to the Franchise Value of the Regulated Utility

But why consider any other factor than earnings? Assuming that the management is capable and honest, earnings are the only criterion by which we can measure the value of a franchise which some public body has granted to some private group. In fact, under regulation we should cease to talk about the taxation of public utilities at all and begin to speak of the "rent" which a utility must pay to the state for the franchise granted to it. And how is rent measured? Of two pieces of land, one on the prairie and one in the heart of New York, the former commands a low rent because its earning power is low and the latter commands a high rent because its earnings are high. While it is the position of the land that gives it rental value, it is the terms or conditions of the franchise that give the utility its value. There is such a thoroughgoing parallel between the two cases that it is difficult to conceive of any argument against the application of the principle of rent to franchises as to land—and the rental value is measured by earnings alone!

It is the principle of rent that the gross-net tax proposes to apply and secure for the state in the form of taxes, exactly what its franchises are worth, measured by earnings; or in other words, to have the state charge the utilities an economic rent for their franchises. Is this unfair to any one? Certainly not to the state, which can only expect to have returned to it what its conferred franchises are worth, and which does not, in theory at least, either overcharge or undercharge. Much honest effort has been spent in the past in trying to determine exactly what the state should charge for its franchises. It is obvious that its franchises differ in value and some yardstick should be available for measuring these differences. No one would think of paying the same rental or tax for a newspaper stand as for the right to supply a city with electricity. What makes the one more valuable than the other? Solely the possibility of earnings—and the one is more valuable than the other directly in proportion to earnings.

Further, this method is not unfair to the utility, which, far from seeking to avoid its civic obligations, is anxious, in its own interest and those of its customers, to know what it should pay for the privilege of owning the franchise. No one, even with the greatest sagacity and foresight, can tell in advance how a venture will turn out and no one can say until the earnings statement appears what a franchise is worth. It all comes back to this, that earnings alone measure the value of a franchise and determine the obligations of the operating company to the civic body that grants the franchise.

Objections to Taxation of Net Earnings Alone

Logically, then, it might appear that the way to tax public utilities would be upon a simple net earnings plan. But it must be remembered that this would result in complete escape from taxation of many corporations and the introduction of an unhealthy principle of the avoidance of all state obligations. It is generally agreed that every individual and every corporation enjoying the benefit of government should contribute something to the cost of such service, and that these services are provided for the fortunate and unfortunate alike. Therefore there should be some minimum payment exacted from every individual and corporation, whether they are prosperous or not. Besides, the expenses of the modern forms of government are not sufficiently flexible to permit of easy adjustment to the great yearly changes in income that might follow the introduction of a simple net earnings plan. The gross income tax represents both the state's security against abnormally lean years and the corporation's obligation to contribute to the expenses of the body politic. Both of these are important enough to justify some degree of taxation no matter what the earnings situation may be.

What are "gross earnings" and what are "net earnings"? The New York Legislature committee defined them as follows: "The committee suggests that gross earnings be defined as all receipts from the operation of a public utility and that net earnings be defined as net earnings from the operation of a public utility after deduction of operating expenses and taxes assignable to operation except special franchise taxes in this state, or the gross-net tax itself." In the case of New York State it was necessary to consider the special franchise taxes, but the committee recommended their removal by constitutional amendment and the replacement of all taxes by the gross-net tax. The important feature about the gross-net tax, in addition to its equity, is its simplicity, for it is designed to replace all other taxes.

There are several ways of applying the gross-net tax, but the simplest of them is "one which imposes a varying rate on gross earnings, the variation in rate depending on the relationship of net to gross, the companies paying higher taxes as their profits increase and lower taxes as they decline." The exact percentages to be applied will vary according to the tax needs of the state and to the willingness of the tax assessing bodies to recognize what is fair as between public utilities themselves and as between public utilities and other corporations. But in order to bring in to the state of New York about the same amount of taxes by the gross-net method as are now collected by other methods the committee made the following suggestion:

Every company shall pay an annual tax which shall be based on gross earnings and which shall be the percentage of gross earnings fixed herein:

Net Earnings in Per Cent of Gross Earnings	Per Cent of Gross Earnings to Be Paid as Tax
When less than 5	1
Between 5 and 10	1¼
Between 10 and 15	1½
Between 15 and 20	1¾
Between 20 and 25	2
Between 25 and 30	2¼
Between 30 and 35	2½
Between 35 and 40	2¾
In excess of 40	3

That is all there is to the gross-net tax—it is simplicity itself, it achieves equality, and it metes out justice. Unfortunately, its adoption by the various states is not an equally simple matter, for in some cases a constitutional amendment would be required, and in almost all an attempt to tax public utilities by

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This Locomotive Pulled a Train of 108 Cars at a Maximum Speed of 32 M.p.H.

a different method would provoke a storm of protest from other groups upon whose shoulders must fall any burden from which the public utilities might be relieved.

But even constitutional amendments, both federal and state, have been, and can be again, brought about by enlightened public opinion; and as the sphere of public utility influence through customer ownership and users increases, so will the demands for justice in taxation for the utilities increase.

No tax change of this kind, however desirable and just, can be brought about by ordinary political means, but it can be brought about by the intensive education of those who use the services of the utilities and bear the burden of taxation. The education of their customers is one of the duties of management in this industry, and if they apply themselves to it the desired results are sure to follow.

A Mile-Long Train Pulled in Electric Locomotive Test

New York Central Gets First of Two Large Freight Locomotives Which Will Be Used in Handling Freight Between New York City and Harmon

WITH a capacity more than double that of any electric freight engine already in service on the New York Central lines out of New York City, a large, dual-unit locomotive was given a series of exhaustive service tests by railway officials on Sunday, Sept. 19. A train of 108 freight cars, a mile in length, was hauled for more than 100 miles at a maximum speed of more than 32 m.p.h. Three round trips in all were made between Harmon and Morris Heights by the 170-ton locomotive with its trailing load of 3,000 tons.

The train of cars used in the test was said to be the longest ever seen in New York City. Only about half as many cars may be handled effectively by electric switching locomotives previously used by the railway. The new locomotive is of the swivel type, with two units, the cabs of each being connected by an articulated joint. Centering devices are also provided which normally hold the two cabs in line, although they are capable of relative movement on sharp curves. The swivel trucks are provided with centering devices to prevent oscillations when running at the maximum speed of 60 m.p.h.

Eight motors, using forced ventilation, furnish the motive power, one being mounted on each axle. Multiple-unit control is provided so that the entire locomotive may be operated from either end. The underframe construction is unusual in that the cab platform consists of an integral casting, made by the Commonwealth Steel Company, instead of being built up of fabricated material, as is usually done with so large a locomotive. The truck frames are also integral steel castings.

Electrical equipment for the new locomotive was provided by the General Electric Company, while the unit was constructed by the American Locomotive Company. It is the first of two for use in main line work on the New York Central between the city and Harmon and on the west side to 72d Street when that section is electrified. Officials of the railway and representatives of the General Electric Company were present at the tests, which included motor temperature, current consumption, train speed and acceleration.

Three methods of measuring motor temperatures were used. These consisted of applying thermometers to the motors, using special exploring coils placed in the armature slots and connected through slip rings to instruments in the caboose coupled directly behind the locomotive, and measuring the resistance of the motor windings. Temperatures by means of the exploring coil method were taken at regular intervals throughout the entire test, while the two other methods were employed at the beginning and end of each run. Results of the tests indicated that the locomotive could haul the specified tonnage without injurious heating.

H. A. Currie, assistant electrical engineer New York Central, was in charge of the tests and was assisted by J. T. Seaver, assistant engineer electrical engineering division; J. A. Carmody, superintendent of electrical equipment, and a crew of 24 of the electrical staff.

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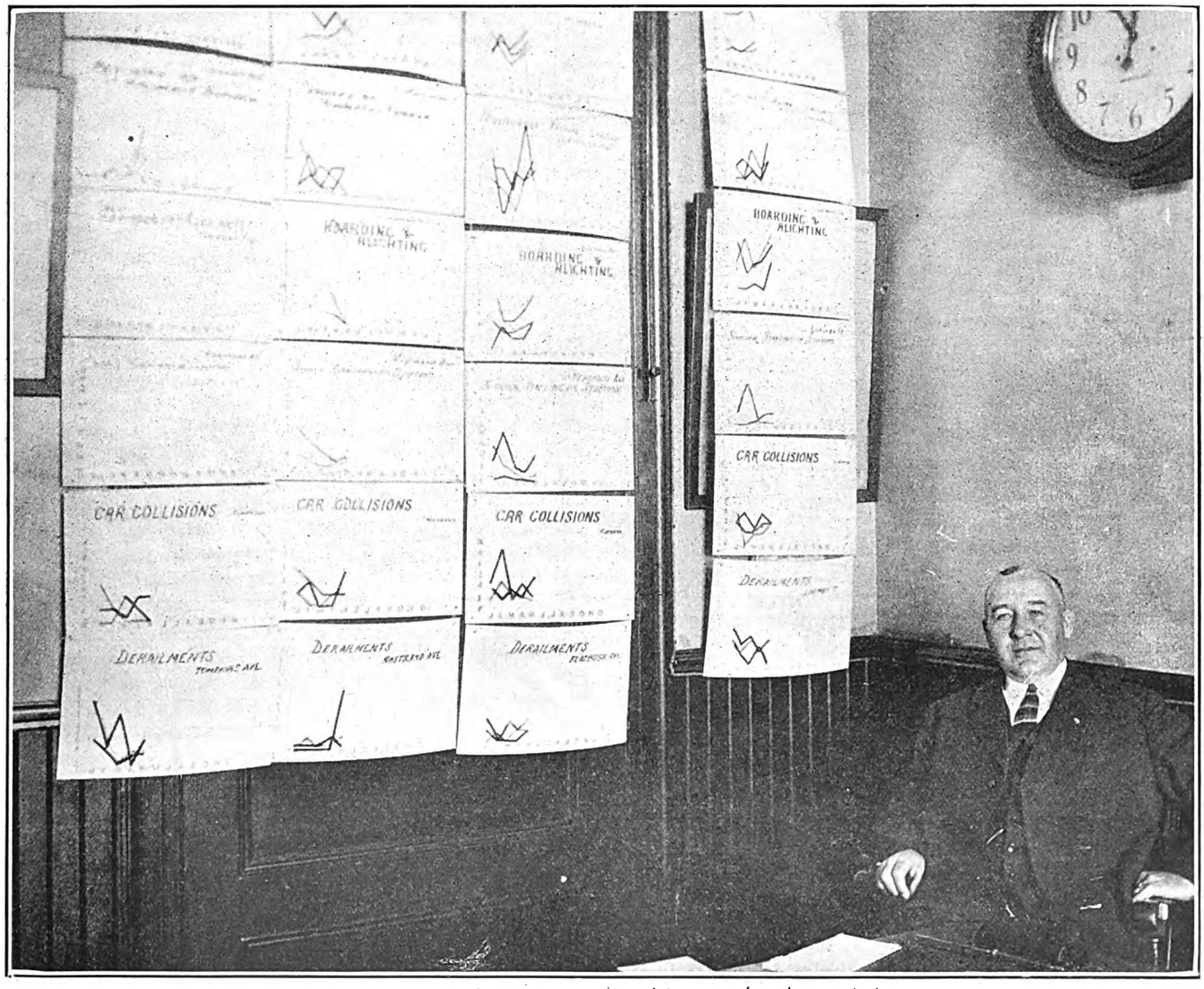
Brooklyn City Railroad Pays Bonus for Accident Immunity

Extended Accident Prevention Work Is Being Conducted on Prominent Brooklyn Property—Spot Maps, Charts Showing Accident Data and Safety Bulletins Are Posted Prominently in Each Operating Depot—Method of Reporting Accidents Carefully Worked Out

MUCH attention is being given by the management of the Brooklyn City Railroad to accident reduction. The latest step in an extended effort along this line is the offer of a bonus of $5 to operators for every 30 days without accident. An account of the establishment of these prizes was published on page 289 of the issue of this paper for Aug. 21, 1926. Briefly, the company agrees to pay $5 to each conductor, motorman and safety car operator for every 30-day working period, completed on or before Nov. 30 of each year, during which the employee operates his car without an accident. This 30-day working period does not mean a calendar month, but days actually worked, i.e., excluding days off. The only proviso is that to receive credit for a day the man must work at least eight hours of the day. An accident for which the operator is in no way responsible will not be counted against him. The plan went into effect on Aug. 1, 1926, and payment will be made to the men on Dec. 15 for the period up to Nov. 30 of each year.

"Spot" Maps Help Toward Safety

As explained, this bonus offer is only one step of a large number which the company has taken to reduce accidents and to determine the cause of those which occur. One method employed along this line for some



Detailed Comparative Charts of the Accidents on Each Division Are Kept Posted in the Office of Each Division Superintendent

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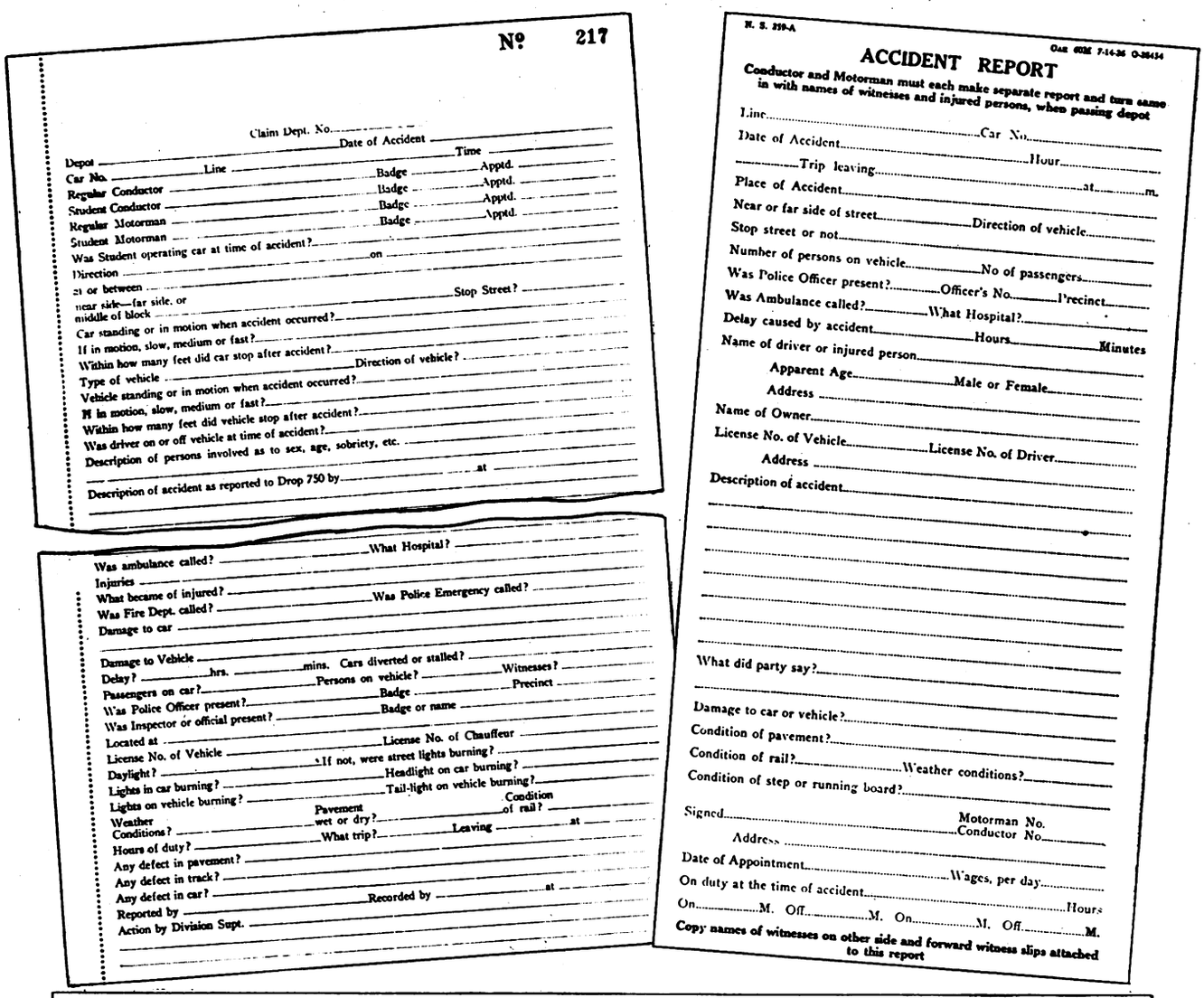
time is the practice followed now by a number of electric railway companies of compiling "spot" maps to show the location and character of every accident on the line. On the Brooklyn City Railroad these spot maps are made more definite by having a separate map for the routes operating out of each depot and of compiling these maps monthly. In other words, there are seven maps, one for each depot, and on each map the location of every accident is indicated each month by a pin. The pin heads are of different colors to identify the kind of accident. The classification used covers twenty different kinds of accidents, as follows:

A. Car collisions (violation of operation rules.)
B. Car collisions with cars for foreign companies.
C. Car and vehicle collisions.
D. Persons or animals struck by cars.
E. Boarding or alighting accidents.
F. Sudden starting or stopping, fast operation around curves, etc.; throwing passengers to floor or against seat or side of car.
G. Derailments.
H. Life guard falling and damaged.
J. Trolley wire and trolley poles.
L. Defective condition of pavement or track causing accidents.
O. Negligence in handling doors, gates or seats.



Nº 217

Claim Dept. No.
Date of Accident
Depot Time
Car No. Line Badge Apptd.
Regular Conductor Badge Apptd.
Student Conductor Badge Apptd.
Regular Motorman Badge Apptd.
Student Motorman
Was Student operating car at time of accident?
Direction on
at or between
near side—far side, or middle of block Stop Street?
Car standing or in motion when accident occurred?
If in motion, slow, medium or fast?
Within how many feet did car stop after accident?
Type of vehicle Direction of vehicle?
Vehicle standing or in motion when accident occurred?
If in motion, slow, medium or fast?
Within how many feet did vehicle stop after accident?
Was driver on or off vehicle at time of accident?
Description of persons involved as to sex, age, sobriety, etc.
Description of accident as reported to Drop 750 by at

Was ambulance called? What Hospital?
Injuries
What became of injured? Was Police Emergency called?
Was Fire Dept. called?
Damage to car
Damage to Vehicle
Delay? hrs. mins. Cars diverted or stalled?
Passengers on car? Persons on vehicle? Witnesses?
Was Police Officer present? Badge Precinct
Was Inspector or official present? Badge or name
Located at
License No. of Vehicle License No. of Chauffeur
Daylight? If not, were street lights burning?
Lights in car burning? Headlight on car burning?
Lights on vehicle burning? Tail-light on vehicle burning?
Weather Conditions? Pavement wet or dry? Condition of rail?
Hours of duty? What trip? Leaving at
Any defect in pavement?
Any defect in track?
Any defect in car?
Reported by Recorded by at
Action by Division Supt.

N. S. 259-A

Car 60M 7-14-36 O-36454

ACCIDENT REPORT

Conductor and Motorman must each make separate report and turn same in with names of witnesses and injured persons, when passing depot

Line Car No.
Date of Accident Hour
Trip leaving at m.
Place of Accident
Near or far side of street Direction of vehicle
Stop street or not
Number of persons on vehicle No of passengers
Was Police Officer present? Officer's No. Precinct
Was Ambulance called? What Hospital?
Delay caused by accident Hours Minutes
Name of driver or injured person
Apparent Age Male or Female
Address
Name of Owner
License No. of Vehicle License No. of Driver
Address
Description of accident
What did party say?
Damage to car or vehicle?
Condition of pavement?
Condition of rail? Weather conditions?
Condition of step or running board?
Signed Motorman No. Conductor No.
Address
Date of Appointment Wages, per day
On duty at the time of accident Hours
On M. Off M. On M. Off M.
Copy names of witnesses on other side and forward witness slips attached to this report

	JAN		FEB		MAR		APRIL		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.	Class	Disc.
1																								
2																								
29																								
30																								
31																								

A—Car Collisions
B—Car and Vehicle Collisions
D—Persons Struck
Name
E—Boarding
EE—Alighting
F—Sudden Starting or Stoppng
Year
Apptd.
O—Negligence
R—Disturbances
S—Clearances
Depot
T—Employes Injured
Z—Miscellaneous
Badge No.

The Accident Report Blank Made Out by the Car Crew, at Right, Covers the Principal Points. The More Comprehensive Blank at the Left Is Used by the Accident Clerk at Depot. Below, Individual Accident Records Are Kept on This Blank for Each Transportation Employee

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Q. Equipment parts broken or defective, not otherwise classified.
R. Disturbances.
S. Clearance accidents, passenger striking "L" columns, passing cars or other obstructions.
T. Employees injured.
V. Windows broken.
W. Substances falling from "L" structures, etc.
X. Persons falling on stairways or platforms.
Y. Passengers falling from platforms to track.
Z. Miscellaneous.

It will be noted that as there are twenty classes of accidents and 26 letters in the alphabet, some letters through the list are undesignated. This is so that additions to the classification can be made, should any be thought desirable in the future.

Two sets of maps of this kind are brought up to date daily. One set is kept in the office of the general manager of the company. There is also a map posted in a conspicuous place in each depot, correspondingly marked for the routes operating out of it. This map is also brought up to date daily. It is mounted in a wooden frame and illuminated at night by lamps above it. This enables every man operating out of that depot to keep in immediate touch with the accident situation of all cars on the route, notice the dangerous crossings as regards vehicular collisions or collisions with other trolley cars, boarding and alighting accidents, clearance accidents, etc. These charts are also used as the basis for conferences on ways to reduce accidents, talks to the men by representatives of the management, division superintendents, etc.

Comparative Charts Are Also Compiled Monthly

Besides the spot maps, the company compiles monthly for posting in every depot a comparative graphic representation of the accidents occurring during the month for the past three years on the routes operating from that depot. This chart gives the accident data on the basis of each 10,000 car-miles run and is printed in colors on a poster measuring 14 in. wide by 22 in. high. The chart also carries a list of the unreported cases for the month, i.e., those cases which are brought to the attention of the management through its claims department or otherwise but have not been reported by the crew. Of course, in some cases, perhaps in most cases, the lack of a report does not mean the crew or operator was negligent in not reporting the case. The motorman, conductor or safety car operator may not have known that such an accident occurred, as when the rear of a car hits an automobile a very slight blow on rounding a corner, or when a passenger who has alighted is struck by a vehicle while passing to the curb.

In the original chart, as shown in an accompanying illustration, the 1926 line is printed in red, the 1925 line in yellow and the 1924 line in green. In the illustration these different colors can be indicated only by the relative darkness of each line.

The data on which these charts are based are available on the tenth of the month following that covered by the comparisons. The charts are then immediately printed and are posted in the depots not later than the fifteenth of the month. As will be noted, depots are arranged in the order of accidents, the depot having the lowest record of accidents per 10,000 car-miles appearing first.

Publication of the number of unreported accidents has been found to stimulate the reporting of accidents which members of the crew might not otherwise have reported.

Detailed charts of different classes of accidents by the cars operating out of each depot are also posted in each depot for the use of the division superintendent and the men under his direction.

How Accidents Are Reported

There is a great variety in the forms of accident reports used by electric railway companies, but the blanks employed by the Brooklyn City Railroad possess perhaps more than the usual interest because of the high traffic density on the streets in Brooklyn, as well as the fact that nearly all of the lines of the company are on city streets.

Spot Maps of This Kind Help Car Crews to Know Where Accidents Are Apt to Occur. They Are Framed and Hung in Each Depot

The first report made of an accident by the conductor, motorman or operator is an oral one. If there is a street inspector or supervisor present or near at the time of the accident, the facts are told to him and he telephones them to the depot of that route. If there is no such official in the immediate neighborhood, the car operator is instructed to tell the facts to the first inspector or supervisor whom he may pass, and also to telephone the depot about it at his first opportunity. The written report of the accident is made out by the operator after he returns to the depot at the end of his trip and is dropped into a special slot box for that purpose.

In all telephone reports of accidents, whether by an inspector or operator, the facts are reported in the

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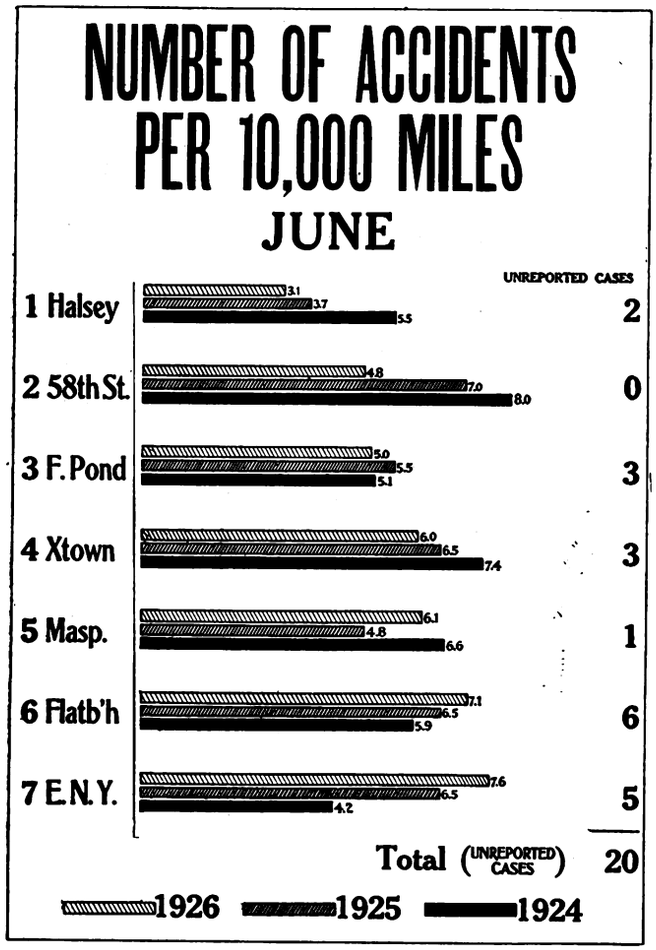
order followed in the standard report blank. They are taken down over the telephone by the depot clerk in this same order and entered in duplicate on the standard accident blank. The clerk then immediately calls up the main office, asking for "drop 750," and gives a summary of the information reported. He then sends the original of the blank he has made out to the main office and retains the duplicate in his accident report binder.

The clerk at headquarters receiving this information keeps in his typewriter six tissue sheets, and as the information is given, he types it as it comes over the telephone. One copy is then sent directly to the claim



Charts with Comparative Accident Records for the Past Three Years Provide Another Way of Stimulating Care in Operation

department and other copies to the heads of other departments concerned. Thus, if the accident was caused by any defect in the track or developed any such defect, a copy would be sent to the head of the track department of the company.

The blank at the right of the two shown on page 570 is that used by the car crew in making reports. That at the left in the group is the one employed by the depot clerk.

As explained, a report of every accident of which there is a record goes promptly to each division superintendent so that he has extended details shortly after the occurrence. He also has the names of the transportation employees involved and can interview them promptly as to their responsibility and other details. If he feels as the result of this inquiry that the men should lose the chance of their bonus for the 30 days concerned, he tells them so and the men have an opportunity at this time to set forth any reasons why they think the accident should not count against the payment of their bonus.

Other Office and Claim Department Records

In this statement of record kept of accidents, mention should be made of the card index of accidents kept individually for every motorman, conductor and safety car operator. There are two such records, one at the depots and one at the main office. The depot record is kept on a card with space for each day during the year on which the classification of the accident and the discipline administered can be entered. This card record is kept alphabetically by names of employees. A very similar record is kept in the main office except that there the record is kept in Kardex index record, which is considered more convenient because records have to be kept here of all the platform men on the system, numbering altogether about 2,400.

It is considered desirable to keep each division superintendent informed of the later history of every reported accident on his division. This is a plan sometimes neglected on other properties. On the Brooklyn City Railroad, in every case where a settlement is made amounting to more than $50, the claim department gives all facts to the division superintendent together with any special points which may have come up, indicating the advisability of a change in operating practice from that depot, or special instructions to the motorman or conductor involved in the accident.

Results Have Been Encouraging

The safety program of the company, as outlined, is in the general charge of A. L. Hodges, assistant to the general manager, and the board of directors feels that its policy of checking accidents and rewarding operators for immunity from accidents, as described, is giving good results. Previous to the establishment of the bonus system, the company gave credit for immunity from accidents for 25 consecutive working days. The merit and demerit system of discipline is employed on the Brooklyn City Railroad, and these credits were added to individual records in the usual way. Since the announcement of the bonus system, these credits are no longer entered on the employee's record.

Still another practice of the company has helped to reduce accidents, it is believed. This is the plan of bringing suits for damages to cars caused by vehicular collisions for which the operator of the vehicle was responsible. Information of this kind comes in, of course, with the accident reports already described. If, after an examination, the company believes that its employees were not responsible for the accident but the driver of the other vehicle was, a letter is sent to the owner of the vehicle causing the injury, setting the damages at a definite figure and stating that the company expects to be reimbursed. If no reply is received within a reasonable time, the matter is turned over to the claim department, which is asked to bring suit.

The present cost of damages on the Brooklyn City Railroad amounts to about 6 per cent of the gross receipts, which is considered low for a property operating purely city service under the congested street conditions existing in Greater New York. It is hoped that even this figure will be reduced.

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London Tramways Improve Service to Meet Bus Competition

Discontinuance of Trailer Operation and Installation of More Powerful Motors Have Resulted in a Substantial Increase of Speed —Better Lighting and Use of Comfortable Plush-Upholstered Spring Seats Have Made the Car Interior More Attractive

Westminster Bridge, Where Tramcars and Buses Are in Active Competition

LONDON is a battleground of competitive transportation undertakings. Illuminating figures are quoted in a recent report issued by the London and Home Counties Traffic Advisory Committee showing the rapidity and extent of the growth of bus competition with tramways during the last six years. In January, 1920, the number of buses plying for hire in competition with the municipal tramways was 612, with an average seating capacity of 34. Four years later they had increased to 1,166, and in January, 1925, to 1,318, with an average seating capacity of 50. At this point the position appears to have been stabilized by action taken under the London traffic act of 1924. Conditions such as these convinced those responsible for the operation of tramways of the prime necessity of bringing them to the highest standard of efficiency both in respect to speed and comfort. With this end in view various steps have been taken to increase the popularity of the service.

Speed Increased to 9.51 M.P.H.

According to the records of the London County Council Tramways the average speed of cars has risen from 9.29 m.p.h. in 1922-1923 to 9.51 m.p.h. in 1924-1925. This increase in two years is the more noteworthy because of the densely congested and thickly populated district served by the L. C. C. system.

Two factors have been primarily responsible for the improvement — first, the discontinuance of trailer operation, and, second, the installation of higher powered motors.

In 1922 the London County Council Tramways was operating trailers on three important routes on the southern part of the system, namely, Victoria Embankment to Norbury, Victoria Embankment to Merton, and London Bridge to Greenwich. At that time there were 150 trailers on the system. While it was felt by the management that trailer operation had been satisfactory at the time of its introduction, more recently it had become a source of serious delay by reducing the speed of all cars on routes where trailers were used. Moreover, in bad weather the open upper decks of the trailers were not being used to the fullest extent. For these reasons it was decided to make careful investigations to determine whether or not it was desirable to continue the operation of trail cars. Tests were carried out on the Merton and Streatham routes, in order to make a comparison between the operation of routes with and without trailers.

From these tests it was found that the operation of single units possessed many advantages over the operation of trailers, including reduced running time, time saving in changing ends at the terminus and increased revenue. On the Merton route the reduction in running time amounted to six minutes in an average round-trip time of 96 minutes, or in other words an increase in speed of 0.7 m.p.h. On the Norbury route the time saved was four minutes in the morning and six minutes

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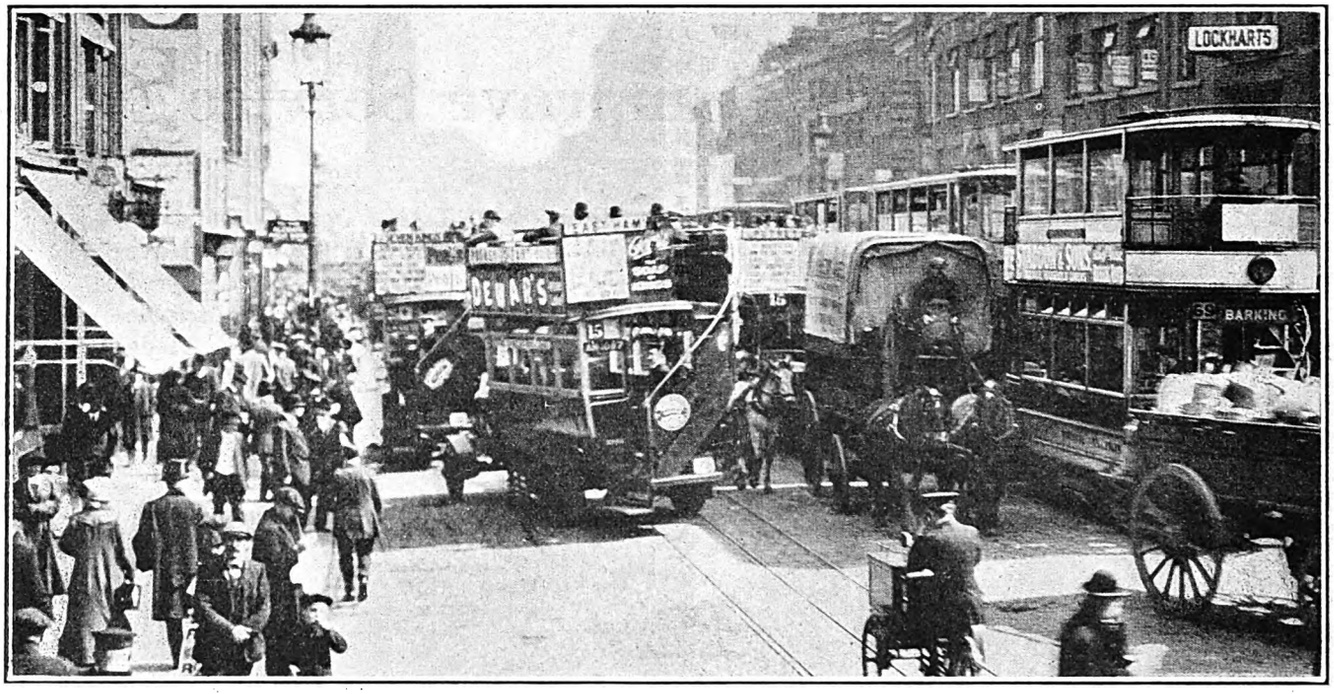
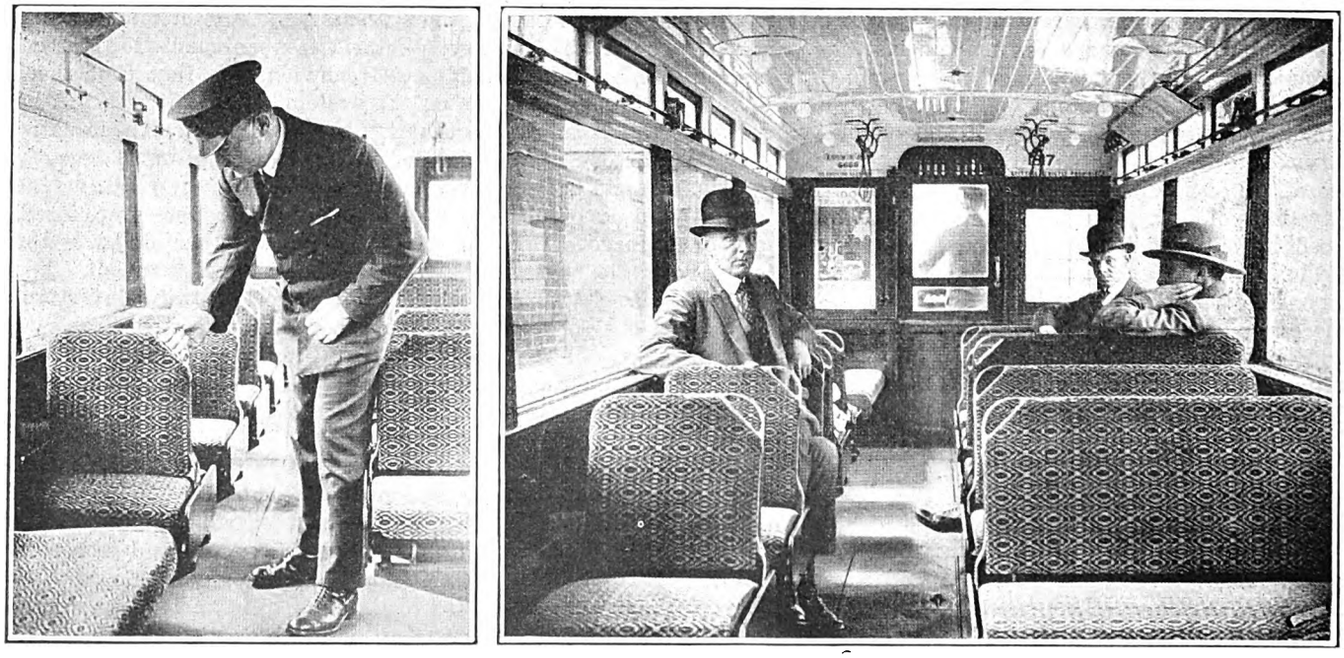


On Many Streets in London Tramways and Buses Vie with Each Other for Traffic

in the evening on an average round trip of 99½ minutes, equivalent to an increase in speed of 0.5 m.p.h. As a result of these tests it was decided that it would be more economical to operate the service with motor cars only and discontinue the use of trailers on all of the tramway lines.

In March, 1923, the London County Council Tramway management came to the conclusion that it would be possible to effect considerable improvements and economies in the service by substituting modern, up-to-date motors for the older equipment on the cars used on certain routes where conditions were favorable to the attainment of higher average speeds. The latest type of car purchased by the Council had been fitted with high-power ventilated motors and had been in operation sufficiently long to convince the officials of its value. As a result of using the new type of motor it had been found that considerable reductions were effected in the cost of operation, while at the same time there was an increase in speed.

As the first step in this direction, 200 cars built in 1907-1911 were equipped with two 60-hp. motors each in place of 42-hp. motors. The latter were substituted in place of 35-hp. and 30-hp. motors on older cars. In February, 1924, an extension of this scheme was decided upon and an additional 200 cars were equipped with 60-hp. motors. Thus a total of 800 cars were re-equipped with motors of higher capacity, the cost being about £300,000.



At Left, Spring-Cushion, Plush-Upholstered Seats Are Being Installed on Cars of the London County Council Tramways to Encourage Traffic. At Right, Installation of Additional Lamps Gives 60 Per Cent Better Illumination Inside the Car

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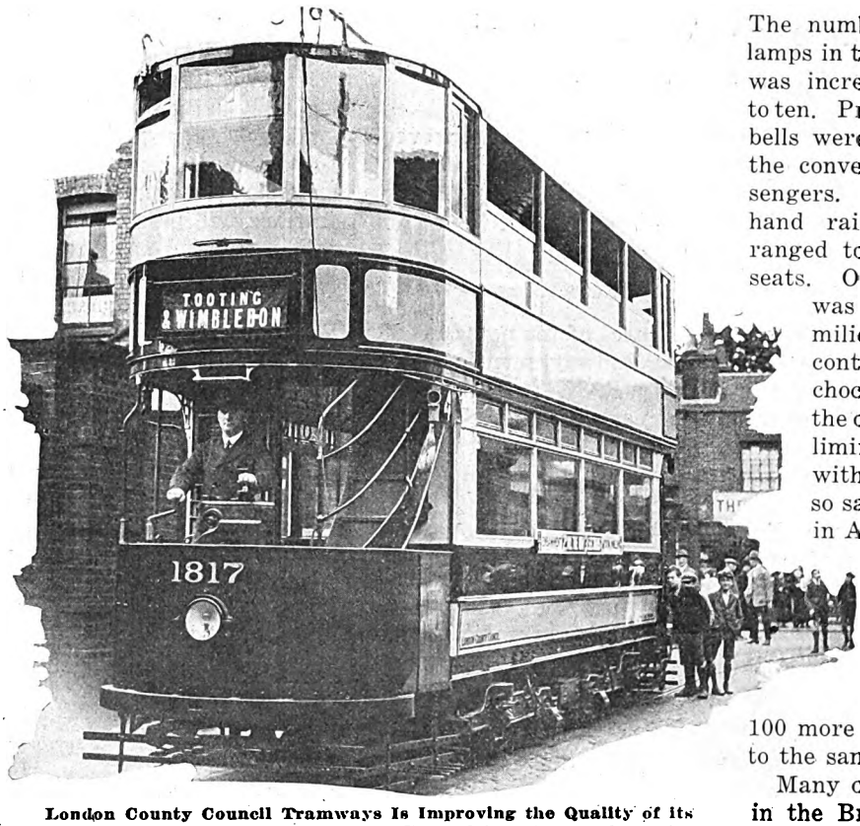
The effect of these changes on the speed of operation is shown in the accompanying table.

During the war and immediately afterward it was not possible for the London County Council to maintain the cars and track in their usual efficient state. For this reason figures for years prior to 1920-1921 are not given. By 1922, however, the pre-war condition had been regained, and it was obvious that something of a positive character was necessary before any substantial improvement in speed could be attained. The discontinuance of trailer operation and the installation of more powerful motors have accomplished this end. As shown by the tabulated figures there has been an increase of 0.25 m.p.h. in speed and an increase of 5.5 miles operated per car per day.



London County Council Tramways Is Improving the Quality of its Service by Installing More Powerful Motors and Rearranging the Interior of Cars of This Type

Assuming that two trailers are equivalent to one motor car, it will be seen that the average number of cars in use in 1924-1925 was only ten more than in 1922-1923, but the total mileage was 4,500,000 more. The increase in car mileage was from 63,500 to 68,000, or more than 7 per cent. Had this been accomplished entirely by placing additional units in service, 100 more cars would have been required. Thus the increase in speed has been equivalent to the provision of 90 new cars on the system, or, allowing for necessary spare equipment, the saving is equivalent to the annual interest charges on 100 new cars and their operation for fourteen hours a day.

RESULTS OF EQUIPMENT MODERNIZATION

Year	Average Speed, M.p.H.	Average Number of Cars in Use		Miles per Day per Car	Total Mileage, Millions
		Motor Cars	Trailers		
1920–21	9.02	1,278	116	120	57½
1921–22	9.13	1,325	112	121	59½
1922–23	9.29	1,421	76	121½	63½
1923–24	9.49	1,445	17	124½	64*
1924–25	9.51	1,469	...	126½	68

*Strike during ten days.

CARS MADE MORE COMFORTABLE

After having made these changes, which increased the speed of tram cars to the same or greater than that of the buses, the management next turned its attention to increasing the passenger comfort of the vehicle. An experimental car was built embodying many improvements in design. Five cross seats on each side of the center aisle with longitudinal seats in each of the four corners were provided on the lower deck. The floor was covered with a thick cork carpet. The number of electric lamps in the lower saloon was increased from six to ten. Pneumatic signal bells were arranged for the convenience of passengers. The ceiling hand rails were rearranged to suit the new seats. Outside the car was painted in vermilion, in striking contrast to the dull chocolate color of the other cars. Preliminary experience with this car was so satisfactory that in August the London County Council authorized the equipment and rearrangement of 100 more cars according to the same plan.

Many other tramways in the British Isles are faced with similar problems of bus competition and are considering taking similar steps to meet the situation. The subject was discussed at length at the annual meeting of the Municipal Tramway Association Sept. 8-10. An abstract of these proceedings appears on page 584.

To Park or Not to Park

IN BEHALF of rational city planning and sound municipal finance in connection with street widening, transit construction, etc., the *American City Magazine* in its October issue suggests a statement of principles concerning parking and storage of automobiles applicable in all cities. The first of these is to the effect that streets are primarily provided for general use as lines of communication and that the rights of the different classes of traffic to unlimited use of the streets, including the right to park, are subject to the public and civic welfare. Another states that the right to move a car is superior to the right to store a car on the public ways, although there is no objection to unlimited parking where it does not interfere with the expeditious movement of traffic and with reasonable access of vehicles to the curb. All future department stores, theaters, tall office buildings and other business structures catering to large numbers of customers or tenants should be built with the knowledge that space must be provided off public streets for loading and unloading merchandise and storage of customers' automobiles.

Favorable comment on these principles is made in the same issue by Robert Whitten, city planning consultant, New York; S. J. Williams, director public safety division, National Safety Council; Walter Jackson, fare and bus consultant, Mount Vernon, N. Y., and A. H. Outhank, chief domestic commerce division, U. S. Department of Commerce.

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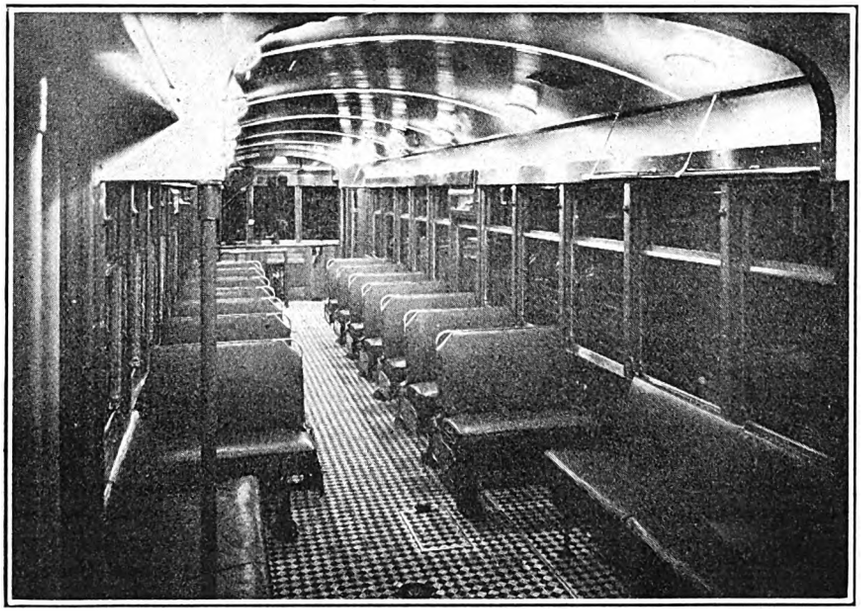
Youngstown Adopts Series Car Lighting

Twenty Lamps in a Single Circuit Provide Improved Illumination at Lower Cost—Newly Developed Cutout Makes Detection of Dead Lamps and Replacement Easy

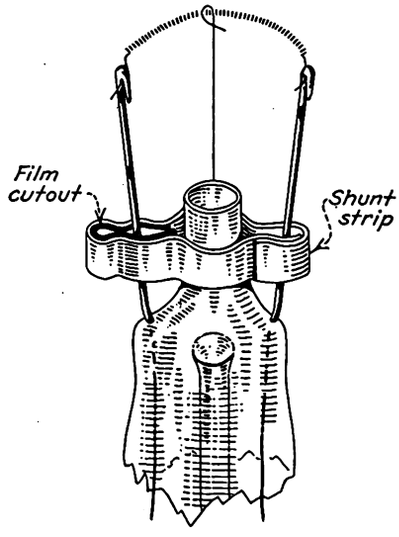
BY H. H. HELMBRIGHT
National Lamp Works, General Electric Company

NOT the least among the features of the new cars of the Youngstown Municipal Railway, mentioned in the article in last week's issue by R. N. Graham, manager of this company and the Pennsylvania-Ohio Electric Company, is the system of lighting. A series of twenty lamps on one circuit replaces the ordinary five-in-series method.

Remove any one of the inclosing shades above and there you will find an automatic cutout lamp, used for the first time as standard equipment by any operating company. This new lamp is the result of several years work on the part of the incandescent lamp development laboratories of the General Electric Company, located at Cleveland, Ohio. Several preliminary installations were described in ELECTRIC RAILWAY JOURNAL for Aug. 22, 1925, page 275.



This Picture of the Car Interior Was Taken Entirely by the Light of the New Lamps. Note Absence of Glare



The Film Cutout Short Circuits the Lamp in Case of a Burnout or Break in the Filament

In order to appreciate the real meaning of this new development it might be well to explain the difficulties which have been experienced in the past when attempting to use gas-filled lamps on street railway circuits. Past practice has called for the operation of vacuum-type lamps arranged in series circuits of five lamps each. When Mazda C (gas-filled) lamps of the ordinary type are operated on such circuits serious arcing is encountered when a lamp burnout occurs while the circuit is alive. This arc, due to the conductive effect of gas, is often sustained indefinitely. It will continue to melt away the lead wires and carry on through to the lamp base, usually ruining the socket and wiring. This difficulty has been a serious handicap to the street railway field, for the latter has not been able to keep pace with the better illumination trend in other fields using gas-filled lamps.

The new lamp is so constructed that the burnout arc is quickly "killed" by means of a small nickel and aluminum device clamped around the lead wires, which provides a shunt across them should the lamp burn out. A simple aluminum oxide cutout on one of the lead wire locations will break down should a lamp filament break while unlighted and it will shunt the lead wires when the circuit is again energized. The construction and method of installing this device are shown in one of the illustrations.

In another diagram is shown the seating arrangement of the cars and also the locations of the lamps. All outlets shown in the seating portion of the car are equipped with Ivanhoe inclosing-type street railway luminaires fitted with short-circuiting sockets which permit the replacing of lamps without disturbing the other lamps in the circuit. The platform outlets are equipped with deep bowl white enameled steel reflectors. These reflectors direct the light toward the steps and also prevent specular reflection from the cab windows reaching the operator's eyes. One lamp is provided in the Hunter sign at each end of the car. Electric Service Supplies Company's No. SR-95 Golden Glow headlights are connected with the rear center platform outlet by means of a throw-over switch, so as to provide for double-end service. Each of these outlets uses a 30-volt, 1-amp., A-19 inside frosted bulb Mazda C lamp and all are connected in a single series circuit across the 600-volt line. Therefore, a string of twenty lamps is used. Had the voltage been 5 per cent more, or 630 volts, 21 lamps would have been installed.

The accompanying graph shows the intensity as well as light distribution secured. These data were obtained by taking illumination measurements at normal reading position (33 in. above the floor) at the locations shown. Since the car interior is of symmetrical design only one-fourth of the car area was considered, this method being accepted as sufficient to provide an average for the entire car. It will be noted

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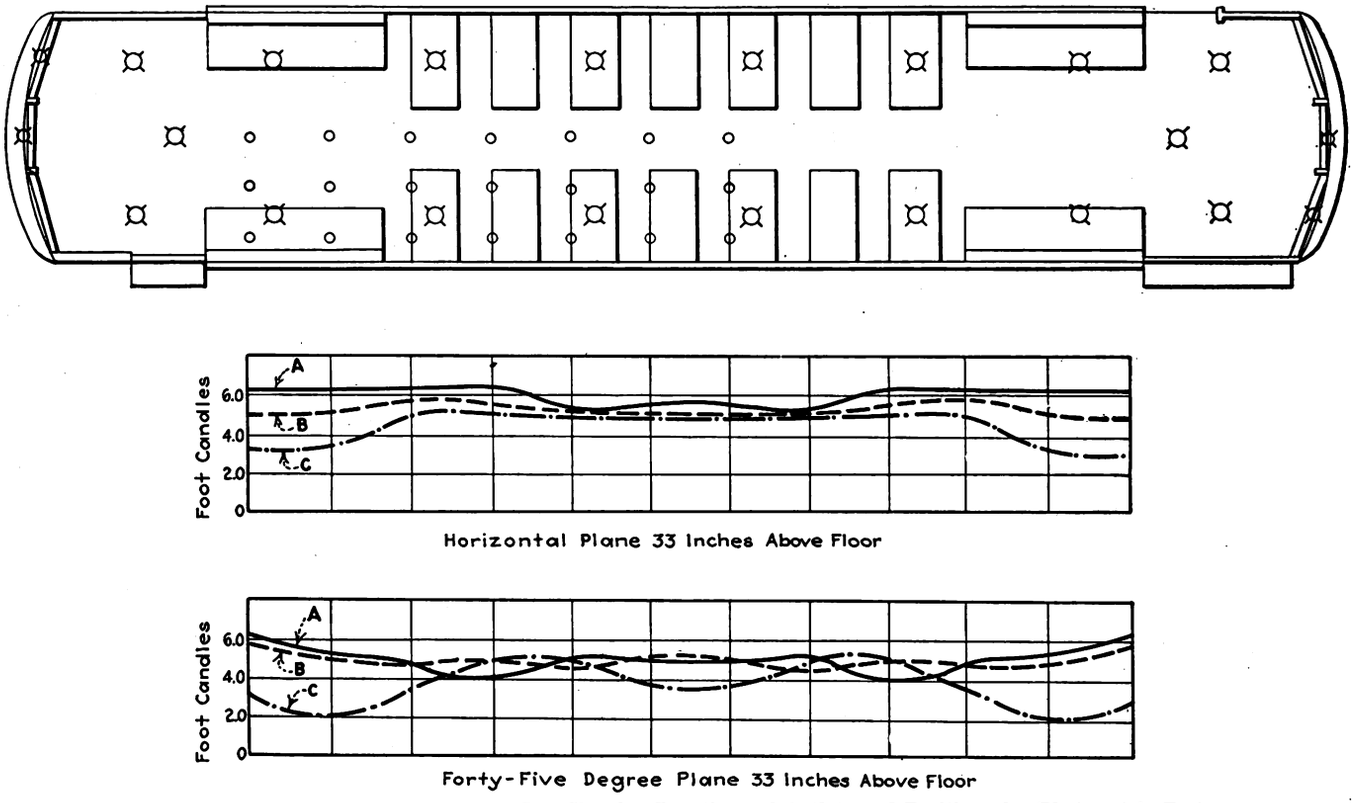

Above, Floor Plan of the Youngstown Car, Showing Locations of Outlets and Positions for Photometric Tests. Below, Light Intensities in Horizontal and 45-Deg. Planes at Reading Height

that the average intensity for the seating portion of the car of 6.0 foot-candles is obtained on the 45-deg. reading plane. Approximately 360 watts are used in this section.

Using for comparison the illumination provided by 36-watt, 120-volt, Mazda B lamps arranged in circuits of five lamps each, 570 watts would be required to provide this same intensity. On the basis of the results with 36-watt, 120-volt Mazda B lamps throughout the car a total of 820 watts would have been required, compared with 600 watts using the cutout lamp.

However, the light efficiency of this gas-filled lamp is but one of its many advantages. For instance, when a lamp burnout occurs, the one lamp only becomes darkened; the remaining nineteen lamps, although connected in the same series circuit, continue to operate. This greatly facilitates replacement of the burned-out lamp. It is unnecessary to check the circuit, as required when using five ordinary lamps in series.

Heavy Filaments Give Long Life

The filament in the Mazda C lamp is approximately 2½ times as large in diameter as that used for the standard 36-watt Mazda B lamps and is about one-fourth as long. It is coiled and supported at three points. These features provide a lamp that not only is highly efficient but extremely rugged. The short life experienced from Mazda B lamps due to filament interlocks is entirely eliminated.

Another advantage experienced by the Pennsylvania-Ohio company is that the problem of lamp theft is practically solved. The new lamp, being designed to operate at 30 volts, will immediately burn out when placed on house lighting circuits.

Many complimentary remarks have been made by the patrons of the Pennsylvania-Ohio company since the cars have been operating. An abundance of light is furnished and at the same time glare is reduced to a minimum. The white ceiling, together with the low brightness of the lighting glassware, has made this possible.

Group Insurance Expanded at Schenectady

CONTINUED co-operation between the management and employees of the Schenectady Railway, Schenectady, N. Y., has resulted in an expansion of the company's group insurance program to include health and non-occupational accident protection and accidental death and dismemberment coverage. Life insurance, in force for about two years, totals approximately $480,000, and is about the same in amount as the accidental death and dismemberment insurance.

The combined insurance plans enable an employee to receive a maximum of $1,000 life insurance and $1,000 accidental death and dismemberment protection. Under the provisions of the health and accident policy, an employee will receive benefits ranging from $10 to $20, according to the size of his weekly salary.

Through the provisions of the accidental death and dismemberment policy, the family of an employee killed in an accident will receive $1,000, in addition to the death benefits established by his life insurance, while if the employee suffers the loss of an eye, limb, or of any two members, he himself will receive a cash payment of either $500 or $1,000, according to the extent of his injury.

The insurance, under both new and original contracts, is being underwritten by the Metropolitan Life Insurance Company and covers about 360 employees of the railway.

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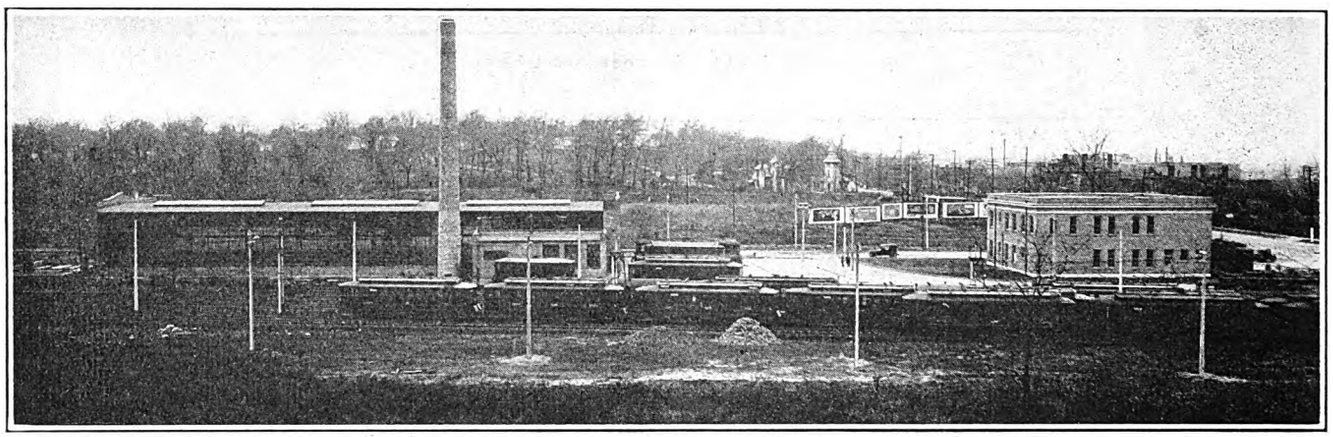
Accidents Reduced in St. Louis

Much Credit Is Due to the Activities of the Safety Director—Prizes Offered for Various Safety Contests on the United Railways System

CONTINUED decrease in the number of accidents on the United Railways of St. Louis has resulted from the interest in safety matters created through the work of E. K. Eastham, safety director of that system. For the year 1923 there averaged 2,112 accidents per month. In 1924 this was reduced to an average of 1,781, in 1925 to 1,738 and in 1926 for the first four months to 1,619 per month. The high point of 3,181 car-miles per transportation accident was reached in July of 1925. Practically every month for the last two years has resulted in a higher mileage per transportation accident than the comparative month the year previous.



One of the Thirteen Stations of the United Railways of St. Louis at Which Safety Work Is Being Actively Promoted by the Safety Director. This View Illustrates North Broadway Car Station, Completed Less than Three Years Ago

These results are accomplished in a number of ways; one or two different kinds of contests are always in progress. In the past, contests have been run between the different car stations of the property for the best reduction in automobile collision accidents in which a $100 prize was given. At another time a $100 prize was offered for the best reduction in the total of all accidents and a similar prize in another contest was given to the car station making the best reduction during the year previous of claims arising on which no reports had been filed.

How the Records Are Calculated

Every three months the motormen and conductors producing the best accident records are given a dinner by the company. The comparison on which the best accident record is calculated in this safety dinner contest is based on a number of points. First comes the item of boarding and alighting accidents, the score on this point being determined by the number of passengers carried per accident. The second point is based on all other transportation accidents and is scored by taking the sum of the total mileage plus one-tenth of the passengers carried and dividing this sum by all accidents. The third point is the calculation of per cent of "no reports claimed." Scoring for this point is obtained by dividing the number of no reports claimed by the total of all accidents.

Certain stations operate greater proportional mileage in the congested districts. In order to put these carhouses on a parity with other stations, they are assigned arbitrary handicaps from par or zero to twelve points for those carhouses where the traffic conditions are the worst. The final scoring to determine which carhouse receives the dinner is obtained in the following manner: The stations are first listed in their relative order in regard to the first point named above, boarding and alighting accidents. The station ranking first received 39 points, the station ranking second 36 points and so on down the list, subtracting three each time. The second point above, all other transportation accidents, is listed in the same way—the station at the top receives 26 points and the next station ranking below receives two less points, and so on down the list. Similarly the no report claims are calculated. The station ranking first in this receives thirteen points and each station below in turn receives one less, and so on. These points are then added together with the handicap allowed and the station having the highest number of points receives the dinner.

Beginning with March 1, 1926, another contest was started. The carhouses having the three highest scores for the six months beginning with that date may each elect one trainman to attend the National Safety Congress in Detroit with Mr. Eastham.

In addition to these contests many meetings are held. Safety work is considered to include personnel work as well. There is a safety committee on the property. Every two months two additional men are elected, one motorman and one conductor from each station. Old members do not retire, but stay on the committee. At present this committee numbers about 400, there being about 32 men from each station. Meetings of the safety committee are held once every four or five weeks.

Fatalities in which the United Railways was involved in any way were 31 in 1925. This figure is compared with the lowest record of fatalities occurring in 1920 and 1922 with 25 fatalities and the high point in 1910 of 70 fatalities. The safety director, in further reporting on the activities of his department in 1925, stated that 305 meetings that were directly connected with safety work on the United Railways were held during the year. There were 78 other meetings either of the St. Louis Safety Council or committees of that council. Safety talks to the number of 195 were given by the safety director during the year.

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Maintenance Notes

Service Obtained from Trolley Wheels

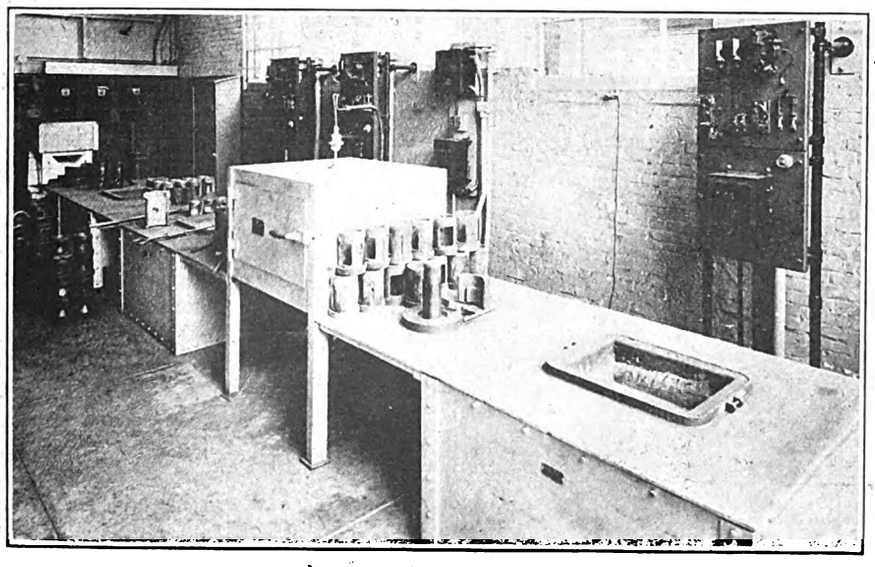
DISCUSSING results obtained with standard makes of trolley wheels, the Electric Railway Association of Equipment Men, Southern Properties, gave some interesting figures at the tenth semi-annual meeting. The Dallas Railway, Dallas, Tex., uses a 6-in. wheel with a 1-in. axle and obtains an average of 3,500 miles per wheel. This company is now testing out trolley shoes and finds that they reduce the number of delays. Cars are equipped with two trolley poles, one of which has a wheel for backing up. The trolley wire is lubricated every three months at a cost of approximately $1 per mile. This company also uses some 4-in. diameter wheels and obtains an average of 8,000 miles.

Of other railways discussing this question, the Chattanooga Traction Company, Chattanooga, Tenn., uses a 4-in. wheel and obtains 1,800 miles. The Mobile Light & Railroad Company, Mobile, Ala., averages 6,000 miles from a 4-in. wheel. The Knoxville Power & Light Company, Knoxville, Tenn., uses a combination of trolley shoe and wheel for backing up, and has had trolley shoes in service now on its interurban lines for two years and found them entirely satisfactory. The company uses 18 to 24 lb. tension at the wire. The Birmingham Electric Company, Birmingham, Ala., uses a 6-in. wheel and obtains 9,000 miles for the wheels and 5,000 from bushings. The Arkansas Central Power Company, Little Rock, Ark., uses 4-in. wheels with ½-in. axles and obtains 9,500 miles. Both the Georgia Railway & Power Company, Atlanta, and the New Orleans Public Service, Inc., New Orleans, La., use 6-in. standard wheels, Atlanta obtaining about 6,000 miles in city service and New Orleans 11,000 miles.

Electrically Heated Babbitt Pots Installed

WHAT is probably the first complete installation by an electric railway of electrically heated babbitting equipment has been made by the Los Angeles Railway, Los Angeles, Cal. This equipment is used for rebabbitting the car journal and armature bearings. The installation consists of three electrically heated and automatically controlled melting pots and a preheating oven, all of General Electric manufacture. In addition, an electrically heated Oakite cleaning tank and various metal-lined bins and benches made in the shops of the company have been installed.

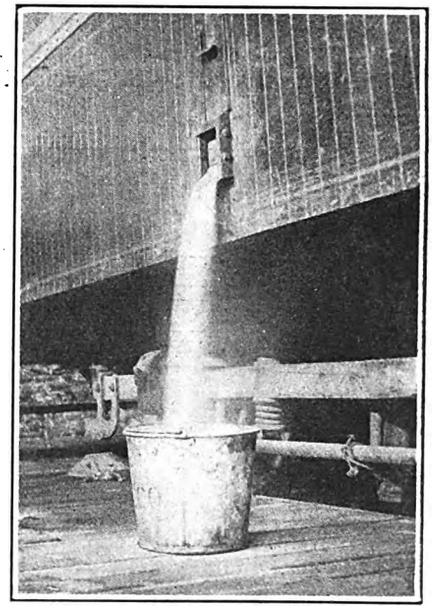
Great effectiveness in the babbitting process is obtained by maintaining a uniform temperature with the thermostatic control. This is set for the correct heat, which is then automatically maintained constant. The Oakite cleaning tank, the melting pots and the preheating oven are arranged in order to obtain the most efficient step-by-step process of production. Methods used in rebabbitting bearings were described in the ELECTRIC RAILWAY JOURNAL for July 26, 1926.



New Bearing Section of the Los Angeles Railway Shops

Old Passenger Cars Converted to Sand Cars

HAVING a number of old passenger cars which had fulfilled their period of usefulness as such, the Portland Railroad, Portland, Me., converted several of them for duty as sand cars. In this capacity they serve two functions, the first being to operate as track sanders in periods of inclement weather, while the other is in their use as sand reservoirs while in the shops. Small sand gates located in the sides of each unit are shown.



Filling a Pail from the Gate in the Side of a Rebuilt Sand Car

Large bins constructed in each of the sand cars contain 5 cu.yd. of sand when filled to capacity. All of the fittings, such as seats, heaters, etc., were removed from the interiors of the cars when the bins were added. No further changes were necessary, other than to provide the necessary sand feeders for covering the rails and inserting the sand gates.

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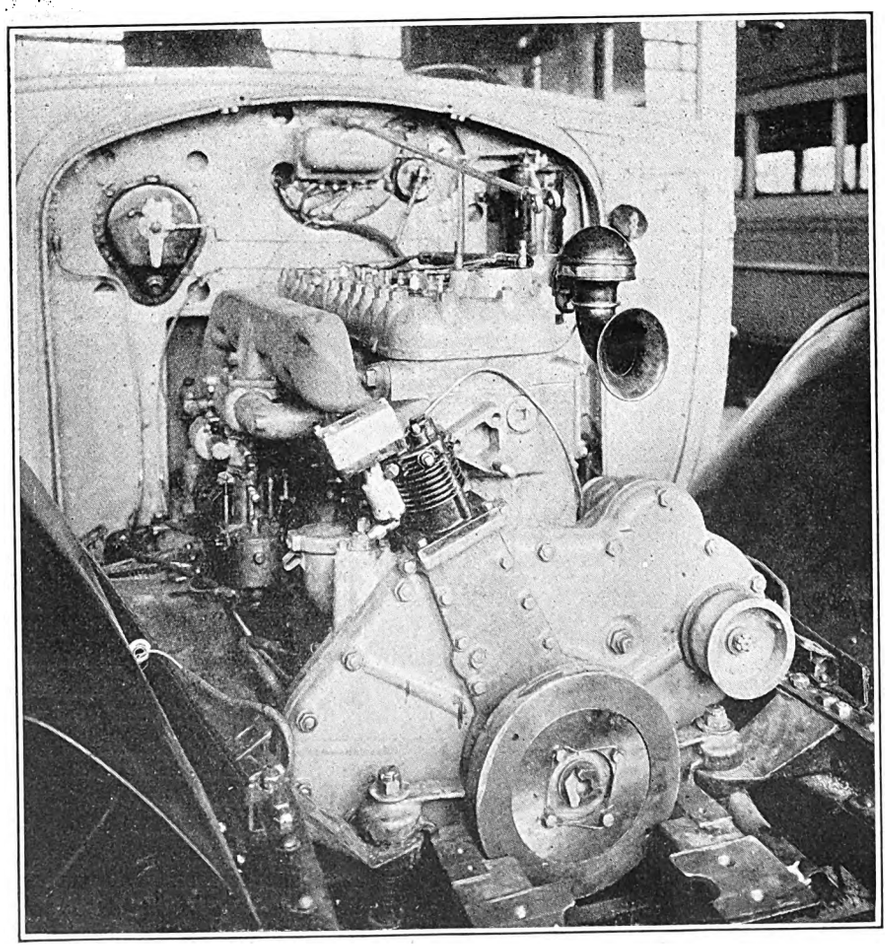
New Equipment Available

Front-End-Mounted Compressor

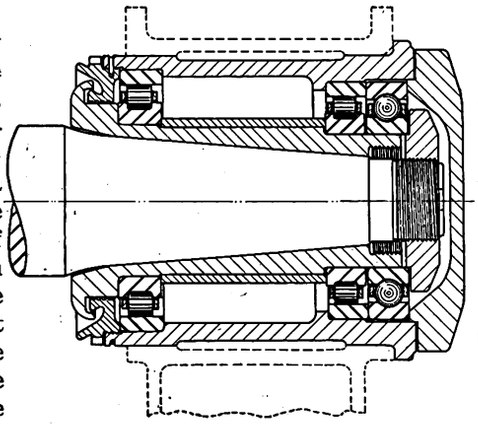
FOR the purpose of getting away from troubles caused by undue strain upon timing gears, chains, belts or universal joints, the Christensen Air Brake Company, Cleveland, Ohio, has worked out a compressor for mounting on the front-end gear case cover plate of the vehicle engine. This is driven directly from an eccentric on the main crankshaft. This makes it practically an integral part of the engine and, besides, a very simple construction and drive. This type of mounting for the compressor has been incorporated in several different makes of buses. The one shown in the illustration is on the front-end gear case cover plate of a Continental Model 14H engine installed in a six-wheel bus for the Cleveland Railway.



Christensen Compressor and Governor Mounted on Front-End Gear Case Cover Plate of Continental Model 14H Engine Installed in Six-Wheel Bus in Service on the Cleveland Railway

Improved Roller Bearing Mounting

BOTH radial and thrust loads are cared for in a combined roller and ball bearing, designed particularly for electric railway use, which has been announced by the Norma-Hoffman Bearings Corporation, Stamford, Conn. The radial loads are carried on roller bearings and the thrust loads on ball bearings, all being mounted on a tapered sleeve. The ball bearings are thus relieved of all radial loading as they do not have contact around the outer periphery. The accompanying drawing shows the construction used in this new design of axle box mounting for electric cars.

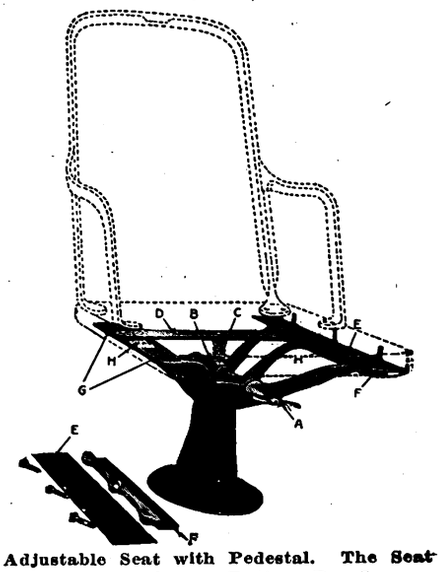


Combined Roller and Ball Bearing Designed for the Axle Boxes of Electric Cars

Advantages claimed by the manufacturer include a reduction in tractive resistance, quicker acceleration and easy dismantling without destroying the original fit of the inner rings on the sleeves. Adequate protection is provided against dirt and moisture and ample space for lubricants.

Adjustable Seats for Bus Drivers

SEATS of the adjustable type for bus drivers have been developed in two styles by the Eberhard Manufacturing Company, Cleveland, Ohio. In one of these styles the seat is provided complete with pedestal. In the other style the seat is designed to be mounted directly on the battery box in such a way that the box cover



Adjustable Seat with Pedestal. The Seat for Mounting on Battery Box Is Similar in Style

and the seat can be tilted to inspect the battery.

It is possible for the driver to move the seat backward or forward to suit his own comfort merely by turning the thumb screw *A*, which is shown in the accompanying illustration. It is unnecessary for the driver to leave the seat in making this adjustment. The screw which moves the seat into the desired position also locks it in place. Flat springs are so arranged that the operating mechanism cannot rattle under road shocks. Both of these types of seats will be on exhibition at the A.E.R.A. convention in Cleveland.

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Powerful Snow Fighter and Dumper Designed

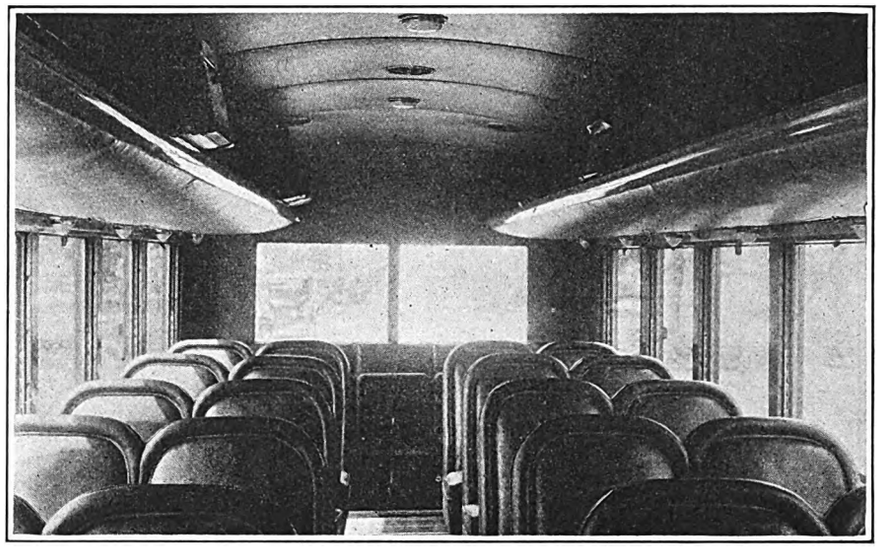
DRIVEN by a 100-hp., six-cylinder engine the new snow-fighter and dumper now offered by the Walter Motor Truck Company, Inc., Long Island City, N. Y., has tremendous pushing power. A special transmission is provided with five forward speeds so as to give a range of ten to one.

The front plow is a new patented type designed to throw the snow well off the road. This is of particular value in steam-electric railway tracks. The plow can be swung to either side to take advantage of traffic or drift conditions. A center scraper is spring mounted so it can scrape right down to the road surface.

Combination Guide Rail and Luggage Loft

BAGGAGE racks of an unusual type have been incorporated in a recent de luxe city type bus body built by the Baker-Raulang Company, Cleveland, Ohio. A lined compartment extends along each side of the bus. It provides sufficient capacity to care for the hand luggage of the passengers. At the edge is a guide rail finished in a natural wood, which serves to steady passengers in going to and from their seats and for the support of standing passengers. This type of construction lends a pleasing appearance to the de luxe model bus, which has leather-covered seats.

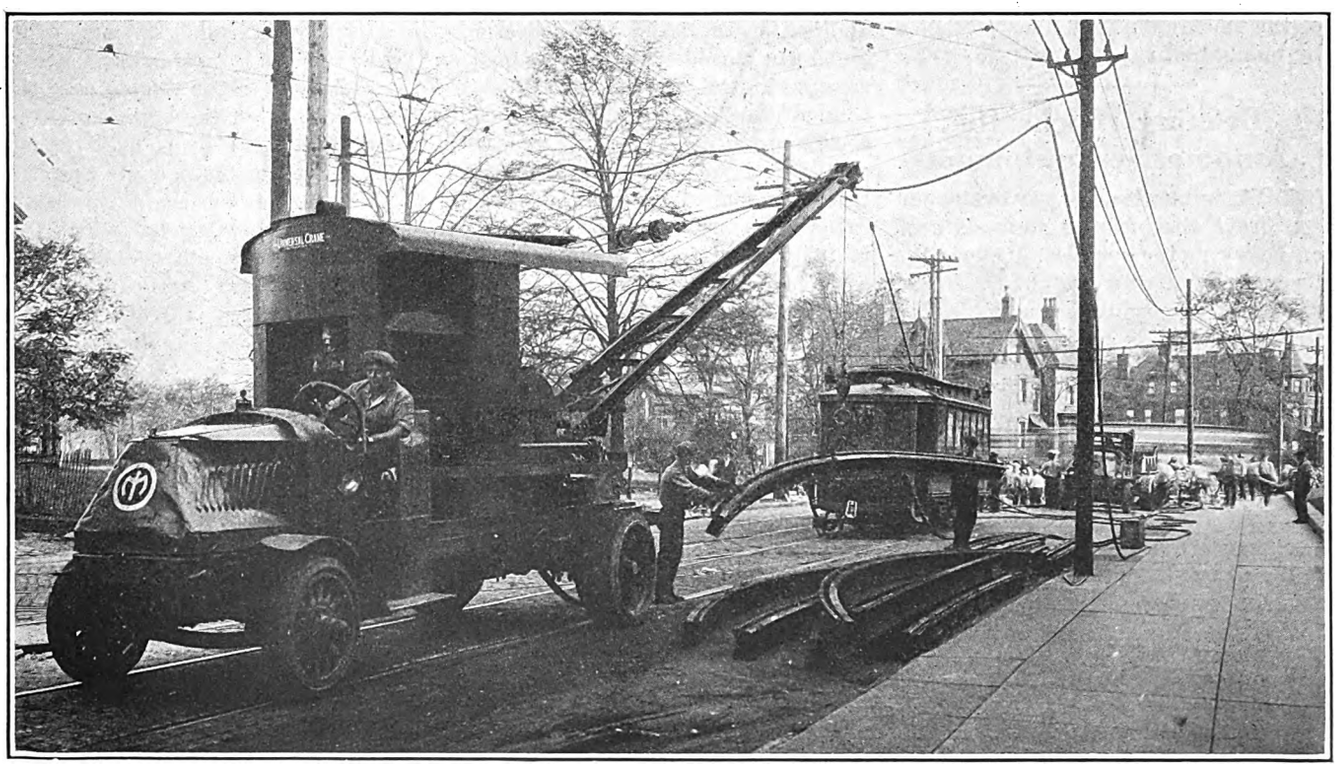
Another feature of the Baker-Raulang design is the use of five individual folding seats across the rear of the bus.



Improved Bus Construction Provides Folding Seats Across the Rear and a Combination Guide Rail and Luggage Loft

Two Heavy Capacity Cranes

SIMILAR in many respects to the 5-ton size of crane but of a capacity of 6 and 7½ tons respectively, two new units have just been brought out by the Universal Crane Company, Cleveland, Ohio. The 6 and 7½-ton units are rated at 12,000 and 15,000 lb. respectively at 10 ft. radius. Their development is the outgrowth of a demand for the mobility, adaptability and all around speed of this type of unit. The appearance and size of the new units are the same as for the present 5-ton crane. They are full revolving with a swing speed of 6 r.p.m. The rope speed is 140 ft. per minute. The units are gasoline-powered with a 44-hp. Waukesha motor and are one-man operated, only three levers and one pedal being used to control various swinging and bucket operations.



For Placing Rails in Position After They are Unloaded at the Side of the Street the New Cranes Are Found of Particular Convenience

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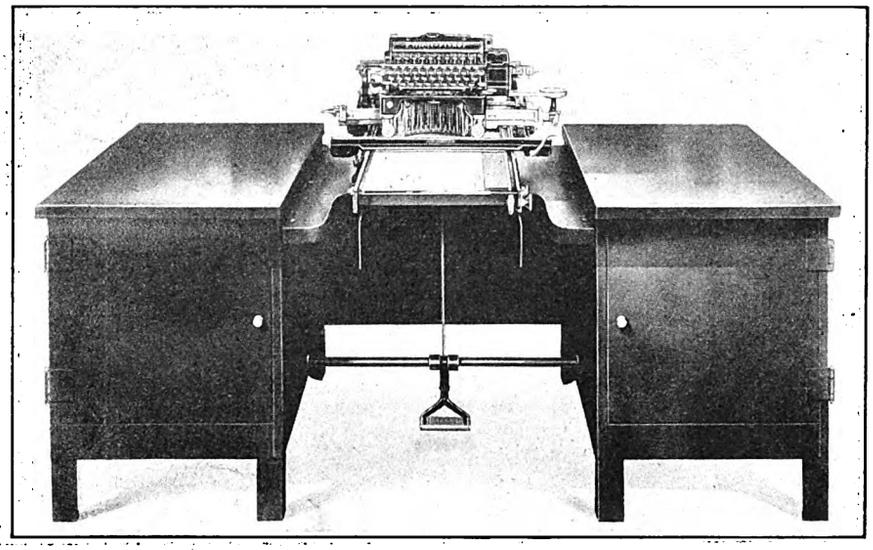


Accounting Machine Embodying the Flat Writing Principle

Time Saved by Electric Accounting Machine

EASE of operation features a new electric accounting machine just announced by the Elliott-Fisher Company, Harrisburg, Pa. This machine relieves the operator of every effort except the manipulation of the keyboard. The flexibility of the machine makes it readily applicable to existing systems and any type of accounting routine may be effectively placed under mechanical operation. With an accounts payable system with columnar distribution all amounts are added simultaneously, sums computed and proved. The electric motor handles all movements of the machine hitherto accomplished by manual effort.

Braking Blocks for Automotive Equipment

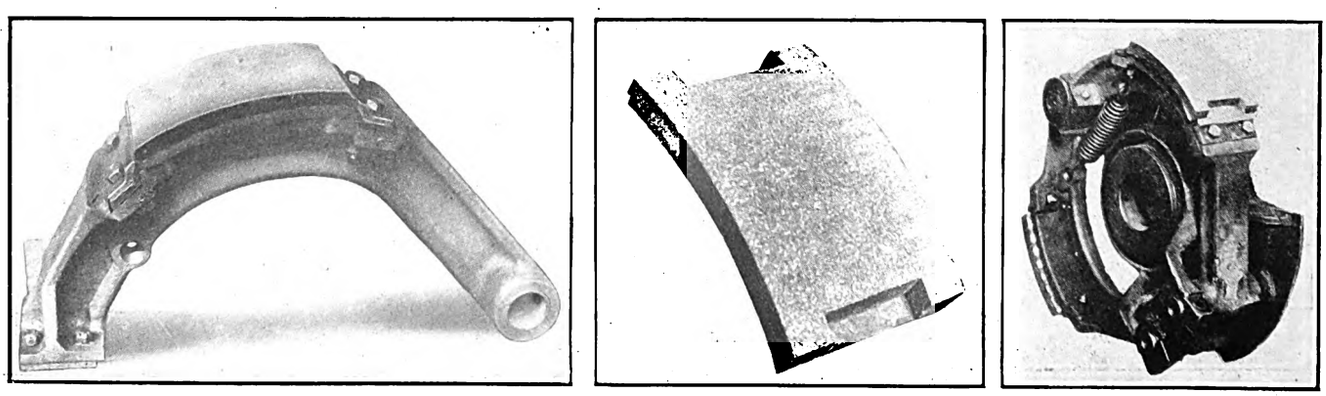
TWO influences are at work to improve the braking methods used on heavy motor vehicles. One is the growing size and weight of these vehicles. Operators are realizing that the methods suitable for lighter cars are not necessarily the best when the weights to be controlled reach 10,000 lb. or more. This is shown by the growing use of power brakes on heavy buses and trucks. The other influence tending toward more scientific braking is the entry into the automotive operating field of many steam and electric railroads which are accustomed to the use of standardized brake rigging on heavy high-speed cars and want the same definiteness and efficiency of brake equipment on the heavy auto vehicles they are placing in service.

With these thoughts in mind the American Brake Shoe & Foundry Company has been at work for some time past on the development of brake materials and their method of application to auto buses and trucks and have placed on this problem the expert knowledge gained by the company in 25 years of experience in the stopping of railroad trains, both steam and electric. Accompanying this development has been a series of extended tests, both on the brake materials testing machine of the company at Mahwah, N. J., and in actual practice on a 16,500-lb. truck. The development work is finished and the company is now putting on the market, through a subsidiary, the American Brake Materials Corporation, a form of brake block and method of its attachment for which notable advantages are claimed over the customary brake band or liner in which some kind of fabric is used as a basis.

With this latter type of brake, the customary method of varying the brake effect has been to increase the area of the brake band or liner so that now on a drum surface of 57 in. in periphery (or 18 in. in diameter) a length of 36 in. for the brake lining is not uncommon on heavy buses and trucks. With this size of brake liner the length of free radiating surface of the drum itself would be 21 in. or the difference between the periphery of the drum, 57 in., and the length of the liner, or 36 in. With the new brake material of the American Brake Materials Corporation two brake blocks, each of only 6 in. length in braking surface, are used, giving 45 in. of drum surface during each revolution for the dissipation of heat.

The brake blocks of the American Brake Materials Corporation are of a dense compressed material which has no metallic content and is unaffected by oil, grease or water. This brake material is compressed under very high pressure into a steel back or shell, which is attached to the brake arm by bolted keepers. These bolts are set radially to the drum, while the bevels on the sides of the keepers are parallel to each other. This prevents the block from becoming dislodged in the remote case that the lock nuts on the bolts should become loose and drop off. At the same time the method of mounting allows the blocks easily to be replaced when they become worn. During such replacement the supporting arm does not have to be removed.

Great stress is laid by the manufacturers on the simplicity of this method of attachment as compared



At Left, Brake Block on Arm. In Center, Brake Block by Itself. At Right, Spider with Arms and Blocks in Place

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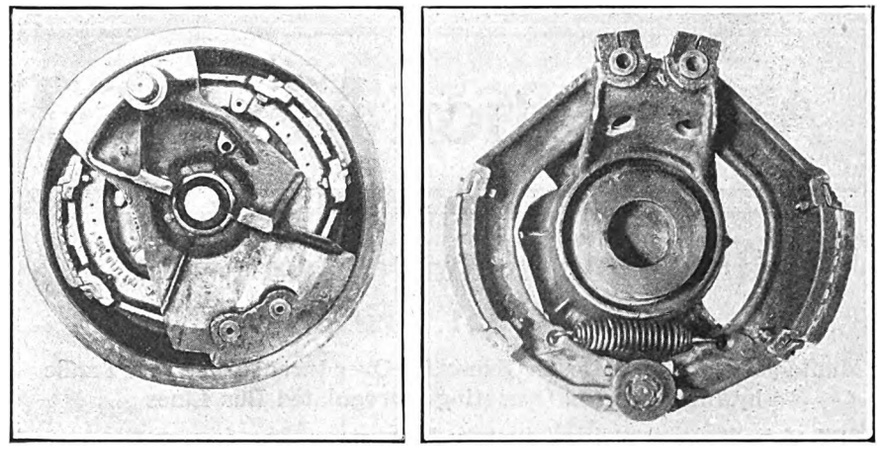
with the rivets employed with the usual brake band or liner. They also emphasize the desirability of a brake material incompressible under the pressures used in service as compared with a fabric liner, which is not only compressible but whose braking effort varies with use. With a constant brake effort it is possible for automotive engineers to establish a suitable foundation for the brake rigging.

The manufacturers have standardized the shape of the brake blocks described so far as it has been possible to go at present, following in this matter their pioneer work in standardizing the shapes of brake shoes for electric railways. In other words, all blocks for trucks and buses weighing more than 10,000 lb. will have a definite length, width, thickness and back radius, as well as a standard keeper. The only dimension which it has been impossible to standardize is the radius of the wearing surface of the block, which necessarily has to vary with the diameter of the drum. This modification in the shape of the brake block is obtained during manufacture by changing the male die used to form the surface.

Briefly the advantages claimed for the new brake block follow:

1. Friction equal to any in fabric liners, and this friction remains constant throughout the entire life.
2. Smaller contact area needed, leaving greater drum surface to dissipate heat.
3. Durability so far in excess of fabric liners that brake wear becomes an unimportant factor.
4. No metallic contact whatsoever. Drums will not be scored or cut.
5. Can be attached or detached readily by unskilled labor, without removing brake block from the brake arm.
6. No riveting required—attached to the shoe with solid bolts.



At Left, Spider with Arms and Blocks Within Brake Drum. At Right, Spider Alone

7. Absolutely unaffected by water, oil or grease.
8. Cannot burn, smoke or squeal. Will not grab.

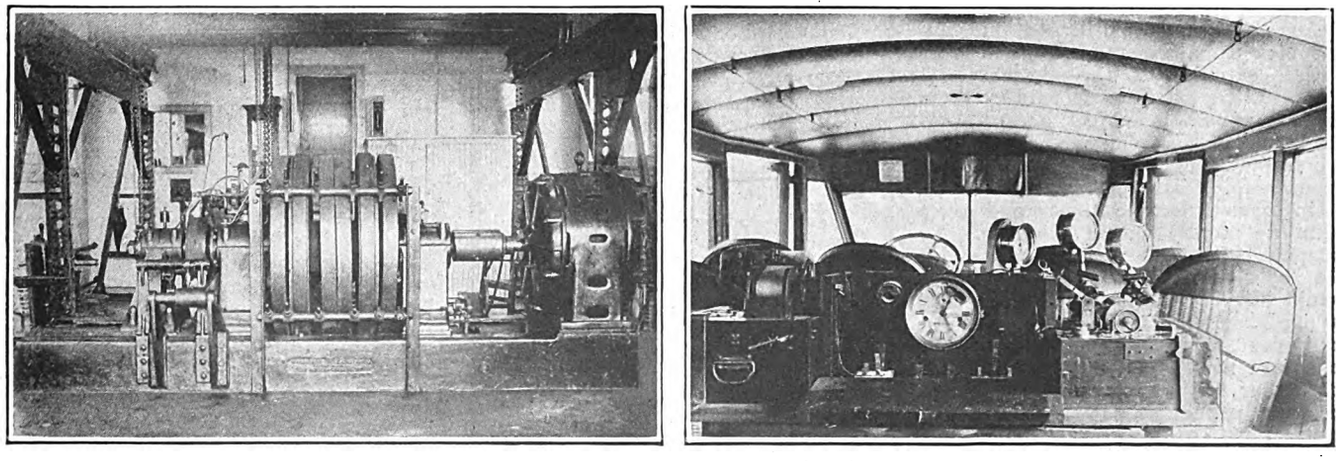
As already explained, the brake blocks mentioned were thoroughly tested by the manufacturers before being placed on the market. The testing machine at the Mahwah works of the American Brake Shoe & Foundry Company, on which one series of tests was conducted, is illustrated. It is the same machine used to test railway shoes and is capable of duplicating service conditions up to 80 m.p.h. and brake block pressures of 20,000 lb.

The other test, which extended over three months, was with a motor bus weighing 16,500 lb., which was run in neutral down a continuous 10 per cent grade for 2¼ miles on Mount Tuscarora, near Chambersburg, Pa. On each run there was but one application of the brakes at not more than 12 lb., the pressure being by power and decreased only at times to allow the bus to maintain uniform speed. The run took about ten minutes.

The bus was fitted with 32 thermocouples read through potentiometers. These couples recorded the heat generated by friction and were placed at all points where it was thought heat measurements of this kind were desirable. Readings were taken at the top and foot of the grade.

The results are now being tabulated and will undoubtedly prove very instructive on the subject of the heat generated by brake friction of descending vehicles. They are to be made public by the manufacturers after being compiled. It is sufficient to say here that they indicated satisfactory results so far as the brake efficiency of the blocks was concerned, and that braking was accomplished without undue heating, without the production of smoke, odor or squeal and without appreciable deterioration of the brake material in the blocks, or excessive wear on the brake surface of the drum.

For outside brakes, a similar arrangement of blocks, but concave, will be used. The brake block can be applied to any brake arrangement, hand, foot or power.



At Left, Brake Shoe Testing Machine at Mahwah, N. J. At Right, Interior of Test Bus

In the right-hand view the two indicators at the extreme right show diaphragm pressure and travel. The third gage at the right shows the reservoir pressure. Time is also shown.

At the left, in the view of the interior of the test bus, is a record chart which shows time, revolutions of front wheel, distance run and brake application.

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Association News & Discussions

Bus Competition to Tramways in Great Britain

Municipal Managers Greatly Exercised Over Inroads on Their Traffic by Independents Operating Unregulated Bus Lines

LOSS of traffic by established electric railway companies to independent, unregulated and almost tax-free bus lines prevails in England and Scotland as it does in America. Indeed, comments on the situation contained in a number of papers by municipal tramway managers, presented at the annual meeting of the Municipal Tramways Association at Liverpool Sept. 8-10, indicate the condition to be even more acute there than in this country, even though a very large number of the tramway systems in the large cities in Great Britain are municipally owned. Even in Glasgow, where in 1924 the only buses were a very few which brought passengers into the city from places far beyond the tramway termini, the streets are now almost overrun with them, and they are seriously cutting into the traffic of the tramways.

Bailie Robert Laing, convener of the Glasgow Tramways Committee, estimated the present number of independent buses in Glasgow at 600. Most of them, he said, are owned in districts outside the city and pay very little in the way of taxes for their use of city streets, adding: "They are wearing the surface of our roads and streets; they are causing congestion; they are taking up a large part of the time and attention of the police force; they are maiming and killing our citizens, and, apparently, there is no redress." All main roads leading to the city now have both tramway service (provided by the municipality) and motor bus service (provided by independents).

Some of these motor buses are legally known as "coaches," which means they require no license, but cannot pick up and set down passengers within 5 miles of the general post office. Little attention is paid by them to the law on this subject, according to the speaker. Recently a number of the bus owners have been taking out licenses for "carriages," which allows them to do a local business and gives them a "stand" within the city. To compete with this motor bus service the speaker believed the tramcars would have to increase their speed to 20 m.p.h. or more and use more modern equipment, while the cities should try to secure more stringent requirements for motor bus operators.

Other papers somewhat along the same lines were presented by the deputy chairman of the Salford City Tramways Committee and the general manager of Birmingham Corporation Tramways. The former strongly advocated the establishment by Parliament of transport commissioners to correlate local transportation services, whether municipal or privately owned, together with local area transport boards, which would initiate or authorize new lines and otherwise have somewhat similar powers to public utility commissions in this country, except that they would have equal control over municipal and private undertakings. Appeals from their decisions could be taken to the national commission. Such boards, said the speaker, would be a great help to many municipal tramway authorities who are intimidated by political influence from establishing an economic tramway fare. An interesting point brought out in this paper was that during the recent general strike in Great Britain, when no tramcars ran, the highway congestion was greater than ever and in some cases, in Manchester, the streets became well-nigh impassable.

Besides the governing boards suggested, the speaker urged greater attention to proper street car design, particularly in the way of the development of smaller modern lightweight cars and automatic equipment for speeding up the loading and unloading of passengers.

The paper from Mr. Baker of Birmingham urged the same obligation on private bus operators with regard to fares, services and cheap fares for working classes that are imposed on municipal tramway undertakings. Birmingham has some municipal bus service, its latest orders being for a six-wheeled double-decker with covered top, the seating capacity being 66.

COUNCIL REPORT

The report of the Council (executive committee of the association) referred to the effort of the association to have Parliament correct the condition by which those municipalities that wish to operate motor buses are subject to the maximum of cost and delay, while private interests can secure these rights at practically no cost. A bill to secure such a change was introduced in Parliament, but was defeated by 133 to 128 votes, largely on the ground that it was a direct attack on private enterprise and an extension of municipal trading. The effort to secure a satisfactory change in the law will be renewed.

The general strike, which lasted from May 3 to May 12, affected every member of the association except Ayr. In many districts the harmony between employers and employed was quickly destroyed. On June 11 the Council decided that the national agreement was suspended, but recommended (1) that the provisions of the agreement should be followed and especially that no concessions should be granted beyond those contained in it; (2) that the clauses in the agreement relating to the schedule of weekly duty being not less than 44 hours and the guaranteed 48-hour week should be definitely suspended until the labor trouble had been cleared up and a further recommendation made, and (3) the break in service caused by the strike should not be considered as a break in service for the purpose of granting holidays.

The tax authorities have agreed that the annual allowance of 20 per cent on the written-down value for wear and tear of motor buses may be continued for a further period of five years, ending with 1929-30, and that the annual rate of depreciation on trackless trolleys may be taken as 15 per cent, with the statutory allowance for obsolescence of the unliquidated amount of capital expenditure (less scrap value) when the vehicle is disposed of. This proposal has been agreed to by the Council.

An essay composition was instituted in 1926 to cover the following

COMING MEETINGS OF *Electric Railway and Allied Associations*

Oct. 4-8—**American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.**

Oct. 10-15—**Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.**

Oct. 11-13—**American Management Association, annual convention, Hotel Statler, Cleveland, Ohio.**

Oct. 25-29—**Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.**

Nov. 5—**American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.**

Nov. 16-18—**Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

Nov. 16-19—**American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.**

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three subjects: (1) Finance, (2) traffic and (3) engineering. Forty-eight essays were submitted.

The Minister of Transport has issued an official notice that one-man front entrance and exit cars will be distinguished by red lettering "Front Entrance Car" and warning drivers of other vehicles about passing between such a car and the curb while the cars are receiving and discharging passengers. An effort to penalize automobile drivers who attempt to do so was defeated in the House of Lords on July 7, 1926.

PRIVATE RAILWAYS ALSO SUFFER

There are 242 tramway undertakings in Great Britain and of this number 170, with 1,859 miles of route, are owned by municipalities, while 72, with 746 miles of route, are owned by companies. The latter have suffered about as much as the municipal lines from unregulated bus competition, according to a paper at the last meeting of the Tramways and Light Railways Association. One remedy suggested by the speaker there was to require the buses to charge a fare somewhat higher than that on the street cars where their routes were parallel.

Colorado Association Discusses Railway Problems

PROBABLY no other industry has had to contend with so many changes in recent years as has the electric street railway, according to S. B. Irelan, vice-president and general manager of the St. Joseph Light, Heat & Power Company, St. Joseph, Mo. This statement is contained in an address on "Electric Street Railway Situation of To-Day," delivered at a convention of the Colorado Public Service Association at Glenwood Springs on Sept. 15. The changes enumerated by Mr. Irelan included the following: Overcoming the increased cost of labor and materials used in railway operation, brought about during the war; changes in contractual relations as to its rates of fare, which in most instances have been made on the old basis of cost, and serious inroads on the volume of its business, due to the development of the automobile and competition of the privately owned car and motor bus. Nevertheless, according to Mr. Irelan, no American city of any size up to date has been successful in substituting some other means of transportation.

In the smaller cities the number of passengers carried has decreased in the five-year period from 20 per cent to as high, in some instances, as 50 per cent. The patrons today are the thrifty and the less well-to-do people of the community, who either cannot afford their own private conveyances or see the fallacy in the economics of operating a private automobile for transportation, as compared to street railway transportation. Authorities should recognize the need of the service to these people and assent to higher fares where necessary, but particularly to the reduction or abolition of the unusual tax burdens and other assessments carried by the average street railway. These include paving taxes, franchise taxes and cost of sprinkling streets, snow removal, and construction and maintenance of bridges and viaducts.

More than 10 per cent of the gross earnings of the average street railway, according to the speaker, is required to pay these taxes and special assessments. He also recommended laws to limit parking on congested streets.

In conclusion, the speaker declared that the individual company is negligent which does not adopt economies in operation, improve its service and engage in a program to eliminate special assessments and unusual burdens. These results can best be secured, he said, by educating the public to recognize the fairness and justice of the railway demands.

Railway Electrification at World Power Conference

RAILWAY electrification was a leading subject discussed at the sectional meeting of the World Power Conference recently held at Basle, Switzerland, on which reports were presented from most European countries, the United States and Japan.

William S. Murray, consulting engineer of New York, who represented this country, took a broad view of the situation. His main contention was that the use of electrical enery for railway operation has fallen far behind the use made of it for other purposes. The revolution of the transportation system has not kept pace with industrial production. About 80 per cent of the electrical energy produced in America is absorbed by industry, the railway demand being exceedingly small in comparison.

The need of the times, Mr. Murray insisted, is the acceptance of a standard type of power for railroads in place of the variety of systems now existing. What has been done hitherto is a mere experiment, as upon the electrified lines of the United States only 5 per cent of the total traffic tonnage is carried. Two opinions expressed in the paper were that in future the standard system of railway operation should be high-voltage direct current and that the railroad companies should procure power from public sources.

Colonel E. O'Brien, the reporter for Great Britain, dealt with the broad economic aspects of railway electrification. His report stated that even in countries where coal was cheap electrification could effect economies in cost of locomotive operation and maintenance of from 10 to 25 per cent and that a 50 per cent increase of speed could be effected without proportionate increase in cost. Other economic advantages referred to were reduction in cost of track and depot maintenance, generally improved conditions of operation and supplies of cheap energy for light and power. An important problem which has not yet been solved in England, Colonel O'Brien said, is whether the electric locomotive requires one or two men to operate it, and he thought that if this question could be satisfactorily settled railway electrification would receive a great stimulus.

Other reports described some existing installations, including those on the French, Dutch, German, Swiss and Swedish railways. The report on the electrification of the Stockholm-Gothenburg section of the Swedish State Railways was particularly interesting.

American Management Association Annual Convention Oct. 11-13

CLEVELAND will not be through with conventions when the A.E.R.A. delegation leaves. The American Management Association will hold its annual convention at the Hotel Statler on Oct. 11, 12 and 13. The sessions will be divided so as to include a comprehensive program of the subjects under the following heads: Trends in methods of distribution, budgeting technique, management organization, personnel administration and office management.

Particularly interesting to members of the association will be the discussion following the presentation of papers on a budget system—how to install and administer it—led by Prof. John MacDonald of New York University, who has made a very exhaustive research in this field. H. A. Fountain, treasurer Ohio Public Service Company, has also been active on the committee preparing information on this subject. Management's contribution to national welfare, another phase, will be presented in "Pre-Retirement Disposition of Older Employees," a contribution by Bennet F. Schauffler, employment manager Philadelphia Rapid Transit Company.

For further details and program, the secretary of the American Management Association may be addressed at 20 Vesey Street, New York City.

American Society of Civil Engineers Meets Oct. 4-9

BECAUSE of the presence of representatives of many foreign countries the 56th annual convention of the American Society of Civil Engineers will have an international character. The meeting will be held at Philadelphia during the Sesqui-Centennial Exposition. The program will be one of the most unusual that has been presented in the society's 74 years of existence. Philadelphia engineers who will be hosts of the occasion will help to make the entertainment of the visitors thoroughly enjoyable by visits to the many points of historical interest located in and around Philadelphia.

Gifford Pinchot, Governor of Pennsylvania, will deliver the opening address, to which a response will be made by Sir William Henry Ellis, president of the Institution of Civil Engineers, London, representing delegates of other nations. Discussion of transportation problems will have a place on the program. Of special interest to electric railway and bus men will be the following: Comparative lectures on the "History of Development of Road Building" in France and the United States by Thomas H. MacDonald, Chief Bureau of Public Roads, U. S. Department of Agriculture, Washington, D. C., and M. P. Le Gavrian, chief engineer of bridges and highways, Paris, France. Another phase of transportation will be the paper "Fifty Years Progress in

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Bridge Building with Special Reference to the Delaware River Bridge," by Ralph Modjeski, chief engineer Delaware River Bridge Joint Commission and consulting engineer, New York.

City planning will be discussed in prepared papers by Harold M. Lewis, executive engineer, Regional Plan of New York and Its Environs, and by John Ihlder, manager, civic development department, Chamber of Commerce of the United States. Other well-known engineers will discuss this subject in five-minute talks.

All members of the society, especially student members, are urged to attend and participate in all the events of the convention.

Will Tell How the Bus Fares in Railway Company

MEMBERS of the American Electric Railway Association have been specially invited to attend the Cleveland Section meeting and dinner of the Society of Automotive Engineers at the Hotel Cleveland, Monday, Oct. 4. A dinner will be served at 6:30 p.m. The meeting proper begins at 8 p.m., at which C. M. Ballou, Street Railway Commissioner of Cleveland, will tell of the public reception of bus service in that city. Walter Jackson, consulting engineer, will address the meeting on the subject "How Fares the Bus in Electric Railway Company."

American Association News

Ample Arrangements for Validating Tickets

W. J. KENNEDY, manager of the Cleveland Chamber of Commerce has concluded arrangements with passenger departments of steam railroads entering Cleveland to maintain at Public Auditorium Oct. 5 to 8, inclusive, a railway information bureau at which delegates and visitors may have their railroad tickets validated for their return journey. At this bureau two railway representatives will be in attendance continuously on Tuesday, Wednesday, Thursday and Friday, 9 a.m. to 5 p.m. In addition, these representatives will furnish information regarding train service out of Cleveland and, up to Friday noon, Oct. 8, will also accept Pullman reservation orders.

In accepting orders for Pullman space these representatives will use a special form which will pass from the railway bureau to the city offices of the several railroads, officials of which will indicate thereon the particular space assigned to the applicant. Then the forms will be dispatched by messenger and placed in the room box of the applicant at his hotel, except that any applicants who may be housed in hotels east of East Fourteenth Street will call at the railway validating office at the auditorium for their particular advice. The applicant will then call at the proper ticket office to purchase his Pullman ticket or advise the hotel porter to pick up the Pullman ticket.

The convention board will supply the messengers to make this service effective. There will be no charge to the visitor for the service rendered at the Public Auditorium.

Monday Morning Session Advanced

CITY MANAGER HOPKINS of Cleveland, Ohio, will open the 45th annual convention of the A.E.R.A. with an address of welcome.

It has been decided to hold this meeting in the ballroom of the auditorium instead of the meeting room in the west wing. Also, the time of the meeting has been advanced from 9:45 a.m. to 9:30 a.m.

The Pittsburgh Railways' band, consisting of 40 pieces, will furnish the music for this meeting and also for the public inspection of the convention exhibits on Wednesday evening.

Tuesday Night Speaker

HON. W. IRVING GLOVER, Second Assistant Postmaster-General, in charge of the air mail service, has been chosen as the principal speaker at the Tuesday night, Oct. 5, session of the American Electric Railway Association.

Mr. Glover's subject will be "Civilization's Progress Parallels Transportation Development."

Lord Ashfield Prepares Address for Convention

LORD ASHFIELD, general manager of the London Underground group of rapid transit lines, tramways and motor bus services, has prepared an address which will be presented before the meeting of the American Association on Thursday morning, Oct. 7. His address is a very scholarly paper on the history, theory and principle of co-ordination as distinguished from other economic practices.

Open-Air Truck Exhibit Space Fills Long Needed Want

NEVER before has a convention of the American Electric Railway Association had such an ideal layout for the display of electric cars as is provided at Cleveland. A space between the Public Auditorium and Exhibition Hall which is in the newly constructed West Wing has been provided with tracks for the open air exhibits. Heavy equipment can be run in on its own wheels from a track connection made to the Cleveland Railway tracks.

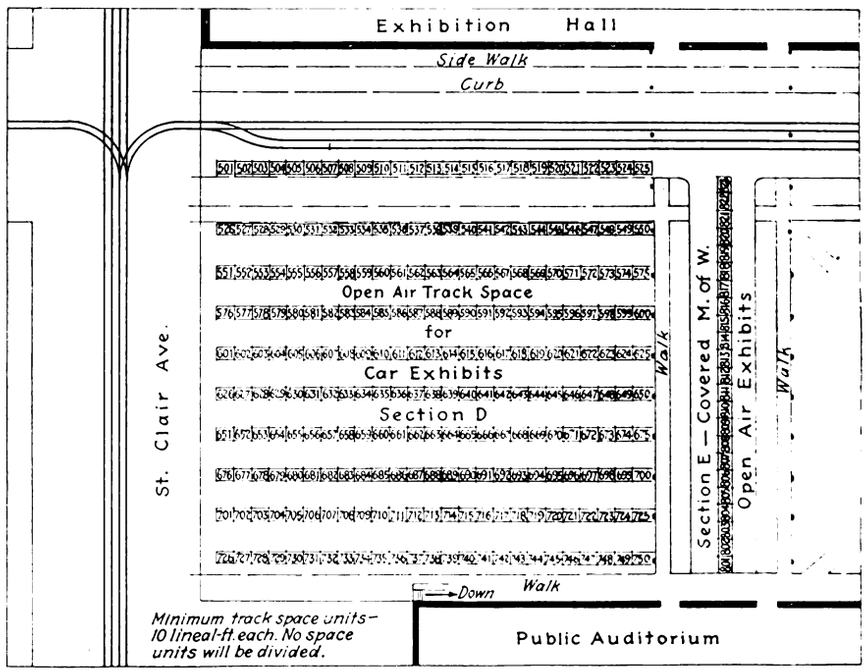
Electric railways and car builders have responded to the opportunity to display cars to an extent never realized before. Seven electric railways and eleven car builders will show the latest types of rolling stock developed. At this time, when such great stress is being placed on the need for modernizing cars, these exhibits will provide an excellent opportunity to gain first hand information on the latest improvements. The railways and car builders who have already taken open air space include:

Electric Railways

Beaver Valley Traction Company.
Chicago, North Shore & Milwaukee Railroad.
Cleveland Railway.
Northern Ohio Power & Light Company.
Pittsburgh Railways.
Tennessee Electric Power Company.
United Railways & Electric Company of Baltimore.

Car Builders

American Car & Foundry Company.
Atlas Car & Manufacturing Company.
The J. G. Brill Company.
Cincinnati Car Company.
Cummings Car & Coach Company.
Differential Steel Car Company.
Light Weight Noiseless Electric Street Car Company.
Phoenix Ice Machine Company.
St. Louis Car Company.
Perley A. Thomas Car Works.
Universal Crane Company.



Seven Electric Railways and Eleven Car Builders Will Exhibit Rolling Stock on These Tracks

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The News of the Industry

Kansas City Franchise Extended

Twelve Years Added to Present Grant There to Permit Successor Company to Function

An ordinance was passed by the City Council of Kansas City, Mo., on Monday night, Sept. 27, granting a twelve-year extension to the present franchise of the Kansas City Railways. The franchise now becomes a 30-year grant. The purpose of the extension was to enable the new owner, the Kansas City Public Service Company, to refinance the property and sell long-time instead of short-time bonds. William G. Woolfolk, president of the proposed successor company, had urged an extension of the franchise as a necessary basis to insure sound initial financing.

In return for the extension of the grant the company has agreed to make a slight reduction in fares fixed in the measure at fifteen tickets for $1, making a fare of 6⅔ cents. This is a saving of ⅓ of a cent on each fare, or about 5 per cent of the 7-cent fares. About 12½ per cent of the revenue passengers ride on the 7-cent fare. This means a saving of about $48,000 annually to them alone. The extension ordinance also provides that the city may require the tickets for the reduced fares to be put on sale at such places and in such manner as future ordinances may designate.

ADDITIONAL SECURITIES MUST BE SOLD

In a recent letter to the Mayor, city manager and members of the Council Mr. Woolfolk outlined a program of service betterment to be started as soon as the new company obtains actual control of the property, probably some time in October. On the improvement program outlines, Mr. Woolfolk committed his associates "without reservation." The program includes the following:

To rebuild the Mill Creek trestle, which crosses Mill Creek Boulevard and is used by the company to provide freight service for the Westport district of Kansas City, Mo. The present trestle is of wood and provides only a narrow passage for automobile traffic.

To restore street cars to Argentine via the Twelfth Street bridge.

To restore street car service to the central industrial district.

To put all street paving between the car tracks in first-class condition.

To rebuild all defective and worn out tracks with modern construction.

To improve and expand bus service.

To start bus service between Kansas City, Mo., and Kansas City, Kan., across the intercity viaduct.

To modernize all rolling stock.

The cost of this work is estimated at $6,600,000.

Although the new company will have at its command all the money turned over to it by the receivers, after all debts are paid, nevertheless this sum will be entirely inadequate for the extensive reconstruction program now outlined.

The vote in the Council on Sept. 27 was five to three, one Councilman being absent.

Francis M. Wilson, one of the receivers for the Kansas City Railways, Kansas City, Mo., on Sept. 22 declined with thanks the post offered him as vice-president in charge of public relations of the Kansas City Public Service Company, the proposed successor to the Kansas City Railways. The post, together with a voting trusteeship in the company, was offered Senator Wilson by William G. Woolfolk, president of the new company, who expressed deep regret at the Senator's unwillingness to accept the public relations post. No plans have been made for the selection of another man.

In his letter declining the offer, Senator Wilson gave expression to his desire to retire permanently from his connection with the local railways, with which he had served admirably as a receiver for more than six years. It is reported that he will resume his law practice, and rumor has it that he will again place his hat in the political ring, this time as a candidate for the Democratic nomination for Governor of Missouri in 1928.

There are to be five of the voting trustees, who will direct the operation of the new company for the stockholders during the readjustment period following the close of the present receivership. The four so far named are Melvin A. Traylor, J. K. Newman, George W. Davison and Powell C. Groner.

Wage Increase on Eastern Massachusetts

Arbitration Board Rejects Men's Plea for 12½ per Cent Increase, but Saddles Company with $200,000 Additional Wage Expense Each Year

BY A MAJORITY report the special board of arbitration has increased the basic wage on the Eastern Massachusetts Street Railway system 1½ cents an hour and has reduced the working day to eight hours. The men's request for a 12½ per cent increase in wages was rejected on the ground that the board did not deem it warranted by the evidence introduced. What the board gave the men amounts to 67½ cents an hour for operators of one-man cars, who constitute more than 90 per cent of the employees, and 61½ cents an hour for the men on the two-man cars.

The extra cost of the award is estimated at $200,000 a year, with $50,000 back pay. To meet this the company has decided to increase its ticket fares, beginning Oct. 1. Cash fares will remain at 10 cents, but one coupon will be cut from each strip ticket. The company has fifteen operating districts and is selling strip tickets at different rates, according to the density of traffic, the range being from twelve tickets for $1 to nineteen tickets for $1. The twelve-ride ticket will be reduced to eleven for $1, and the nineteen-ride ticket will be reduced to eighteen rides.

The award is made retroactive to May 1. It will run only until May 1, 1927. The eight-hour day also is made retroactive, so that the men will be paid extra for time worked in excess of eight hours since last May.

The finding is signed by Judge John C. Leggat, chairman, and by James H. Vahey, who represented the men. Fred A. Cummings, who was the arbitrator for the company, dissents from the report.

Fred A. Cummings, who dissents in behalf of the company, makes the following analysis of the results:

The basic rate of wages on this road for blue uniform men is 61 cents an hour. The differential for one-man operation is 5 cents and the basic rate is increased 1½ cents an hour. The 5-cent differential remains unchanged. The snowplow differential of 12 cents on top of the one-man car rate remains unchanged.

This award provides for time and one-half for all work performed over eight hours. It not only provides for time and one-half for all work over eight hours in the future but also time and one-half for all work over eight hours back to May 2, although the company was in no position to work the men on an eight-hour basis since that date, being bound by an agreement to work employees nine hours.

The award further provides that all schedule runs shall be no less than eight hours, which means that a number of blue uniform men must be paid eight hours for actual work performed between seven hours and seven hours and 59 minutes. In other words, the situation is that if the company wants the men on schedule runs less than eight hours it must pay eight hours, and if it does work the men eight hours it must pay 8½ hours, this latter penalty having been in existence prior to this award.

In snowplow work no overtime rate was paid on top of the one-man car differential of 5 cents plus snow rate differential of 12 cents until in the twelfth hour of a spread (by which is meant the span of time in which men might work), when an excess of 20 per cent was added, and in the thirteenth hour of the spread, when a 35 per cent excess was added. These excess rates still continue, but in addition to this, under the new award, after the eighth hour of work a snowplow worker receives the basic rate, plus the one-man car rate, plus the snow differential and one-half again the aggregate of the basic rate plus the one-man car rate plus the snow differential, which amounts to $1.19 an hour.

New time tables on the eight-hour basis are being prepared and will be put into effect within a few days. Employees in repair shops in Brockton and Chelsea and miscellaneous carhouse employees and trackmen throughout the system will go on an eight-hour basis possibly within 48 hours.

The new agreement expires May 1, 1927, and in readjusting fares the company must obtain not only sufficient money to pay current expenses at the new basic rate of wages and time and one-half penalty, but also must meet the additional burdens imposed by the award for the last five months.

To attempt to cover the cost of this

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award it will be necessary to increase fares in every operating district. These new rates will go into effect on or about Oct. 1, 1926.

The wage rates for trainmen are as follows:

	New Rates* Effective 5/1/26–5/1/27, Cents per Hour	Old Rates* Effective 5/1/25–4/30/26, Cents per Hour
First three months.....	57	55½
Next nine months.....	60	58½
Thereafter.....	62½	61

* One-man car operators, 5 cents per hour extra.

The wage rates for bus men are as follows:

	New Rates Effective 5/1/26–5/1/27, Cents per Hour	Old Rates Effective 5/1/25–4/30/26, Cents per Hour
First three months.....	62	60½
Next nine months.....	65	63½
Thereafter.....	67½	66

Miles of bus route: 134.58.

New Yorkers Seek Information on Subway Policy

A constructive and significant step was taken on Sept. 29 when the Citizens' Union of New York City, N. Y., sent a letter to Mayor Walker seeking advice on the policy for building and operating new subways. Up to date no definite policy for the transportation problem has been announced by the Mayor, although he has indicated from time to time that a solution was in the making and would be announced just as soon as he was certain it was practicable. William J. Schieffelin, president of the Citizens' Union, who wrote the letter to the city's chief official, suggested four things as follows:

A single system, rather than a separate city-owned system which would be a competitor against the city's present interest in the old subways.

Radical revision of the dual subway contracts in favor of the city.

Reorganization of existing transit companies under one head as proposed by the old Transit Commission five years ago.

Higher fares on express routes only if, after these steps have been taken, a 5-cent fare still is inadequate.

In his letter Mr. Schieffelin reviewed the financial aspects of the matter. It was his conclusion that until the subway policy had been determined the solution of other city problems would naturally be impeded.

Revival Work Continues in Miami

Everybody in the organization of the Miami Beach Railway, Miami Beach, Fla., came through the recent disaster safely, but the property and equipment were damaged. Most of the cars were 3 ft. under salt water for six hours. This meant complete baking of all electrical equipment. Many wires were down, but service in the city was restored on Sunday, Sept. 26. The line to Miami Beach was washed away and many of the rails and ties had to be fished out of Biscayne Bay. On Sept. 24 it appeared unlikely that service to the beach would be restored for another ten days.

Of course other conditions were bad. There was no water for two days, but the Florida Power & Light Company did excellent work in connecting up hospitals and hotels for first aid purposes.

Lisman Plan Dismissed

Chicago Traction Settlement Proposals Attacked—Another Plan Is Offered

Awaiting presentation to the Chicago City Council of the details of the plans of New York bankers, represented by John M. Harlan and Frederick Lisman, for the solution of Chicago's transportation problems, Aldermen and local traction representatives continue to shoot holes in the proposal, while Judge Harlan and Mr. Lisman are kept busy defending their scheme.

Alderman Arthur Albert, one of the most violent opponents of the plan, made the Easterners' offer of $50,000,000 for added transit facilities appear so unfavorable that the petitioners have virtually agreed to amend their proposal in this respect. Mr. Albert's persistent queries revealed that after the $50,000,000 securities had been sold at 85 cents on the dollar, a 10 per cent construction profit and a $5,000,000 stabilization fund had been deducted from the original amount only $33,250,000 would actually be available for extensions and new equipment.

Although he agreed that the 10 per cent construction profit would probably be considered a legal charge, Corporation Counsel Busch said that the most severely criticised feature of the 1907 ordinance was a provision which allows 10 per cent construction profit and 5 per cent as the cost of money. "It is illogical to pay 10 per cent construction profit when the company does the work itself," he added.

Intimating that the present bondholders of the Chicago Surface Lines would pocket an estimated $13,900,000 annually after the ordinance expires next February, Judge Harlan proceeded to quiz Leonard A. Busby, president of the Chicago City Railway, about the plans of his company in event of receivership next February. He wanted to know if the Chicago Surface Lines would continue to pay 55 per cent of its net earnings, or $2,100,000 annually to the city, if it would spend $7,000,000 for repairs and maintenance and if it would put $4,800,000 into the renewal and depreciation fund.

Mr. Busby was emphatic in his answer that "the greatest asset of the company is good will." "Why should we destroy it by refusing to make that payment?" he asked. "I shall certainly recommend to my directorate that these payments be continued."

One of the main features of the New York bankers' plan is that it seeks only a twenty-year franchise and requires no special legislation. Mr. Harlan believes that a complete, permanent and progressive settlement of the surface transportation problem can be made under existing law, and that his plan means speed and progress, while waiting for legislation means delay. Local bankers and traction representatives, on the other hand, are unalterably opposed to an ordinance which becomes ineffective, as does the Harlan proposal, unless a city commission is created.

Still another plan to solve the city of Chicago's transportation problem was reported on Sept. 30. The plan was presented to Alderman McDonnough, chairman of the City Council committee on local transportation, by Harry R. Miller and Nicholas J. Shorn of Detroit. They revealed as their financial sponsor William L. Davis & Company, Detroit banking firm. The plan calls for coordination between buses and surface cars and the building of a downtown subway.

Subways Needed for St. Louis

A special committee of the St. Louis Board of Aldermen appointed to study the city's rapid transit needs has made public the first part of its report. It deals with findings indicating the need for subways to speed up the city's transportation. The committee does not make any final recommendations about subways, but merely confines itself to the need and feasibility of subways.

The committee has also released the second section of its report. The final sections to be released will contain specific recommendations regarding rapid transit. It is known, however, the committee favors an underground system at once for downtown St. Louis and an extension later into the outlying sections. The committee has found that St. Louis can afford to and should build subways. It estimates that subways can be provided at a cost of not to exceed 2 cents per capita a day.

The first section of its report also predicts that in 1950 the city will have a population of 1,505,800 persons in its metropolitan district on both sides of the Mississippi River at St. Louis.

It further declares that a subway is needed if downtown property values are to be maintained. These now represent 22 per cent of the city's assessed valuation.

It is clear, the report asserts, that street cars must be taken from the surface of business streets downtown and in this connection there is mention of underground sidewalks paralleling the subways to provide for crowds.

Order Restored in Baltimore

After several days, during which most of the traffic regulations in Baltimore were ineffective, the Baltimore City Council has passed an ordinance which restores all the rules which had been in effect. The action of the Council followed an opinion handed down by Judge Eugene O'Dunne, in the Criminal Court, holding that power given the Police Commissioner to promulgate rules and regulations was unconstitutional. This power had been granted by the Maryland General Assembly in 1924 and Judge O'Dunne held that it violated the state home rule amendment. As soon as the opinion was given conditions became chaotic, as only a few laws were left in effect, these being measures that had been passed by the City Council before 1924. Since that date all the rules have been made by the Police Commissioner. In order to clear the situation the City Council passed an ordinance which embodied all the rules made by the Police Commissioner. Officials, however, intend to carry the case ruled upon by Judge O'Dunne to the State Court of Appeals.

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Jamestown Fare Rejected

The Public Service Commission has rejected the schedule of fares proposed by the Jamestown Street Railway and the Jamestown Motor Bus Transportation Company, Jamestown, N. Y., which provides for an increase effective Oct. 1.

The companies proposed to increase one-way fares between points in the city of Jamestown from 8 to 10 cents and to increase ticket fares from five tickets for 35 cents to three tickets for 25 cents. It was also proposed to sell ten tickets for 75 cents and to sell weekly card passes at the rate of $1 each to be good by the holder on either line. The railway lines connect the villages of Celeron, Falconer and Lakewood and the town of Ellicott and the hamlet of Ashville. The company also proposed to increase fares between Jamestown and these villages from 8 to 10 cents, and from 16 to 20 cents between Jamestown and Ashville.

The commission granted an 8-cent fare on June 22, 1920, and provided for the sale of tickets at reduced rates. It ruled that until it was shown that the present rate was not adequate this order must remain in effect.

South Shore Freight Trains Make Record

Freight service on the Chicago, South Shore & South Bend Railroad has shown a remarkable improvement since the company's re-electrification and track reconstruction program was completed during the past summer. A check on the arriving time of the morning freight train at South Bend from Chicago throughout the month of August reveals that in every instance except three, or approximately 97 per cent of the time, the train arrived before 6 a.m. On two of these occasions the train was less than 30 minutes late. Two months ago more than 68 per cent of the trains arrived later than 6 o'clock. Fast overnight service, punctual delivery and conveniently located receiving stations in Chicago are the main features upon which the new and improved freight service is being built. The line has already shown a considerable gain in traffic.

Seattle Council Favors Commission's Transit Plan

In a round-table discussion with William Pitt Trimble, head of the City Planning Commission, which has spent a year in investigating transit problems in Seattle, Wash., the City Council expressed itself in favor of the proposed rapid transit system recommended by the commission, provided it could be shown that it would be a good investment and not add too much to the railway's financial burdens. The commission has outlined a combination system of surface lines, subway and elevated lines, estimated to cost $4,000,000, and providing a rapid transit line connecting the region north of the Lake Washington canal with the down-town section of the city and south and west Seattle.

The Council expressed more interest in ways and means of financing a rapid transit system than in the physical aspects of the case.

According to figures of Mr. Trimble, the average daily loss of passengers in 1925, compared with 1924, was more than 5,000, while so far this year the loss, compared with 1925, has been 7,675 a day.

Beaver County Sends Car and Girls to Cleveland

At the invitation of the exhibit committee, the Beaver Valley Traction Company, New Brighton, Pa., is sending its industrial art advertising car to the Cleveland convention next week. Or, rather, the Beaver Valley manufacturers and citizens are sending the car, for the entire expense is being borne by the various communities in the valley. This was brought about through the medium of a beauty contest, sponsored by the railway and the Beaver Falls Chamber of Commerce, to choose the four young ladies in the valley possessing the greatest intelligence, personality and beauty. To nominate and vote for the contestants in this race it was necessary to contribute hard coin of the realm and a very imposing fund soon came into existence.

Not only will the industrial art car be on hand to illustrate the progressiveness of the Beaver Valley but the four contest winners, who were selected from a field of nearly 200 entrants and a narrowed group of 26, chosen by popular vote, will also be present at the convention to welcome all who visit the car and to distribute booklets which will give complete information on the advantages of Beaver County. These young ladies were jointly awarded the title "Miss Beaver Valley" by the judges of the contest. They are the Misses Betty Thomas of Monaca, Mary L. Guy of New Brighton, Eleanor Murphy of Beaver Falls and Mrs. George Weinman of Beaver Falls. Accompanying them will be Mrs. Loretta Werner, who will act as chaperon.

A complete description of the industrial art trolley car was published in the issue of ELECTRIC RAILWAY JOURNAL for June 12, 1926, under the title "Beaver Valley Enters the World of Art." It was the fact that so many of the industries of the valley were represented among the paintings on the sides of the car that suggested to Clinton D. Smith, general manager of the Beaver Valley Traction Company, the advisability of sending the car to the convention as a graphic illustration of Beaver County's desirability as a location for industrial activity.

On its way to Cleveland the car will pass over five different electric railway lines and, in addition, will be operated over many of the lines in Cleveland, in order that the widest publicity may be given to this traveling exhibit. It is planned to introduce the "Misses Beaver Valley" to the entire convention during one of the American Association sessions and they will also be on hand for all of the social and entertainment features of the convention. In addition to their expenses, the young ladies will receive a generous daily emolument and are already being made the recipients of many gifts and prizes from local stores and firms in the Beaver Valley.

New Fares at Buffalo Denied

The New York State Public Service Commission has rejected the new tariff filed by the International Railway, Buffalo, for a 10-cent fare in Buffalo and proportionate increases in Niagara Falls, Lockport and on its interurban lines in western New York. Instead of filing an application for permission to increase its fares, which is the usual practice within the state, the company merely filed a new tariff schedule saying it would become effective Oct. 16. Counsel for the International Railway indicated that he was paving the way for an appeal to the United States District Court for the western district of New York at Buffalo from the decision of the state utilities board. The company will contend that the present rate of fare is insufficient to meet expenses and is confiscatory.

The lines of the International Railway reach across the border into the Dominion of Canada, and the company will contend that the commission lacks authority to fix fares.

Extension of One-Man Service Authorized in Milwaukee

Formal order has been issued by the Wisconsin Railroad Commission authorizing the Milwaukee Electric Railway & Light Company to operate one-man cars on its Oakland-Delaware line. The one-man cars to be installed are similar to those now operating on the Walnut and 35th Street lines.

In its order the commission declared that permission for the one-man cars was granted on the basis of the company's promise to increase the service 20 per cent, together with the fact that previous developments had shown that one-man cars would result in improved service for this line. In his arguments before commission, city and civic officials, R. H. Pinkley, assistant general manager, declared that this line was one of the lightest traveled in the city.

More Passengers in Missouri

An increase of 25,000,000 passengers for the first six months of this year over the similar period last year is reported by the sixteen electric railways affiliated with the Missouri Committee on Public Utility Information.

In commenting on this trend in traffic a report by the Missouri Committee on Public Utility Information states:

> Despite the fact that the street railways in Missouri carried 50,000,000 fewer passengers in 1925 than in 1921, the increase for the six months ended June 30, this year, indicates that automobile congestion in the downtown districts, expense of operation and the increased difficulty in locating parking space in the downtown sections are resulting in the increased number of street car riders.

Fare Advance in Portsmouth

The Virginia State Corporation Commission has granted the Virginia Electric & Power Company's petition to put into effect a 7-cent cash fare, with tokens at four for 25 cents and school tickets at half cash fare, on its Portsmouth division. There was no opposition to the petition. The straight fare was 6 cents.

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News Notes

P.R.T. Men Give $20,000 to Florida.—The Co-operative Council of the Philadelphia Rapid Transit Company, Philadelphia, Pa., recently approved payment to the Citizens' Emergency Relief Committee of a sum equal to $1 for every employee and an equal amount to be paid by the management to the Florida relief fund. The resolution, which increased the Florida fund by $20,000, was forwarded to J. Franklin McFadden, chairman of the Citizens' Emergency Relief Committee, Southeastern Chapter, American Red Cross.

Trial Period of Five-Cent Fare Extended. — The Pittsburgh Railways, Pittsburgh, Pa., has extended the time limit of the 5-cent fare on its line between 62d Street and Butler Street and Sharpsburg and Aspinwall for another 60 days or possibly longer. In announcing this step the company said that in view of the fact that no definite appraisal of the effectiveness of the 5-cent car fare had been made possible during the 60 days it has been in effect, a longer period of time would be taken to make a fair test.

Employees Compromise. — Trainmen of the Illinois Power & Light Corporation, Bloomington, Ill., voted on Sept. 16 to accept an increase of 2½ cents an hour in their wages. They had demanded 5 cents. The new scale is retroactive to July 2 and will be effective for two years.

Proposes Rapid Transit Over Steam Line in Chicago.—Rapid transit service for areas in Chicago, Ill., not now served would be provided under a plan which the City Council ordered under investigation on Sept. 17. Alderman John Toman, author of the proposal, suggested that electrically driven cars be operated over steam railway lines radiating from the Loop district. He said that only a small expense would be involved in providing for the supplementary service.

Reduced Tickets for School Children.—R. Bly Wagner, manager of the Pine Bluff Company, Pine Bluff, Ark., announced recently that street car tickets in books of 20 for 50 cents per book, or at the rate of 2½ cents per trip, are being issued for the use of the school children. On account of the low fare rate, use of these tickets is restricted to children attending public and private grammar and high schools, and are good any time between the hours of 7 a.m. and 6 p.m.

Fares Increased in Johnson City.—Increase of 2 cents in fare by the Johnson City Traction Corporation, Johnson City, Tenn., will be allowed by the State Public Utilities Commission as soon as the company puts into service four new one-man-operated cars. The new fare will be 7 cents. The company asked to be allowed 8 cents. Despite an inquiry by the commission as to overhead expenses, W. H. Baldwin, vice-president of the Tennessee Eastern Electric Company, which owns the traction company, and other officials convinced the commission that even elimination of the objectionable items would not enable the company to make a profit.

Seeks to Operate One-Man Cars.—The Eastern New York Utilities Corporation, formerly known as the Albany Southern Railroad, and operating an electric railway between Albany and Hudson, N. Y., has filed with the Public Service Commission a petition to operate its lines with one-man trolley cars, changing the present type of car for this purpose. A public hearing will be held on this application later.

Men Restrained from Joining Union.—Employees of the Interborough Rapid Transit Company, New York, N. Y., who join the Amalgamated Association, which is affiliated with the American Federation of Labor, will be subject to prompt dismissal. Frank A. Hedley, president and general manager of the company, says that membership in the Interborough Brotherhood carries with it a pledge not to join any other union and that this pledge is part of the contract of employment. His statement to the men was called forth by the effort of organizers of the Amalgamated to obtain recruits from the Interborough union, particularly from former members of the Consolidated Railroad Workers of Greater New York.

Safety Work Bonus to Memphis Men.—Extra pay amounting to $6,387 is to be distributed shortly to motormen and conductors of the Memphis Street Railway, Memphis, Tenn., this amount representing savings effected by reducing accident costs during June, July and August. Under the plan the company divides with the men the amount saved each month, but distributes the awards at the end of each quarter. Records of the company over a period of years showed that 4.25 per cent of the gross receipts had been required for accident costs.

Parking Prohibited. — Intercity bus lines operated into Madison, Wis., by electric railways and independent owners are prohibited, under an ordinance just enacted by the Common Council, from parking on any street on the Capitol Square for a period longer than it actually requires to load and unload passengers. The same ordinance provides that after Jan. 1, 1928, no bus station will be allowed within two blocks of the Capitol Square where it is necessary to take on and discharge passengers in the street.

Courses for P.R.T. Men.—The Philadelphia Rapid Transit Company, Philadelphia, Pa., announced recently that it would provide educational courses during the fall and winter to give employees an opportunity for a "broader understanding of the principles underlying the company's co-ordinated system and its varied activities." The courses will be under the direction of officials of Mitten Management, Inc., and will include a wide variety of subjects under the general headings as follows: "Public Relations with a Background of Transportation and Public Utility Economics," and "Handling Men."

Foreign News

Subway for Japan

Tokyo will be the first city of the Far East to have a subway. This new underground road will be constructed in a manner similar to the plan used in New York City in that it is open cut and roofed over with steel, the tube being square and located a comparatively short distance below the surface of the street. The civil engineering work of this link, which will connect two very densely populated sections of Tokyo, has been about 50 per cent completed. The first rolling stock will include ten steel cars, each of which at first will be provided with two motors of 120-hp. rating. The motors are being furnished by the International General Electric Company, through Mitsui Bussan Kaisha. It is one of ten sections projected for Tokyo, this section being constructed by the privately owned Tokyo Underground Railway. The nine other sections may be constructed by the Tokyo municipality in the future.

Number of London Buses Reduced.—In a statement issued at the House of Commons recently the number of licensed omnibuses in the Metropolitan area is shown for Jan. 31 and June 30 of the present year. The figures are:

	London General Omnibus Co. and Associated Companies	Independent Proprietors	Total
Jan. 31, 1926	4,718	611	5,329
June 30, 1926	4,571*	474	5,045

*Including 99 omnibuses now controlled by the L. G. O. Co. which on Jan. 31 were independent.

Tram Cars May Replace Gondolas—If proposed plans are approved by the city officials of Venice, to unite five other communes with the city by bridges, over which electric cars will be operated, it will mean that the tramcar will practically replace the gondola. This method of transportation is now being advocated by the Cabinet. The arrangement proposes to connect Venice and the communes of Mestre, Tavaro, Chirignago, Zellarino and Fusino.

London Underground Has Longest Subway—Free passage was given to 3,000 people on the opening day of the Morden extension of the City & South London Railway, Sept. 13. This extension of 5½ miles gives to this property first claim to the longest underground railway in the world. It is 16½ miles long, connecting North and South London from Golders Green to Morden, and takes 53 minutes running time. The other route of the tunnel is by way of Charing Cross, which is 15 miles long and takes 49 minutes. The area covered will serve 2,500,000 people. If the line is to pay, however, at least 12,000,000 passengers must use it yearly. At the southern terminus there has been erected a large garage by the company for the accommodation of automobile owners who wish to leave their cars and continue the journey by tube.

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Recent Bus Developments

Jitney Proposal Defeated in Detroit

Electors Support Contention of City Officials that Municipal Railway Should Have Monopoly

Another blow was dealt the jitney operators in Detroit, Mich., at the election on Sept. 14 when the people defeated the initiatory ordinance proposed by the jitney organizations for regulating the operation of jitneys on Detroit streets. The amendment which was defeated would have allowed 500 jitneys to operate under city license on Woodward, Jefferson and Grand River Avenues and Fort Street.

An active campaign to defeat the amendment at the polls was waged by Mayor Smith and other administration officials, but the defeat of the proposed amendment is not considered as the final action by the jitney drivers. In the meantime, pending the hearing before the United States Supreme Court, the jitneys are operating as usual. Before the ballot, the Corporation Counsel proposed that a stipulation be signed to the effect that both the jitney organizations and the city officials would abide by the decision made by the voters. Edward N. Barnard, attorney for the jitney drivers, would not agree to the proposal.

The Corporation Counsel's office has engaged New York counsel to look after the city's interest when the case is reviewed before the U. S. Supreme Court.

New motor coach service has been started by the Department of Street Railways on a five-minute schedule on Woodward Avenue to combat the jitneys. A 10-cent fare is charged for passengers riding between the Detroit River and Six-Mile road, with the added inducement of free transfers to railway lines. These coaches are single-deck, 21-passenger buses which stop at all street crossings to take on or discharge passengers. With these coaches a comfortable ride is offered at a lower rate of fare than the jitneys charge.

It was pointed out by the Street Railway Commission that the jitneys take from the municipal street railway system a large portion of the most profitable central traffic in Detroit without relieving the D. S. R. of a single line of its unprofitable routes, many of which must be operated at a loss. The principle of operation embracing the use of the profitable downtown lines to support the lightly traveled outlying lines obviously cannot be applied with jitney competition.

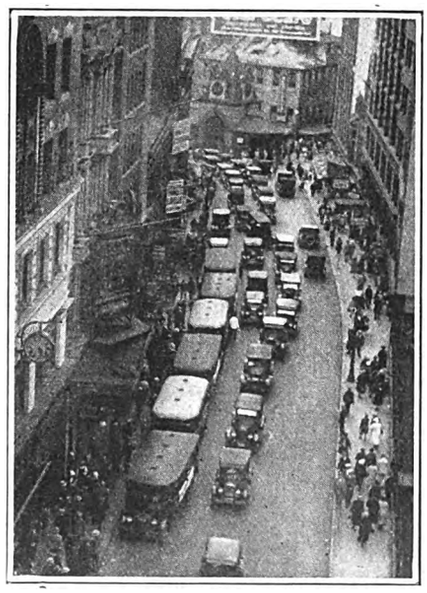
The recent decision at the polls is looked upon by the city officials as a renewed pledge of faith in municipal ownership. The proposed amendment to the ordinance was considered an attempt to wrest from the people the control of city streets, for which a 30-year battle was fought.

It was stated by the commission that while the jitneys serve only four downtown lines, the Department of Street Railways operates 55 lines, for service, not profit. In depriving the city of $1,000,000 in revenue last year, the jitneys reduced the D. S. R. revenues by an amount sufficient to purchase 72 new street cars or 75 double-deck, 60-passenger gas-electric motor coaches similar to the 50 which the city has purchased and which are now being delivered, under the terms of the contract with the bus manufacturers.

It was brought to the attention of the people that extensions of city railway and motor coach service to outlying sections and the continuation of the present 6-cent fare depended largely on the elimination of the jitney.

Baseball Enthusiasts Travel by Bus in Boston

Ten buses were chartered from the Boston Elevated Railway during the recent baseball season to enable employees of the Houghton & Dutton Company, Boston, to reach the Fenway Park baseball grounds quickly without encroaching upon track capacity of the local railway. There is a department store baseball league in Boston the games of which begin in the late afternoon, and in order to take advantage of daylight saving and reach the grounds as soon as possible after the stores close, the bus was utilized. The Houghton & Dutton store is located about half way between two busy subway stations crowded with traffic during the late afternoon, and the use of the bus in this case was advantageous from every viewpoint. The accompanying illustration was taken from the Boston office of the ELECTRIC RAILWAY JOURNAL in Tremont Temple.



Boston Fans Handled by Buses Which Were Specially Chartered from the Elevated

Menominee Favors Bus—Marinette Issue Pending

The Menominee, Mich., Common Council has expressed itself in favor of the installation of bus service in that city. As the first step in this direction the Council has instructed the franchise committee to investigate the practicability of offering a franchise to a bus company which would guarantee adequate service, preferably the Menominee & Marinette Light & Traction Company.

Contrary to the stand taken by the Council of Menominee, the Council of Marinette, at a meeting in August, refused to allow the railway to use buses on a three months basis in an attempt to wipe out the deficit which it is now experiencing in the operation of its twin city street car line. At a later meeting, however, the Council unanimously passed a resolution authorizing Councilmen to visit the bus systems operated by the railways in Manitowoc and Sheboygan.

After the refusal of above-mentioned Council to permit bus service on a trial basis, the company applied to the Railroad Commission for permission to increase its railway fares. Should the commission approve the proposed scale, cash fares will be 10 cents instead of 7, tickets three for 25 cents instead of ten for 50 and rates for children between four and twelve years of age from 4 to 5 cents. The question of bus operation will be deferred pending the return of the Aldermen from their tour of investigation.

Another Stage in Buffalo's Municipal Bus Venture

Mayor Frank X. Schwab of Buffalo, N. Y., was authorized by the City Council recently to invite corporations to operate buses within the city under the terms of a contract which provides for the payment of 20 cents per mile of operation, the money to apply on the purchase price of the buses by the city. Details of the proposed contracts were not revealed at the Council session, but the Mayor promised the Council he would submit within the next two weeks the names of the companies which will operate buses under the new form of contract. Mayor Schwab said he had no intention of giving up his municipal bus venture.

Questioned by other members of the City Council, Mayor Schwab said that the $10,000 which the Council appropriated for initial operating expenses of the municipal bus routes and which already had been paid to John C. Montana, who operates interurban buses in western New York, and to the White Motor Company, had not been lost to the city and would apply on the purchase price of the buses if the city voted to buy them. The new form of contract under which the city would pay 20 cents per mile of operation, the Mayor said, was modeled after a bus contract made in the city of Detroit when municipal bus lines were first operated.

Besides asking that he be given authority to enter into a new bus contract, the Mayor advocated the establishment of a zone system of fare payment.

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Stagger Arrangement in Neenah

A three-cornered agreement was finally reached by officials of the city of Neenah, Wis., the Railroad Commission and bus transportation companies at a recent conference held in Neenah for the purpose of regulating the operation of interurbans and buses in the hope of solving the traffic problem. A one month's trial will be made beginning Oct. 1 to regulate all transportation lines. This will be attempted by having buses of the traction company leave at five minutes after and 25 minutes before each hour and buses of the Homan Bus Company leave 25 minutes after and five minutes before each hour, while the Neenah-Appleton interurban cars will remain on the same schedule of fifteen minutes before and after each hour. A ten-minute service will thus be provided between Neenah and Appleton. A system of skip stops will also be introduced to cut down the number of stops by buses. At present buses stop anywhere.

Bus Operator Seeks to Use Weekly Pass.—Application for the use of the weekly pass was made before the Public Utilities Commission at Hartford, Conn., on Sept. 28 by John T. L. Hubbard, counsel for the Lordship Railway. The latter operates bus lines between Bridgeport and the communities of Lordship Park and Avon Park. Arguments in support of the application were made by Mr. Hubbard, Edwin M. Walker, president Schenectady Railway, and Walter Jackson. W. J. Flickinger, vice-president of the Connecticut Company, and various jitney operators protested the application. The commission reserved decision.

Abandons Bus Line.—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., discontinued the operation of its Beaver Dam bus line, effective Oct. 1. Unlike its other bus lines running into the lake regions, the Beaver Dam line was not heavily patronized during the busiest summer months.

Buses on Trial for One Year.—The Peninsular Railway has been authorized by the Railroad Commission to continue experimental operation of buses in the city of Palo Alto, Cal., for one year from Sept. 28, 1926. The petition is granted on condition that such service may be discontinued on 90 days notice if it be found that the revenues are insufficient to warrant operating. The bus service in question was authorized by the Railroad Commission a year ago as a substitute for the electric railway line abandoned at that time. The railway had found after one year of operation that the service was not paying its way.

Objects to Bus Application.—The International Railway, Buffalo, N. Y., appeared recently before Public Service Commissioner Pooley in opposition to the application of John F. Burke, receiver for the Hamburg Railway, Buffalo, for permission to operate buses between Hamburg and Buffalo to amplify the company's service. The company seeks to operate two passenger buses on an hourly schedule between Hamburg and Lafayette Square at Main Street in Buffalo, charging a 40-cent fare to Hamburg and 20-cent fare to Lackawanna and zone rates between these two points. The International Railway complained that the proposed bus line would take passengers to Lackawanna in competition with the South Park car line. Decision by the commission was reserved.

Bus Line Authorized.—The Charleston Interurban Railroad was granted a permit recently by the City Council of Charleston, W. Va., to operate on Piedmont Road to Greenbrier Street and through the residential thoroughfares north of Washington Street. The new bus line, which will be started in the near future, will have its terminal at the corner of State and Summers Streets.

Bus Certificate Granted.—The Illinois Commerce Commission on Sept. 22 granted the Alton, Granite & St. Louis Traction Company a certificate of convenience and necessity to operate buses connecting East St. Louis, National City, Brooklyn, Venice, Madison, Granite City and Nameoki to Mitchell, Ill., and from Mitchell to Hartford, Wood-river, East Alton and Alton. At the same time the commission dismissed the applications of the Pioneer Motor Transportation Company, Prairie State Bus Line and Superior Motor Bus Company for certificates to serve the same territory.

Would Operate in Binghamton.—The Binghamton Railway Bus Lines, Inc., has filed a petition with the Public Service Commission for permission to operate buses in the city of Binghamton, N. Y., and adjoining territory. The company proposes a 30-minute schedule from 6 a.m. to 12 p.m. weekdays and 7 a.m. to 12 p.m. on Sundays. The fare is to be 7 cents. Transfers will be permitted from the bus line to the street cars of the Binghamton Railway under the same rules as prevail at present. A public hearing will be held on the application.

Buses Used on Extension.—The Key System Transit Company has applied to the California Railroad Commission for a certificate to operate an extension of its Thousand Oaks line. Buses will be used between the intersection of the Alameda and Monterey Avenue and the intersections of Colusa Avenue and Fairmont Avenue and intermediate points in the city of Berkeley.

Would Substitute Buses. — The Bus Transportation Company, subsidiary of the Denver Tramway, Denver, Col., has asked for a permit to operate buses between the western city limits of Denver and Arvada, Col. The tramway desires to operate buses because its electric lines in this vicinity do not pay.

Suburban Line Denied Bus Grant.—The Pennsylvania Public Service Commission recently refused a petition for a certificate of public convenience to the Southern Pennsylvania Bus Company for the right to operate a bus line between Chester and Darby. The applicant is a subsidiary of the Southern Pennsylvania Traction Company, Chester, Pa., which operates a double-track railway between these points. Various communities along the line protested against the bus line, claiming that the roads are already heavily traveled traffic arteries. The commission in its decision said that although the terminal points were important centers they were now served not only by a number of railway lines but by steam lines as well. It was possible, the commission felt, in this rapidly growing territory that conditions might change where bus service would become necessary in addition to existing facilities, but at the present time the commission was not convinced that public necessity required the additional service.

Franchise Canceled—Buses to Be Operated.—The City Council of Vancouver, Wash., has received authorization to let an exclusive franchise for bus lines to be operated to the district recently served by street cars. Applications for such service will be received after Oct. 1. Earl S. Nelson, president of the Clark County Development Company, which corporation managed the railway lines, has signed on behalf of his company an agreement reached with the City Council relative to repairing streets on which the tracks of the Vancouver electric railway are located. With this agreement signed the Council approved the ordinance canceling the franchise held by the company. Service of street cars on the Orchards-Sifton line as previously reported was to cease on Oct. 1. Other lines are to continue until the middle of October or until suitable bus service can be instituted.

Buses and Cars to the Fair. — The Reading Transit Bus Company, an associate of the Reading Transit Company, Reading, Pa., operated buses in conjunction with railway cars to give patrons the advantage of direct transportation between their homes and the Reading Fair Grounds. The charge on the buses was 10 cents, while the regular 7-cent fare continued on the cars. Persons wishing to avail themselves of the railway and bus service in visiting the fair, which opened on Sept. 14, were able to make the trip from their homes direct to the entrance gates for a fare of 17 cents.

Would Operate in Troy.—The Public Service Commission held a hearing on Sept. 22 on the application of the Capitol District Transportation Company, Inc., a subsidiary of the United Traction Company, for a certificate to operate a bus line in the city of Troy. The bus company proposes to operate over the so-called Albia division of the traction company, which the company at the same time petitioned to abandon. The city of Troy has by action of its Common Council consented to the abandonment and the substitution of buses. The bus company has agreed to a system of transfers with the United Traction Company lines, to a minimum of 22 buses with a minimum schedule of ten minutes and a five-minute schedule during rush hours; to the payment of a license fee of $75 per year for each vehicle operated; to the storing of the buses in the Albia carhouse of the United Traction Company, and to the removal under the direction of the city engineer of the poles, wires, tracks, ties and all other paraphernalia now used in the operation of the trolley line.

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Financial and Corporate

New Jersey Company to Split Stock

Three for One Division of Common Proposed—Dividends on Preferred to Be Paid Monthly

Directors of the Public Service Corporation of New Jersey, among the subsidiaries of which are the Public Service Railway and the Public Service Transportation Company, announced on Sept. 28 that they would recommend to shareholders that the common stock outstanding be divided in a ratio of three to one and also that eventually the new stock would be put on the equivalent of a $6 dividend basis as against the present rate of $5. The directors also will recommend that authorized preferred stock be increased from $100,000,000 to $200,000,000 and that the authorized amount of no-par value common shares be increased from 2,000,000 to 10,000,000 shares. The corporation does not intend to offer any additional common stock for subscription by stockholders.

The board will further recommend that dividends on 6 per cent cumulative preferred stock be paid monthly instead of quarterly. Under the recommendation, the authorized 6 per cent cumulative preferred stock would be increased from $25,000,000 to $125,000,000. The authorized 8 per cent cumulative preferred would remain at $25,000,000 and the authorized 7 per cent cumulative preferred at $50,000,000. On Sept. 25 there were outstanding 1,192,425 shares of no-par common, 215,312 shares of 8 per cent cumulative, 288,570 shares of 7 per cent cumulative and 51,973 shares of 6 per cent cumulative preferred.

In commenting on the proposals Thomas N. McCarter, president, said:

> The recommendations are in the interest of more economical financing and a wider distribution of stock holdings among the public. While it is expected that much new capital will be obtained through the sale of our 6 per cent cumulative preferred, at the same time, because of favorable results of operation, common stock of the corporation is coming into favor as an investment and through the lower selling price to result from division will undoubtedly become more attractive to investors of moderate means.
>
> At the proper time I shall recommend to the board that the new stock be placed upon a $2 a year dividend basis. The proposal to pay monthly instead of quarterly dividends on the 6 per cent cumulative preferred is for the purpose of giving another attractive feature to this security, which is being sold direct to the public by employees of our operating companies.

P. R. T. Stock Increase Approved

The shareholders of the Philadelphia Rapid Transit Company, Philadelphia, Pa., at a special meeting on Sept. 22 approved an increase in the company's preferred stock from $18,000,000 to $23,000,000. The new stock, when issued, will bring the total capitalization up to $53,000,000, it having $30,000,000 common stock outstanding.

Under the stockholders' approval, the company will issue $5,000,000 additional preferred stock, the proceeds to go for capital additions and improvements during next year, including expenditures for track improvements and extensions, retirement of underlying securities, bus equipment and garaging.

According to a statement made to the City Council when that body was considering the question of increased stock under the city-rapid transit agreement, it was stated $1,550,000 of the new preferred stock would go toward the retirement of underlying securities, including rapid transit bonds and car-trust certificates and similar securities of underlying companies, $1,700,000 for normal capital expenditures and $1,750,000 for additional buses. Common stock holders of the company have waived their right to buy the new preferred stock and it will shortly be offered to car riders on a partial payment plan. The par of the new stock will be $50 and dividends of 7 per cent will be paid.

Toronto Commission Would Abandon Radials

During the negotiations for the transfer of the York Radials to the Toronto Transportation Commission, Toronto, Ont., the latter body submitted to the Board of Control on Sept. 17 a recommendation that the lines, owned by the city, should be abandoned. The commission gave as its reason that deficits would increase further if the radials continued to operate. Although the city under an agreement with the Ontario Hydro-Electric Power Commission, has had to assume the deficits of the last four years of operation of the radials, the board of control at a recent conference with the Toronto Transportation Commission voted unanimously that that body should take care of any future deficits, provided it assumed operation of the radials.

Mayor Foster said that the time had arrived for the city to cease shouldering the burden of about $25,000 annually. If the only way to effect the saving was to abandon the radials, then he was prepared to go ahead and do so. Ultimately, he believed, it would be a matter for the voters of the city of Toronto to decide.

$300,000 for Tacony Line

Settlement was made on Sept. 24 by the Philadelphia Rapid Transit Company, Philadelphia, with the Northeastern Philadelphia Transit Company for the acquisition of the old Frankford, Holmesburg & Tacony Railroad. The announcement was made by Albert M. Greenfield, representing the stockholders. A price of $300,000 was agreed upon last spring and the Public Service Commission has approved. Mr. Greenfield announced that the road would be rebuilt and become a part of the P. R. T. system. It will operate from Blakiston Street to the Frankford "L" terminal at Bridge Street. One fare will be charged and free transfers will be given to and from the line at the "L" terminal.

Rate Settlement in Memphis

New Tentative Base of $10,674,452 Recalls 1919 Investigation—Approval Awaited

A compromise on a suit now pending in the Supreme Court of Tennessee involving the rate base of the Memphis Street Railway, Memphis, Tenn., was effected recently. Mayor Paine has approved the terms which settle $10,674,452 as the rate base. Recommendation for this settlement was made by Ross Harris, valuation expert employed by the city, and E. B. Klewer, city attorney. The settlement will have no immediate bearing on the fare charged by the company. By the terms of the agreement the company will dismiss its appeal to the Supreme Court, thereby making the opinion of the court of civil appeals, which sustained the material contentions of the city, final. Mayor Paine, in approving the terms of the settlement, traced the history of the litigation.

The Railroad and Public Utilities Commission on July 12, 1919, ordered an investigation to ascertain the value of the property as of July 1, 1919, so that it could be determined upon what proper values the company was entitled to earn a fair return.

Valuation reports were made by A. S. Richey, representing the commission; J. H. Perkins, representing the receivers of the company, and Ross Harris, representing the city, and early in 1920 the utilities commission fixed the rate base as of July 1, 1919, at $11,846,034, in which was included $787,579, for development costs and $1,930,544, representing the value of superseded property. To the inclusion of the last two items in the rate base the city objected and filed a certiorari to review the findings of the commission in the Circuit Court of Davidson County, in Nashville. The city lost this case in the Circuit Court and appealed to the Court of Civil Appeals.

Reproduction Cost Overlooked

That court decided that while the commission erred in including in the rate base items for superseded property and development costs complained of by the city, the commission should have given, but failed to give, due weight to the reproduction cost of the property of the company—that is, what it would cost to reproduce the physical properties of the company, as of the date fixed, less accrued depreciation—and remanded the case to the utilities commission for a revaluation in accordance with the principles announced by the court. Then the company took the case to the Supreme Court by certiorari.

Since the reproduction cost would equal, if not exceed, the rate base as fixed by the commission, and since the rate of fare would not be affected, and in view of the enormous cost of a revaluation hearing, it was deemed advisable to compromise the law suit, the Memphis Street Railway having agreed to pay all costs. The new rate base, tentatively agreed upon, must be approved by the commission. If adopted, it is substantially the same as the rate base heretofore fixed by the commission, the difference being due to deductions made since 1919, by the sale of certain properties of the company.

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The Memphis Street Railway's rate base case was one of the very first coming before the commission after its organization in 1919. At that time the courts were not agreed as to the basis on which a value for rate making purposes should be fixed. Since that time the Supreme Court of the United States, and courts generally, have announced the rule that the reproduction cost less depreciation is a controlling factor in fixing a valuation of public utility properties for rate making purposes.

Even if the city had sustained all its contentions in the suit, a reduction in fares would not have been justified by the earnings of the company, due to loss in revenue passengers carried and because of the increased use of automobiles.

Receiver for Colorado Road

As the result of a suit in equity brought by the Guaranty Trust Company of New York, trustee for the bondholders, the Denver & Interurban Railroad, operating between Denver and Boulder, has been placed under a receivership. Judge Foster Symes of the U. S. District Court at Denver named as receiver W. H. Edmunds, general manager of the road since its operation began in 1909. Mr. Edmunds expressed the opinion that discontinuance of service was desired.

In December, 1924, the electric line started bus service over virtually a parallel route. It received the support of the city of Boulder in its application for a certificate of public convenience and necessity at that time. The city now claims that the road officials promised electric service would not be discontinued if the bus franchise were secured.

The Denver & Interurban Railroad was a paying property during the first ten years of its operation. It was in the hands of a receiver from 1918 to 1920, war conditions being responsible for its failure to pay.

Information laid before the court by Receiver Edmunds in his request for instructions sets forth that operating profit was $6,782 in 1921 and $27,095 in 1922. Since then, however, the line has lost money, the figures being: 1923, $13,051; 1924, $42,226, and 1925, $53,514. Losses this year total $51,217 to Aug. 1.

The line operates eighteen schedules daily, the one-way distance being 30 miles. Employees number 42 and the monthly payroll is $8,000. Power costs average $2,800 monthly. Single-phase current is utilized. Cars installed in 1909 are still in use. The round-trip fare on the line is $1.80, with one-way tickets selling for $1. Lower rates prevail on a commutation basis.

The bus line has proved successful. Six runs each way daily were operated at first. This was later increased to eleven each way, two more than the electric line. Tickets have been interchangeable on the bus and electric railway line.

The bonded indebtedness of the electric line is $1,250,000. In its suit the Guaranty Trust Company stated that the road was delinquent in interest payments on the bonds.

$204,706 Profit in Seattle

Operation of Municipal Railway in 1925 Results in Decreased Revenues—Number of Accidents Decreases

EARNING figures of the Seattle Municipal Railway, Seattle, Wash., for the year ended Dec. 31, 1925, reveal a net income considerably lower than for the year previous but higher than for 1923. Net income in 1925 was $204,706, compared with $557,243 in 1924 and $169,636 in 1923. No explanation of the lowered net income was included in the report, which is devoid of text except for the chronology. However, a perusal of the statistical tables shows a

INCOME STATEMENT, SEATTLE MUNICIPAL STREET RAILWAY

	1925	1924
Operating revenues	$5,950,204	$6,119,290
Operating expenses	5,031,917	4,807,538
Operating income	$918,287	$1,311,752
Miscellaneous revenue	12,196	11,699
Gross income	$930,483	$1,323,451
Deductions from gross income	725,776	766,207
Net income	$204,707	$557,244

PROFIT AND LOSS

Losses accrued (other than income) current annual period.		
Adjustment of accounts receivable		$590
Delayed losses accrued in prior periods:		
Cost of retiring property	$19,013	
Property retired not fully depreciated	159,362	
Loss on land sold	17,418	
Adjustment of accounts receivable	1,058	
		$196,852
Net income (profit and loss) gain		25,746
		$223,187
Net income		204,707
Gains accrued (other than income) current annual period		1,244
Delayed gains, accrued in prior periods		13,504
Unearned increase of plant		3,731
		$223,187

OPERATING STATISTICS OF THE SEATTLE MUNICIPAL STREET RAILWAY

	1925	1924
Car-miles operated	15,717,484	15,883,567
Car-hours operated	1,700,450	1,717,052
Bus-miles operated	559,236	414,720
Bus-hours operated	57,135	43,542
Total car-miles	16,276,720	16,298,287
Total car-hours	1,757,585	1,760,594
Average speed	9.27	9.26
P. S. E. transfers	7,033	7,063
S. & R. V. transfers	883,418	882,738
Jitney transfers	481,775	414,798
Passengers at 2½ cents	2,200,758	2,151,501
Passengers at 3 cents	59,527	58,078
Passengers at 8½ cents	63,994,015	66,060,792
Passengers at 10 cents	4,827,790	4,841,895
Total pay passengers	72,454,316	74,416,865
Deadheads	1,007,590	1,152,735
Transfers	18,995,932	18,697,374
Total passengers	92,457,838	94,266,974
Pay passengers per car-mile	4.4514	4.5659
Total passengers per car-mile	5.6804	5.7839
Total passengers per car-hour	52.6050	53.5427
Passenger revenue	$5,909,486.75	$6,083,238.19
Miscellaneous revenue	52,914.16	47,751.16
Gross revenue	5,962,400.91	6,130,989.35
Revenue per car-mile	.366315	.376174
Revenue per pay passenger	.082292	.082387
Revenue per total passenger	.064488	.065039
Expenses, including depreciation	$5,031,917.72	$4,807,538.52

STATISTICAL AND COMPARATIVE REPORT OF OPERATION OF THE SEATTLE MUNICIPAL STREET RAILWAY

Revenue—Operating	1925 Amount	1925 Per Car-Mile (Cents)	1925 Per Car-Hour (Cents)	1924 Amount	1924 Per Car-Mile (Cents)	1924 Per Car-Hour (Cents)
Passenger car revenue	$5,851,959	35.95	332.95	$6,043,981	37.08	343.29
Special passenger car revenue	1,205	.01	.07	593	0	.03
Automobile bus revenue	57,526	.35	3.27	38,662	.24	2.20
Municipal department passenger revenue	48,000	.29	2.73	48,000	.29	2.73
Freight revenue	32,434	.20	1.85	29,621	.18	1.68
Mail revenue	22,776	.14	1.29	19,395	.13	1.10
Miscellaneous transportation revenue	.....	.....	.....	12	0	0
Discounts and adjustments	*68,699*	*.39*	*3.62*	*60,976*	*.37*	*3.46*
Total operating revenue	$5,950,204	36.55	338.54	$6,119,290	37.55	347.57
Miscellaneous Revenues and Expenses:						
General shops	*$34,685*	*.21*	*1.97*	*$40,086*	*.25*	*2.28*
Service equipment	*2,605*	*.02*	*.15*	*2,351*	*.01*	*.15*
Utility equipment	728	0	.04	*182*	*0*	*.01*
Electric current sold	797	0	.05	946	.01	.05
Rental of real estate and buildings	4,410	.03	.25	4,024	.02	.23
Rental of tracks and way facilities	22,071	.14	1.26	23,892	.15	1.36
Rental of transportation equipment	1,071	.01	.06	1,578	.01	.09
Station and car privileges	18,731	.12	1.06	22,335	.13	1.27
Lost and found department	*246*	*0*	*.01*	*296*	*0*	*.02*
Other miscellaneous Revenues and expenses	1,923	.01	.11	1,840	.01	.10
Total miscellaneous revenue	$12,196	.08	.70	$11,699	.07	.66
Total gross revenue	$5,962,400	36.63	339.24	$6,130,989	37.62	348.23
Summary of Operation:						
Way and way structures	$498,345	3.06	28.35	$459,717	2.82	26.11
Conducting transportation	2,144,246	13.17	122.00	2,022,303	12.41	114.86
Maintenance of transportation equipment	471,367	2.90	26.82	455,935	2.80	25.90
Housing and hostling transportation equipment	218,152	1.34	12.41	206,294	1.27	11.72
Power	617,488	3.79	35.13	624,815	3.83	35.49
Commercial	65,986	.41	3.75	53,472	.33	3.04
General	332,773	2.04	18.93	299,885	1.84	17.03
Depreciation and amortization	683,556	4.20	38.91	685,114	4.20	38.91
Total operating expenses	$5,031,917	30.91	286.30	$4,807,538	29.50	273.06

INCOME STATEMENT

	1925 Dr.	1925 Cr.	1924 Dr.	1924 Cr.
Operating revenues	.....	$5,950,204	.....	$6,119,290
Operating expenses	$5,031,917	.....	$4,807,538	.....
Operating income	.....	918,286	.....	1,311,751
Miscellaneous revenues and expenses	.....	12,196	.....	11,699
Gross income	.....	930,483	.....	1,323,450
Deductions from gross income	725,776	.....	766,207	.....
Net income	.....	204,706	.....	557,243

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CONDENSED BALANCE SHEET OF SEATTLE MUNICIPAL STREET RAILWAY AS OF DEC. 31, 1925

Capital Assets		
Total capital assets		$13,578,403
Total interest, redemption and special fund assets		355,343
Total current assets		1,190,400
Total deferred charges		60,852
Deficit—Dec. 31, 1925		590,182
		$15,775,182
Capital Liabilities		
Bonds outstanding:		
General lien bonds		$775,000
Utility revenue bonds		13,524,500
Total capital liabilities		$14,299,500
Redemption and Sinking Fund Liabilities		
Unmatured accrued interest on funded debt:		
General lien bonds	$7,812	
Utility revenue bonds	225,240	
		$233,052
Special guaranty deposit (repayable)		300
Matured unpaid interest on funded debt		3,244
Audited and approved claims and depreciation reserve fund loans payable		28,219
Total interest, redemption and special fund liabilities		$264,817
Current Liabilities		
Current fund loans payable:		
To general fund		$264,133
To bond funds		227,000
To depreciation reserve fund		90,000
		$581,133
Amounts reserved on contractor's estimates		23,395
Tokens outstanding		74,156
Audited and approved claims payable		250,918
Warrants outstanding		243,429
Total current liabilities		$1,173,031
		$15,775,182

PAYROLLS AND VACATIONS—1925

Transportation:	Payrolls	Cost of Vacations
Office, inspectors, station masters	$107,541	$4,306
Trainmen	2,100,778	87,696
Shops and carhouses	559,047	15,157
Way and structures	525,187	20,152
Accounting	89,864	3,899
Total	$3,382,416	$131,210

SEATTLE MUNICIPAL STREET RAILWAY SEGREGATION OF PASSENGER CAR-HOURS AND CAR-MILES

	Car-Hours	Car-Miles
One-man single truck	175,268	1,336,557
One-man double truck	715,769	6,878,412
Two-man	788,806	7,427,906
Buses	57,135	559,236
Total	1,736,978	16,202,111

decline of $169,086 in total operating revenue and an increase of $224,379 in total operating expenses.

Included in the history are the fluctuations in the fare rate from May 9, 1914, when the cash fare was 5 cents with six tickets for 25 cents, to June 16, 1923, when a cash rate of 10 cents and a token fare of 8½ cents went into effect. Employees numbered 1,869, of whom 1,192 were trainmen receiving from 60 cents to 77 cents an hour. There was a slight decrease in the number of accidents. The total number in 1925 was 6,322, against 6,443 in 1924. Still the amount paid for injuries and damages was higher in 1925, being $78,567, against $65,105 in 1924.

Petitions for Valuations Rejected.—The California Railroad Commission has dismissed applications of the city of Oakland and the city of Alameda for a valuation of the property of the San Francisco-Oakland Terminal Railways, Oakland, Cal.

Increase in Net Income on Brooklyn City

For the year ended June 30, 1926, the Brooklyn City Railroad, Brooklyn, N. Y., realized a net income available for dividends of $1,422,736, compared with $1,411,576 for a similar period the year previous. Gross revenues from transportation were $11,399,373, an increase of $36,092 compared with the previous year. Total operating expenses decreased from $9,077,698 for the previous year to $8,963,104. During the year 230,355,382 revenue passengers were carried, compared with 229,613,538 in the preceding year. A higher standard of service was accorded the public, the seat-miles per car-mile increasing from 45.71 to 47.12.

Interest charges showed an increase from $282,688 to $500,810 due to the interest on the $1,627,000 first consolidated mortgage 5 per cent bonds sold on July 1, 1925, and the interest on the equipment trust series "A" 5 per cent certificates issued in January, 1925. The proceeds from the sale of these securities were used to make payments on account of the new cars, to reimburse the company for expenditures on its shops, to purchase materials and supplies and for other corporate purposes. This increase was in part offset by a reduction in the amount paid for rentals of cars and tracks from $204,832 to $79,275 due to the use during a portion of the year of the newly purchased cars in lieu of others previously rented.

Pursuant to order of the Transit Commission of the state of New York dated May 24, 1925, the company is proceeding with the inventory and appraisal of its property and it is said that the same will shortly be completed and ready for presentation.

All the 335 new modern type cars contracted for in 1925 were delivered and placed in operation during the summer and fall of 1925. As of Jan. 1, 1926, various agreements having to do with the joint expense of maintenance of track, roadway and cars by the Brooklyn City and the Brooklyn-Manhattan Transit Corporation were terminated by mutual agreement, and the Brooklyn City is now doing all such maintenance work itself. The reduction in the maintenance of equipment compared to previous years is largely due to the newer and more modern type of cars.

The company, jointly with the Brooklyn-Manhattan Transit Corporation, has offered to supply supplemental bus service in Brooklyn on terms which it is believed are more advantageous to the general public than any other suggestion that has been laid before the Board of Estimate and Apportionment of the city of New York. The matter is still under advisement by the Board of Estimate and Apportionment.

Charges for injuries to persons and property were greater than the previous year, largely due to the increase in vehicular traffic. Every effort is being made to decrease the number of accidents, and beginning Aug. 1, 1926, a plan was put in effect under which all employees operating their cars for certain periods without an accident will receive a bonus. It is expected that this plan will prove of advantage to the employees, the public and the company.

INCOME STATEMENT OF THE BROOKLYN CITY RAILROAD

	Fiscal Year Ended June 30, 1926	Fiscal Year Ended June 30, 1925
Passenger revenue	$11,399,283	$11,363,196
Other car revenue	90	85
Total transportation revenue	$11,399,373	$11,363,281
Advertising and other privileges	96,666	96,000
Rent of land and buildings	126,526	146,292
Rent of tracks and terminals	54,527	56,590
Miscellaneous revenue	820	1,515
Total operating revenue	$11,677,915	$11,663,679
Operating Expenses:		
Maintenance—Way and structures	$1,327,310	$1,407,398
Equipment	1,216,427	1,441,866
Power	1,047,848	953,422
Operation of cars	4,219,640	4,143,844
Injuries to person and property	636,747	583,183
General and miscellaneous expenses	515,129	547,982
Total operating expenses	$8,963,104	$9,077,698
Net operating revenue	$2,714,810	$2,585,981
Taxes assignable to operation	768,707	775,363
Operating income	$1,946,103	$1,810,617
Non-operating income	92,854	101,940
Gross income	$2,038,958	$1,912,558
Income Deductions:		
Interest	$500,810	$282,688
Rent of cars and tracks	79,275	204,832
Other deductions from income	36,135	13,461
	$616,222	$500,982
Net income	$1,422,736	$1,411,576

Railway Operates Under New Control.—Control of the Valley Railways, Lemoyne, Pa., operating 44 miles of electric railway, particularly in Carlyle and Lemoyne, has passed to the Lehigh Power Securities Corporation. This has brought the Valley Railways into the group of properties under the supervision of the Electric Bond & Share Company, New York, N. Y.

Fate of Line Uncertain.—The possible purchase of the Windsor, Essex & Lake Shore Rapid Railway, Kingston, Ont., by Windsor and adjacent border cities is a question for early consideration. This situation was announced recently by Gordon D. Wickett, president, leaving for England to attend a meeting of the road's bondholders. He forecast a cessation of operations unless the line were taken over by the interested communities of Essex County. Mayor Mitchell of Windsor said he would not countenance purchase of the line until definite information was forthcoming with respect to its financial condition.

Hearing on Abandonment Deferred.—The hearing before the Public Service Commission on the application of the Hudson Valley Railway, Glens Falls, N. Y., for approval of a declaration of abandonment of its Lake George to Warrensburg trolley line and the line from Thomson to Greenwich has been adjourned to Oct. 19 at Albany. The date for a hearing on the matter was first set for Sept. 22 and then adjourned to Oct. 5.

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Legal Notes

FEDERAL CIRCUIT COURT—*Employee Engaged in Interstate Commerce.*

The train of a railway entirely intrastate was carrying both interstate and intrastate shipments when it stopped to allow the electric locomotive to do some switching of empty coal cars. While this was being done, a trainman was injured. He was held to be engaged in interstate commerce. [Youngstown & O. R.R. vs. Halverstodt, 12 Federal (Second) Rep., 995.]

FEDERAL CIRCUIT COURT.—*Cars Used in Interstate Commerce Must Have Safety Coupler.*

A switchman in the yard of an electric interurban railway was injured while endeavoring to couple a car to an electric locomotive. The car was sometimes used in interstate commerce, but was empty at the time and was simply being switched from one to another track. The company was held responsible because the car was not equipped with automatic safety couplers as required by the federal safety appliance act. [Detroit U. R. vs. Craven, 13 Federal (Second) Rep., 352.]

FEDERAL CIRCUIT COURT—*City Ordinance Regulating Motor Vehicles, Passed Under Police Power, Must be Fair and for All Citizens Alike.*

The city of Hammond, Ind., passed an ordinance forbidding motor vehicle common carriers from operating over certain streets, but exempted any motor vehicles with whose owner the city already had a contract. A certain company came under this exemption. The ordinance was said to have been passed "to promote public safety and order and to diminish the congestion of vehicular travel within said city." The suit was brought by a bus company which was excluded under the law but had met all the requirements of the laws of the state of Indiana as to the operation of buses. The Court said there were several reasons why the ordinance should be declared invalid, but the one particularly cited was the exemption mentioned, saying: "Police regulations must be fair and reasonable for all citizens alike, so far as may be." The ordinance "permits some concerns to do the identical things from the doing of which" appellant is excluded. The city had the right to make a contract with one coach company and not with another, but if it had police powers of the extent claimed, it has no right to exercise them against one user of the street and not another. [Schappi Bus Lines, Inc. vs. City of Hammond, 11 Federal (Second) Rep., 940.]

INDIANA.—*Relocation of Tracks Because of Street Improvement.*

A railway company which originally had a 50 year franchise but changed it in 1921 to an indeterminate permit, was required by the State Highway Commission to relocate its tracks and change their grade on a highway which was being improved. The action of the State Highway Commission was upheld. [Hammond W. & E. C. Railway vs. State Highway Commission, 152 Northeast. Rep., 806.]

KENTUCKY.—*Local License Fee for Interstate Bus Upheld.*

A Kentucky law declares that auto transportation companies which accept licensing and regulation from the state need not take out a local license in those cities through which they operate. A license fee in a small city of from $25 to $50 a year per bus, depending on the size of the bus, was upheld as not constituting a burden on interstate commerce, in the case of an interstate bus company that had not taken out a state license. [Northern Kentucky Transportation Co., vs. City of Bellevue, 285 Southwest. Rep. 241.]

MASSACHUSETTS—*Automobile Stopped too Near Track.*

A driver stopped an automobile where it was certain to be hit by a passing electric car if the latter should sway a few inches further than the driver supposed it would. He was held guilty of contributory negligence as a matter of law. [Hurd vs. E. M. S. R. Co., 150 Northeast. Rep., 5.]

MISSOURI.—*High Degree of Care Required to Persons Standing on Step with Door Closed.*

A person tried to board a crowded car at a regular stopping place and stood on the step after the door was closed and the car had started. While in this position, he was hit by the girder of a bridge which the car was crossing. The company, under the humanitarian doctrine, was held responsible, if the conductor knew, or by using the highest degree of care could have known, that an intending passenger was still on the step and might be injured. [Amos vs. Fleming et al., 285 Southwest. Rep., 134.]

NEW HAMPSHIRE—*Interstate Bus Lines Must Not Accept Intrastate Business Unless They Conform to Regulations Laid Down for Motor Bus Common Carriers.*

All recent decisions on the regulation of interstate motor bus carriers by State Public Service Commissions are reviewed, and the terms of the New Hampshire statute on motor bus vehicles was held to apply to all intrastate business done by interstate motor buses. [Haselton vs. Interstate Stage Lines, 133 Atlantic Rep., 451.]

MICHIGAN — *Passenger Signaling Car While Standing Near Track Is Responsible If Injured.*

A person accustomed to travel on a certain interurban line signaled a car to stop at a point where stops are usually made on signal. Expecting the car to stop, the prospective passenger stood very near the track. No stop was made and he was injured. The court held him guilty of contributory negligence. [Devore vs. Rapid Railway, 209 Northwest. Rep., 111.]

NEW YORK—*Not Responsible When Car Hits Child Caught in Rail.*

A child crossing the track between blocks caught his foot in the rail and was struck by a car, whereas, if he had not caught his foot in the rail, probably he would not have been injured. There was no evidence that the rail was defective, and judgment for the plaintiff was reversed and a new trial ordered. [Madden vs. Chalmers, 214 New York Supp., 268.]

OHIO—*Authority to Issue Bus Certificates to Line Operating to State Border.*

A bus company applied for a certificate to operate from a city in Ohio near the state line to the state line between Ohio and Kentucky. The record showed that it had also applied for a route in Kentucky. It was held that the grant of the Ohio franchise was within the power of the municipality and not within the jurisdiction of the Public Utilities Commission. [Cannonball Transportation Co. vs. Public Utilities Commission of Ohio., 150 Northeast, Rep., 39.]

OHIO—*Grounds for Revocation of Bus Certificate of Public Convenience and Necessity.*

The Public Utilities Commission revoked a certificate of public convenience and necessity granted to a motor-bus common carrier between Cleveland and Elyria for the following reasons among others: Omission of scheduled trips, operation without certain safety requirements, use of buses over irregular routes for special trips, and use of an outside bus for a schedule trip. The revocation was upheld on all points by the Supreme Court of Ohio, which declared, among other things, that the carrier, having brought itself clearly within the designation of a motor transportation company in order to receive the benefits of the provisions of the motor transportation act, cannot claim exemption therefrom on the theory that as to the so-called special trips, it was a "private contract carrier." [Solt et al. vs. Public Utilities Com. et al., 150 Northeast. Rep., 28.]

VIRGINIA—*Injury to Passenger Alighting from Car Stopped on Wrong Side of Street.*

A city ordinance of Richmond, Va., requires street cars to stop for the receipt and discharge of passengers only on the near side of intersecting streets. The director of public safety made an exception of the corner where the accident occurred, had instructed the company to stop on the far side and had erected a sign to that effect, but the Supreme Court of Appeals of Virginia held that he had exceeded his powers in doing so. The passenger alighting from the front platform of a car stopped at the corner in question was struck by an automobile, whose driver was unaware of the exception and did not expect passengers to be discharged at that point. The court differentiated the case from others where the company was held not liable when alighting passengers were struck by vehicles, because it declared the passenger had been put off at a wrong place. [Virginia Ry. & Power Co. vs. Taylor, 132 Southeast. Rep., 334.]

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Personal Items

Charles R. Mahan Comptroller at Highwood

Charles R. Mahan, for the past four years auditor of the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—has been appointed comptroller of this high-speed electrically operated railroad, with offices in Highwood, Ill. Mr. Mahan's appointment to this new office in the North Shore Line official organization comes as a reward for efficient service with transportation companies under the management of Samuel Insull and associates.

It was while employed in the office of the auditor of disbursements of the Chicago, Rock Island & Pacific Railroad

C. R. Mahan

in 1905, where he had charge of the payroll department, that Mr. Mahan became acquainted with T. B. MacRae, now auditor of the Chicago Rapid Transit (elevated) Lines, who also was employed in the same office at that time. Mr. MacRae left this organization to become auditor of the Metropolitan West Side Elevated Railway, Chicago, about the same time that Mr. Mahan became chief clerk to the auditor of the Indiana Harbor Belt Railway, which was then in course of construction. The result of this early acquaintance was that on Sept. 1, 1907, Mr. Mahan was offered and accepted the position of chief clerk to Auditor MacRae on the Chicago elevated line.

In 1911, following consolidation of the elevated lines under the management of Samuel Insull and associates, Mr. Mahan was appointed assistant auditor. He retained this position until May 1, 1916, when he resigned to accept a position as accountant with the Interstate Commerce Commission in Washington, D. C. While engaged in this work he was promoted to accountant in charge of a field party on valuation work.

Returning to Chicago in 1921 to resume his position of assistant auditor of the Rapid Transit Lines, Mr. Mahan served in this capacity until Feb. 1, 1922, when he was appointed auditor of the North Shore Line. He was holding this position with the North Shore Line at the time of his recent promotion.

Changes in Personnel at Fitchburg

Stockholders of the Fitchburg & Leominster Street Railway, Fitchburg, Mass., met on Sept. 28 and initiated steps to reorganize the company. Wesley W. Sargent, president and general manager, resigned. Other resignations included Herbert I. Wallace as vice-president and William E. Putney as director. The others were also directors. This left three vacancies on the board of directors, places filled by the election of Albert C. Brown, George R. Wallace, Jr., and Robert S. Parks, all of whom are residents of Fitchburg.

Louis E. Cushing, Lowell, Mass., general manager of the Lowell & Fitchburg Street Railway for the last eighteen years, will succeed Wesley W. Sargent as general manager of the Fitchburg & Leominster company. Mr. Cushing enters immediately on his new work.

Other directors of the organization are Harry G. Townsend, Emerson W. Baker, Charles F. Baker and Thomas H. Shea. Charles F. Baker is clerk of the company. A new president and vice-president will be elected.

Major Mathews Resigns

Major Philip Mathews, chief executive officer New York Transit Commission, has resigned, effective Sept. 30, to accept the post of Director of the Governmental Research Bureau at Pittsburgh, Pa. Major Mathews took over the transit assignment on May 15, 1924, when Lincoln C. Andrews resigned to become assistant secretary of the treasury in charge of prohibition enforcement. Mr. Mathews has conducted many public hearings for the commission. In addition to the many transportation problems he helped to solve he has had general charge of all administrative affairs outside the offices of the secretary, legal advisers, and consulting engineer. Major Mathews has held many high army posts.

J. F. Greenawalt, publicity manager of the Mountain States Telephone & Telegraph Company, was recently elected president of the Colorado Public Service Association, Denver, Col. H. S. Robinson was elected first vice-president and V. L. Board second vice-president. O. A. Weller will continue to serve as secretary of both associations.

Frank Kley, for some time assistant superintendent of the Monongahela West Penn Public Service Company in Elkins, W. Va., has been transferred to Grafton, with a promotion to district superintendent. Mr. Kley has been connected with the electric interests at Elkins for more than nine years, going into the service of what was then the Elkins Power Company in 1917. He has continued his services with the organization since that time. Mr. Kley was graduated from high school in 1917.

L. C. Torrey Appointed Secretary and Treasurer in Chicago

Lincoln C. Torrey, an authority on transportation finances, has been appointed secretary and treasurer of the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—with offices in Chicago, Ill. His promotion to this position of trust at the age of 36 years is an outstanding example of rapid advancement in the public service field. In addition to his duties with the North Shore Line, Mr. Torrey is assistant secretary and assistant treasurer of the Chicago Rapid Transit (elevated) Lines, also under the management of

L. C. Torrey

Samuel Insull and associates, and treasurer of the Niles Center Transit Company. He entered the service of the North Shore Line on Jan. 1, 1921, as engineer auditor and rose rapidly to higher positions of responsibility with this company. He was promoted to valuation engineer in 1922 and became assistant treasurer in 1923. In March, 1925, he was given the double duties of assistant secretary and assistant treasurer, which offices he was holding at the time of his recent promotion.

Mr. Torrey was born at Byfield, Mass., in 1890. He was graduated in 1912 from Harvard, where he specialized in engineering. From 1912 to 1914 he served with the engineer corps of the Pennsylvania Railroad, and during the following two years was pilot engineer on valuation of the same line as ordered by the Interstate Commerce Commission. He was cost engineer with the Goodyear Tire & Rubber Company from 1916 to 1920.

George R. Apfel has been promoted to assistant treasurer and Arthur E. Kullas assistant secretary, succeeding Mr. Torrey in these positions. George G. Green succeeds Mr. Apfel as cashier and Lurton F. Gottliebe has been appointed assistant cashier.

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Obituary

A. D. McPherson

A. D. McPherson, auditor of the Pittsburgh Railways, Pittsburgh, Pa., dropped dead on Sept. 24 while crossing Smithfield Street at Fifth Avenue, Pittsburgh. Physicians ascribed his sudden death to heart disease. The late official had been identified with Pittsburgh utilities since 1899, when he entered the employ of the Pittsburgh Traction Company as a clerk. When the Pittsburgh Railways was organized, following the consolidation of the city's traction interests, he was made chief clerk of traffic receipts. In 1924 he assumed the duties of auditor. Besides his railway affiliation he was a member of the Chamber of Commerce.

Mr. McPherson was born in Bellevue. He attended the borough schools and the Allegheny High School.

Alfred Craven

Alfred Craven, well-known engineer, who had a large part in the construction of the subways of New York City, N. Y., died Sept. 30 at Pleasantville, N. Y., where he had been living since his retirement six years ago.

Mr. Craven was chief engineer of the old Rapid Transit Commission, under whose administration the dual subway rapid transit system was planned and built. His achievement in digging the subway system is ranked by engineers with that of the construction of the Panama Canal, and he was often referred to as "the General Goethals of New York City."

He started in the service of the city in 1884, after making a reputation as a civil and mining engineer in California. In 1900, when the first New York subway work was begun, Mr. Craven was appointed division engineer of the Rapid Transit Commission, and was in charge of that part of the construction from Park Avenue and 41st Street to Broadway and 104th Street.

Four years later he was made deputy chief engineer of the Rapid Transit Commission. In 1907 he was appointed deputy engineer of the Subway Commission. He was made acting chief engineer of the same commission in 1910 and a year later chief engineer, in which post he served until 1916, when he became consulting engineer to the Public Service Commission and its successor, the Transit Commission. He retired as consulting engineer in 1920.

Mr. Craven was born in Bound Brook, N. J., Sept. 16, 1846, the son of Rear Admiral T. T. Craven. He was graduated from the Naval Academy in 1867.

Frank Cook, St. Louis district sales manager of the Ohio Brass Company, Mansfield, Ohio, one of the most widely and popularly known salesmen in the electric railway and power fields, died suddenly in Chicago, Sept. 30. Mr. Cook had been ailing for some time, but his condition had not been considered serious. In fact, he had recently seemed much improved. He will be mourned by a host of friends and leaves a place which the Ohio Brass Company feels can never be filled.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

National Electrical Manufacturers' Association

Gerard Swope Will Head New Organization, Made Up of 270 Leading Companies

Announcement was made recently of the creation of the National Electrical Manufacturers' Association, an organization consisting of 270 leading electrical manufacturers with a gross annual business exceeding $1,500,000,000. The new organization, with Gerard Swope, president of the General Electric Company, as president, was formed by the merger of the Electric Power Club, the Associated Manufacturers of Electrical Supplies and the Electrical Manufacturers' Council. J. W. Perry, vice-president of the Johns-Manville Company, Inc., was made treasurer.

The general purpose of the new association is to advance the art of manufacturing adequate and reliable electrical equipment and to standardize electrical apparatus, which, it was said, will ultimately mean lower costs and lower selling prices to the public. The association will co-operate with the Department of Commerce in its constructive work, both in standardization and simplification.

Specifically, the objects of the new association, according to its constitution, are to further the interests of the makers of electrical apparatus and supplies in manufacturing, engineering, safety, transportation and other industrial problems; to promote the standardization of electrical apparatus and supplies; to collect and disseminate information of value to its members or to the public; to appear for its members before legislative committees, governmental bureaus and other bodies in regard to matters affecting the industry, and to promote a spirit of co-operation among its members.

Among the charter members were Allis-Chalmers Manufacturing Company, Anaconda Copper Company, Crocker-Wheeler Company, Crouse-Hinds Company, Cutler-Hammer Manufacturing Company, Electric Storage Battery Company, General Electric Company, Landers, Frary & Clark, National Carbon Company, Inc., National Metal Molding Company, Radio Corporation of America, Reliance Electric & Engineering Company, Robbins & Myers Company, Stromberg-Carlson Telephone Company, Western Electric Company and Westinghouse Electric & Manufacturing Company.

New Bus Engines Will Be Exhibited

A six-cylinder, light, high-speed bus engine of new design will be exhibited by the Waukesha Motor Company, Waukesha, Wis., at the American Electric Railway Association convention in Cleveland. The engine has many features that are of interest, such as the Ricardo head, girder type crankcase, truncated cylinders, and a dynamic thermostat.

All of these features are embodied in Waukesha heavy-duty bus engines such as are being used by the International Harvester, Wilcox, Versare and Fageol companies.

New Italian Electric Locomotives

Ten electric locomotives of a new type have recently been completed by the Breda Company of Milan for use on the Rome-Tivoli-Avezzano Railroad. The engines, which have a wheelbase of 38 ft., are equipped with two motors which drive through gearing a countershaft connected to the driving axles by coupling rods. They are designed to be operated by 10,000-volt, three-phase, 45-cycle a.c., which is stepped down to a working tension of 1,600 volts. The motors are so arranged that either eight or twelve poles may be utilized, so that they may either be run in series or parallel.

Authority on Strength of Materials Joins Haskelite Staff

Prof. O. H. Basquin, who for 25 years has been on the staff at Northwestern University, has resigned from the faculty to take charge of the engineering department of the Haskelite Manufacturing Corporation with headquarters in Chicago. He has been acting as consulting engineer for this company since its organization.

Professor Basquin's principal interest in his own graduate work and in his teaching and research work has been in the field of strength of materials. One subject that attracted his attention particularly was the so-called fatigue phenomena of metals. When the National Research Council appointed an advisory committee on this subject toward the close of the war, Professor Basquin was made a member of the committee, the work of which is now drawing to a close.

The experience of Professor Basquin will peculiarly fit him for the problems he faces in connection with the production and application of Haskelite, the structural plywood, and Plymetl, its steel-faced companion. The Haskelite products are used for a wide variety of applications where known physical properties are the first requisites. The process of production in the Haskelite plant must, therefore, be carefully safeguarded to insure absolute uniformity in strength, weight and other properties. The molding of Haskelite and Plymetl for bus and street car roofs and other uses introduces problems in manufacture that require very careful study and frequently the design of spe-

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cial equipment. Professor Basquin will devote considerable time and effort to this phase of the company's work.

Important Tests Conducted on Paving Brick

To settle the moot question as to whether brick less than 4 in. in thickness may properly be used in the construction of brick pavements, a comprehensive investigation of the subject has been made on sections of pavement built of brick of different thicknesses and in the form of a circular test track at Arlington, Va. This investigation has been carried on by the Bureau of Public Roads of the United States Department of Agriculture, and the whole subject was covered in a thoroughgoing fashion, not only through service tests on the track itself, under accelerated traffic conditions, but also by means of a series of laboratory tests on the bricks to determine their quality. Several plants manufacturing brick of less than 3-in. thickness have also been visited to determine the attitude of the industry toward the use of a thinner brick and to ascertain if their manufacture presents any particular difficulties.

A reduction of thickness below the usual 4-in. depth would give a resulting economy in the construction of brick surfaces. Several parts of the investigation have now been completed and an analysis of the data obtained has been published as a series of conclusions in the issue of *Public Roads* for September. The report was made by L. W. Teller, engineer of tests, and J. T. Pauls, associate highway engineer, United States Bureau of Public Roads.

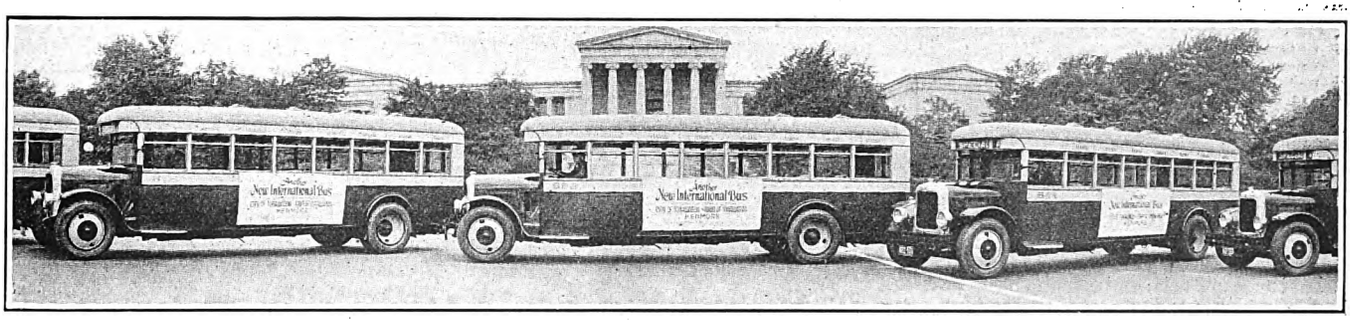
Among the more important conclusions reached by the engineers were the following: (1) Brick 2½ in. thick, of the quality used in the Arlington traffic tests, when properly supported, will prove satisfactory for pavements carrying the heavier types of traffic; (2) brick 2 in. thick, when properly supported and of the quality used in the tests, will be adequate for pavements on streets carrying the lighter types of traffic; (3) a bedding course of plain sand is more effective in reducing breakage of brick than a cement-sand bedding course, the breakage being much less on the former than the latter. The depth of the sand bedding course should not greatly exceed ¾ in. Increasing the depth tends to produce roughness in the pavement; (4) cobbling of the brick is greatly increased as the spacing between bricks is increased; (5) the use of excessive quantities of asphalt filler is a common and serious fault in construction, unnecessarily increasing the cost and resulting in a condition which impairs both the appearance and the serviceability of the pavement; (6) base construction of other than the rigid type may in many cases prove entirely satisfactory; macadam bases and those constructed of certain types of natural earth appear to be suitable when the local conditions are such that these types of construction maintain their stability throughout the year; (7) no difference in the base construction is necessary for the different thicknesses of brick.

On the basis of 1925 shipments of paving brick, the use of the 2½-in. brick would indicate a saving to the country of more than $1,500,000 annually.

New Yellow Buses for International Railway

Five new gas-electric single-deck buses have been received by the International Railway of Buffalo, N. Y., for use over the new Kenmore-Tonawanda route on Military Road. The units were built by the Yellow Truck & Coach Manufacturing Company of Chicago, Ill. They have a seated passenger capacity of 33. They are of the special type which has been developed for Mitten Management for use in Philadelphia.

Pneumatic tires and dual wheels on the rear are provided on these new buses. The body design is of the city service type, to accommodate the maximum number of seated passengers. Half-hour headways will be maintained in both directions over the Military Road, with fifteen-minute service during the morning and evening rush hours.



These Gas-Electric Buses Will Be Used in Interurban Service Out of Buffalo

American Locomotive Will Maintain Dividend Rate

No thought is being entertained by the board of directors of the American Locomotive Company of reducing the dividend rate, according to William H. Woodin, chairman of the board. He states that the $8 annual dividend virtually is being earned at the present time. He added that the American Car & Foundry Company, of which he is president, is also earning its annual dividend. He believes that the outlook for locomotive and equipment business is somewhat better now because of the heavy traffic which the transportation companies are handling.

Seattle Finds Way to Get Its New Cars

Members of the utilities committee of the City Council of Seattle, Wash., now believe that a way is clear to issue $1,875,000 of bonds for the purchase of eighty new street cars. The proposal to issue the bonds was questioned by Comptroller Harry W. Carroll after the passage of the ordinance. He pointed out that as there has been a decrease in patronage on the street cars there could be no extensions. As a result of views expressed by five Councilmen at the recent committee meeting, it was predicted that a resolution would be introduced in the Council directing Comptroller Carroll to issue the bonds.

T. J. L. Kennedy, Corporation Counsel, holds that if the bonds are issued for extensions to the railway system they would be legal, but if they were for replacements, they would be illegal as the state law provides that replacements of a municipal utility must be met from the revenues. Councilmen pointed out that since Mr. Kennedy had left it up to them to decide whether the bonds were for replacements or extensions, there was really no new decision to make, as the ordinance already passed said the bonds were for extensions. Therefore, the way was clear for them to direct Comptroller Carroll to issue the bonds. The contract for the new cars has been let to the St. Louis Car Company.

Duco for Brush Application Now Available

For convenience in finishing sash, interior trim and in other places where spray application does not give maximum efficiency, as well as for all finishing in shops not equipped with pneumatic spray apparatus, Duco finish for application by hand brushing has recently been placed on the market by the chemical products division of E. I. du Pont de Nemours & Company, Parlin, N. J. This new type of Duco can be easily brushed on in the same way as varnish, paint or enamel. It dries dust free in a half hour and the second coat can be applied after three hours. The finish obtained possesses a hard, durable gloss, requiring no polish, although it can be rubbed to a brilliant luster if desired. The manufacturer states that it has been successfully used for refinishing cars already in service, the Duco being applied directly over the old

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paint or varnish, either in interior or exterior, and on either wood or metal.

Time saving is an important element in the use of Duco. it is possible to complete the finish of an entire car in one day under rush-job conditions, this representing a real saving in the time that the car is out of service and also in freeing the paint shop for other jobs. It is claimed that the new brush Duco possesses the same durable finish that has characterized Duco heretofore applied by the spraying process.

The finish may be used effectively on street cars as well as buses. The Du Pont Company states that Duco finish has been widely adopted as standard in the automotive industry, including many bus manufacturers, and is being used to an increasing extent on both steam and electric railways.

Mack Sales to Electric Railways

Announcement has been made by the International Motor Company, New York, N. Y., of a number of sales of Mack buses to electric railway companies in recent weeks. Among the orders listed were the following:

Tri-City Railway, Davenport, Iowa, two 25-passenger gas-electric, city type.

Iowa Southern Utilities Company, three 25-passenger city type (for operation by the Ottumwa Street Railway).

Topeka Railways, Topeka, Kan., two 25-passenger city type.

Twin City Motor Bus Company, one 29-passenger city type.

Information for Users of Electric Steel Castings

In the belief that there is a woeful lack of knowledge concerning the manufacturing processes involved in the production of electric furnace steel castings on the part of the users of these castings the Lebanon Steel Foundry, Lebanon, Pa., has published a very interesting set of bulletins on the subject. Twelve of these bulletins have now been issued, and it is planned to carry the series still further in coming months.

Beginning with bulletin No. 1, entitled "The Rise of the Steel Casting Industry," the series treats on such subjects as physical characteristics of electric furnace steel castings, qualities and uses of molding sand, cores, patterns, pattern mounting, various uses of electric steel castings, etc. The material is well illustrated throughout and has been couched in language which is comprehensible to the man who is only indirectly interested in steel treatment.

The bulletins are intended to be of an educational rather than an advertising nature, and it is along similar lines that the series will be continued in the future. The Lebanon company will be very glad to furnish all of the bulletins to date to any one interested in having them. Bulletins to be issued in the future will also be mailed to those who desire them.

Metal, Coal and Material Prices

Metals—New York	Sept. 28, 1926
Copper, electrolytic, cents per lb	14.275
Copper wire, cents per lb	16.25
Lead, cents per lb	8.725
Zinc, cents per lb	7.72
Tin, Straits, cents per lb	71.00
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.875
Somerset mine run, Boston, net tons	2.075
Pittsburgh mine run, Pittsburgh, net tons	2.00
Franklin, Ill., screenings, Chicago, net tons	1.525
Central, Ill., screenings, Chicago, net tons	1.40
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$5.75
Weatherproof wire base, N. Y., cents per lb	17.75
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb	11.4
White lead in oil (100-lb. keg), N. Y., cents per lb	15.25
Turpentine (bbl. lots), N. Y., per gal	$0.945

Sash Locks by O. M. Edwards

Sash locks on the 50 street cars being built by the Osgood-Bradley Car Company of Worcester, Mass., for the Pittsburgh Railways are being furnished by the O. M. Edwards Company of Syracuse, N. Y., instead of by the Dayton Manufacturing Company. This item was incorrectly reported in the issue of ELECTRIC RAILWAY JOURNAL for Sept. 4.

Rolling Stock

Chicago, Ill.—Nearly one-third of the 100 new cars ordered last May by the Chicago Surface Lines were delivered on Sept. 15 and have been placed in service. The remainder of the cars, the total cost of which is more than $1,600,000, are expected to be delivered within the next month. With the additional equipment the company will have 445 new cars, all of which were obtained in a little more than three years. During that time there has been an increase in service of 12,000,000 annual car-miles and an increase in riding of approximately 83,000,000 revenue passengers.

Richmond, Va.—Fifteen new buses were recently ordered by the Virginia Electric & Power Company to augment its bus fleet, which now numbers 64. The new equipment will be used on several extensions and new routes which are being planned by the railway. Thirteen of these buses have been purchased from the White Company of Cleveland, Ohio. Eight of these are model 50-B, seating 29 passengers, and five are of the smaller model 53, seating 21 passengers. The bodies for the smaller type chassis are being built by the Bender Body Company of Cleveland, Ohio. The two buses not being furnished by the White Company were ordered from the Yellow Truck & Coach Manufacturing Company, Chicago, Ill.

Community Traction Company, Toledo, Ohio, purchased twelve 29-passenger city type buses from the International Motor Company. The Mack buses will be operated on Front Street, at a four-minute headway. Smaller buses are being used for feeder service to the main bus lines operated by the company. It is possible that additional routes will be started in the near future.

Track and Line

Virginia Electric & Power Company, Richmond, Va., intends to lay out about 10 miles of new trackage for the electric car service. On the Belmont line a double track will be placed from Belmont and Cary Streets to Granite Street, adjacent to William Byrd Park. An extension will be laid on Broad Street from Sheppard Street to the city limits. In the Grove Avenue "Crest" section a line will be run on Lafayette Street from Broad to Grove Avenues, connecting with the existing Westhampton line. The Highland Park line will be extended along First Avenue to Highland Street, then to Patrick and to Meadowbridge Road. The Hull Street line, in South Richmond, will be run from the Broad Rock Road to 43d Street.

Worcester Consolidated Street Railway, Worcester, Mass., is relocating and changing the grade of 3,700 ft. of track in the town of Boylston at an estimated cost of $13,500. Also the grade of track is being changed on 2,900 ft. of track on Merriam Avenue, Leominster, at an estimated cost of $5,000. The cost of relocating and reconstruction of 475 ft. of track on Canal Street, Millbury, is estimated at $3,600. This will involve the use of 10 tons of 7-in. girder rail and a new special curve. Six new crossing frogs have been installed at Barbers Crossing at an estimated cost of $8,000.

Trade Notes

Ohio Brass Company, Mansfield, Ohio, will pay an extra dividend of $1 a share on the common, in addition to the regular quarterly payment of $1 a share, according to a recent decision of the board of directors, it was reported.

Central Alloy Steel Corporation is the new name under which the Central Steel Company of Massillon, Ohio, and the United Alloy Steel Corporation of Canton, Ohio, have been consolidated. The two plants in Massillon and Canton will continue to be operated as divisions of the central organization.

New Advertising Literature

Ingersoll-Rand Company, New York, N. Y., has published an interesting little booklet entitled "Clearing the Way for the Comforts of Life." It embraces a brief narrative of the development of American railway motive power from its earliest stage and leading up to the recent advent of the oil-electric locomotive. A glimpse is given of the economies already effected by this new type of locomotive and of its potential effect upon the future of railroading in America.

Reo Motor Car Company, Lansing, Mich., has issued a booklet describing its several types of buses. Illustrations and data on the chair coach for intercity and interurban service, the pay-enter bus for city service and the pay-enter Grand for combination city and suburban service appear in the booklet, as well as a discussion of the relative advantages of large and small capacity buses.

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-504, entitled "Electrification of the Detroit Tunnel Lines of the Michigan Central R.R." Pictures and descriptions of the operation of the electrified division and of the electrical equipment are included.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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CHARLES GORDON, *Editor*

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A New Day in Local Transportation Dawned in Cleveland

THE 45th annual convention of the American Electric Railway Association has just come to a close in Cleveland. What a convention it has been! In years to come it will stand out as a landmark on the route of progress; as the turning point in an industry's awakening. To say that this convention has exceeded the expectations of the most optimistic is putting the situation mildly. As sometimes happens when the minds of individuals turn toward a common objective, the spirit of the group becomes contagious and sweeps along the doubting Thomases as it rises in a mighty tide of confidence and enthusiasm.

At Cleveland there was more than abstract opinion. There was more than mere enthusiasm. There was concrete evidence not only of confidence and progress, but of the fact that this is only the beginning of a new era in local transportation. All records for an electric railway exhibit were exceeded. The industry rubbed its eyes in amazement to find itself staging an exhibit which, so far as can be determined at this time, exceeds any other similar independent exposition ever held in this country for a single industry. Surely such an event is significant for the industry which Mr. Loree and other false prophets were ready to relegate to the scrap pile!

A total of 271 exhibitors occupied 119,007 sq.ft. of inclosed space and 1,790 lineal feet of track space. There was a total of 41 different car exhibits by 19 companies. Ten companies showed operating maintenance of way equipment. Bus, truck and body manufacturers, totaling 31 companies, occupied 43,283 sq.ft. of space. Including the area of car and operating track maintenance exhibits, the entire space occupied approximated 200,000 sq.ft.—a staggering total. It is particularly significant that the car exhibit was the largest ever held in the history of the industry.

Nor did the size of the exhibit exceed in its significance the proceedings of the convention. A renewed confidence and determination to drive ahead along constructive lines was voiced by leader after leader in the transportation world. Back of the words themselves was evident a spirit and an enthusiasm which was felt by every delegate from low to high position. The impression of the opening of a new era in transportation was strengthened by the addresses of men representing the public's viewpoint. There was general recognition of the need for organized transportation, of the difficulties attending the effort to give convenient and efficient service, and of the extent to which individual right to the use of streets and highways must be curtailed when that becomes necessary in the community interest on the principle of the greatest good to the greatest number.

Thus in all of its phases the Cleveland convention was full of significance. The local transportation industry has definitely taken the offensive in building its business. It has a determination to win back its prestige in the eyes of the public and the bankers of the country. It is no longer passively awaiting help from an uninterested public. It is moving forward rapidly in a program of self-improvement which offers the only known means of winning public support and good will.

Engineering Is Made the Servant of Transportation

DISTORTED ideas as to the place of engineering in electric railway operation were conspicuous by their absence at the Cleveland convention. In the past the engineer too often has forgotten the part he should play and has exaggerated the importance of some technical detail until in his eyes it loomed larger than the successful operation of the cars. On the other hand, a tendency has been in evidence sometimes to regard the engineer as a kind of superfluous appendage to the organization, one whose views are interesting, but of no great practical value.

At Cleveland, however, the proceedings of the Engineering Association portrayed the members as technical specialists whose job it is to make better transportation service possible. How to increase the comfort of the passenger, improve the appearance of cars, speed up operation, reduce costs, eliminate noise, and insure reliability of power supply are examples of problems the engineers are tackling today.

Only a few speakers were so obsessed by their own hobbies that they could not see the larger picture. Suggestions that certain power and track troubles could be avoided by running the cars at slower speeds fell on deaf ears. To solve the technical problems that confront the industry, not to evade them, was the attitude of the great majority of the engineers. To make engineering the servant of transportation was shown to be the firm determination of this association. With this high purpose the achievements of the coming year promise to surpass the commendable accomplishments of the twelve months just ended.

Convention Exhibits Formed a Vast Educational Display

IN SIZE, cost and educational value, the exhibits at the Cleveland convention of the American Electric Railway Association surpassed any transportation exhibit ever held. The influence that they will exert on electric railway men who were fortunate enough to view the magnificent display should produce a decided result toward providing faster, safer and more attractive transportation.

The vehicles, rolling stock, equipment and materials shown were for construction and operation, however, rather than maintenance. Shop equipment such as

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machine tools, material handling apparatus and labor-saving devices for repair shop usage were few. This deficiency, however, was made up for, somewhat, by the close proximity of the Harvard shops of the Cleveland Railway and large numbers of mechanical-department delegates took advantage of the opportunity to inspect these well-equipped and efficient railway shops.

All classes of electric railway delegates obtained much of interest and value from the very complete car and bus display. The car exhibit was not only the largest ever assembled but it was complete in that cars for all classes of service and work were shown. A large number of operating companies took exhibit space and sent their most attractive cars to Cleveland at their own expense in order that the industry as a whole could profit by the attractive designs. Many other railways loaned cars to various manufacturers for display at the convention.

The importance of buses in rounding out a complete transportation system was admirably illustrated by the 79 bus and chassis units shown. Parlor cars or similar designs with wide window drapes predominated. The city type has grown so luxurious that it is hard to make a clear separation from the de luxe type. The big thing of the bus displays and the biggest of all exhibits was the continuing note of the enlarged passenger automobile and the realization that the rider must be weaned away from his unit of individual transportation.

For the first time in the history of the association a display of line material over tracks was shown. Also street lighting fixtures had a prominent place in the Cleveland exhibits.

The importance of accessories to electric railway transportation was shown by the vast displays devoted to these lines. Every detail needed for construction and repair of buses and cars was displayed and also devices needed for conducting transportation in the most efficient and attractive manner. Among these were included paints, varnishes, lubricants, fare boxes, registers, turnstiles, cables, wheels, shoes, bearings, lighting equipment, as well as signals, ties, rails, frogs and switches. Bus accessories included tires, leathers, seat covering, speedometers, transmissions, brakes and many detail bus parts.

Advisory Council's Principles Point the Way to Success

A CAREFULLY prepared, conservative statement of principles is contained in the address of B. C. Cobb at the meeting held Tuesday night under the auspices of the Advisory Council. While he expressed deep faith in the industry and paid tribute to its courage in the past, he did not stop there.

Mr. Cobb gave a warning that his remarks might be considered pessimistic. But in reality they are not so, for electric railways are needed and will continue to serve the public. He feels that it is idle for the railways to sit back expecting the public to take the initiative. He insists that the facts in the situation must be faced and that there are serious problems to be solved. He advocates frank publicity and courageous recognition of these facts. He holds that electric railway employees as well as their managements must have the interests of the industry at heart to assure success.

Mr. Cobb did not leave his audience in the dark, groping for a way out. He told them what is needed—modern methods and equipment, improved service, salesmanship, employee interest, frank publicity. He made concrete these general statements in a code of principles—a list of things the companies, the employees and the public must do, which he laid down as the fundamentals of success for the electric railway industry.

Mr. Cobb spoke not from theory but from practice. The Advisory Council has followed closely the experiences of properties which have been applying these principles. Mr. Cobb himself has the general responsibility for many properties on which they are being worked out in practice.

Courage, determination and energy are needed for success. When these are guided and tempered by the sound business judgment laid down in the Advisory Council's principles, success may be reasonably expected.

Real Progress Made in Solving Corrugation Problem

OPTIMISM concerning the eventual solution of the old problem of rail corrugation was evident in the sessions of the engineering association. The final answer has not yet been found, but definite progress undoubtedly has been made.

Corrugation is a problem which has been remarkable for its periodical recurrence during the history of the industry. As soon as some one finds what he believes to be the exact cause of this mysterious malady some one else comes along and upsets these conclusions by finding that neither the cause nor the cure is applicable to the disease as it occurs on his property. Rolled steel and cast wheels, rigid and flexible roadbed, tight track and loose gage, vibration, wheel slippage, cold rolling of the rail metal and chattering brake rigging are a few of the many elements around which theories of cause and mitigation have been built up.

Summing up the causes and remedies suggested by the committee and various speakers contributing to the discussion, it appears probable that all of the apparently conflicting explanations are correct and that they represent simply different phases of a problem containing many variables. If this be a true conclusion, then many of the paradoxes and anomalies of the problem can be understood. Under certain conditions it may easily happen that one factor, such as tight gage, would be so influential that it becomes the proverbial straw that breaks the camel's back. Thus it might appear to be the direct cause of corrugation, whereas in reality it is only one of a number of contributing causes. In other cases a different factor might be predominant and seem to be the active cause, the mitigation of which would bring relief. This theory of many variables is the more credible because in other fields of scientific endeavor similar elusive problems, when solved, have been found to be influenced by a number of factors.

The special committee on rail corrugation is attempting to gather and analyze all the data that it can secure before trying to formulate conclusions as to causes and remedies. Obviously this is the proper procedure. Loose generalizations based on inadequate data and personal opinion are often dangerous. Worth-while advances in medicine, physical sciences and engineering usually have been based on analyses containing adequate data and experimental evidence and drawn with an open-minded attitude. Good reasons exist to hope that the same method will in time solve the perplexing problem of rail corrugation.

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Street Car Progress Reflected in Cleveland Exhibit

PLEASING appearance, comfort and general attractiveness stood out in the car exhibit at the convention as the present day objectives in car design. Combined with this there was evident in most of the exhibits a continued development toward one-man operation and light-weight construction. From the general lines and appearance of the various cars displayed to the details of truck and body construction there was much to hold the interest of railway operators in this, the largest street car exhibit in the history of the industry.

Operators, as well as manufacturers, joined in making such a showing possible. Many of the cars were taken out of actual service on properties where they have already demonstrated their value in building traffic and reducing costs. New ideas were legion, and interest in the exhibit ran high. Thousands of electric railway executives manifested by their questions and their attention to these cars the thought being given throughout the industry to the subject of car improvement.

New construction features and the use of new materials were evident as never before in a car exhibit. But marked as were some of the improvements shown, and wide as was the variety of new ideas represented, these may be considered only the beginning. Discussion between operators and builders was rife with possibilities. The exhibit itself was in this respect only symbolic of the plans which are already under way on various properties in the country to bring about even more radical changes in design.

Much interest centers in the construction of trucks. There are under way at the present time several efforts to reduce the amount of unsprung weight incident to carrying the motors directly on the axles. Various forms of bevel or worm gear are being proposed, which would not only accomplish this but would also provide oil-tight housings to improve lubrication and reduce noise.

All in all, the Cleveland exhibit, although it was the greatest ever held by the industry, appears to be just the beginning. The next year will be one of intensive research and accelerated development. Electric railways are genuinely interested not only in new cars but in further developments to increase their attractiveness and improve their performance.

Carry the Convention Home with You

WHEN President George Clifford said "Take the ideas home and put them to work," he gave the one message that can justify the extensive sessions of the Transportation & Traffic Association work. Four valuable reports were presented this year and much pointed discussion followed. All this will be of no avail if operations that may be lacking in some essential details go unchanged as a result of these reports. The subject of traffic congestion and accidents is ever upon the industry. Bus operation is still in its infancy. Papers and reports at the convention represent the most modern thinking on these subjects.

The suggestion of Mr. Clifford is equally applicable to the work of all the associations. Committees have been working, some for a year, but many for much longer periods, and developing important information as a result of research and experiment. There is material of value in all of the reports, instantly available. The convention is not over. It should never be over until the material and ideas presented have been exhausted by every operator. No better message can be drawn from the association work this year than to "take the ideas home and put them to work."

Tragedy at the 45th Convention Must Not Mar the Inspiration of a Great Life

ACCOMPANIED by one of life's dramatic tragedies, the setting for which has never before been equaled, the 45th convention will long be remembered. After an active life of 63 years devoted so intently to the promotion of the electric railway industry, John J. Stanley culminated his career by bringing this remarkable convention to Cleveland. At the close of the first day, and at the conclusion of his "president's dinner" to some 60 leaders of the industry and life-long friends, Mr. Stanley passed to the Great Beyond. His death occurred at the very hour, even at the very minute, that marked the pinnacle of his remarkable career. To those who knew him best, it was a fitting setting despite the sadness. He died in harness and among the friends he loved best.

Often the burden of such events bears heavily on those left behind. Realize the effect on Mr. Stanley's lieutenants who did so much to bring this exhibition to a successful conclusion. The work to carry on for the remainder of the brief week was enough to try the hearts of strong men.

Now is the time to think of the greatness of accomplishment and to forget the play of fate that so dramatically linked the passing of this great leader with the recent migration to Cleveland. After all, death is only a natural step in the process of life that can be enhanced by a firm resolve to carry on to loftier heights the ideals created by John Stanley.

Changes in Program Caused by Mr. Stanley's Death

THE death of Mr. Stanley on Monday evening just at the opening of the convention necessarily affected all plans during the rest of the week, the most important change being the abandonment of the entertainment features. Of course, in cases of this kind, two views are always possible. One would be that the success of the convention and a pleasant time for every one were undoubtedly the two greatest desires of Mr. Stanley for some time prior to his death, and that respect for his memory would best be shown by very few changes in the program.

The other view would be that the convention was being held in Mr. Stanley's home city, so that, in a sense, he was host of the association, and that as he was held in such great respect both by members of the association and by the people of Cleveland, the action taken was appropriate. The latter view was the one taken by the most intimate personal friends of Mr. Stanley who were consulted, as well as by the city authorities, so it is the one which prevailed. The sessions and the exhibits went on as usual except for a few changes in time for the meetings and opening of the exhibit to the public Thursday night, as well as on Wednesday night, in accordance with an expressed wish by Mr. Stanley on the day of his death, that the Cleveland people might see more of the exhibits.

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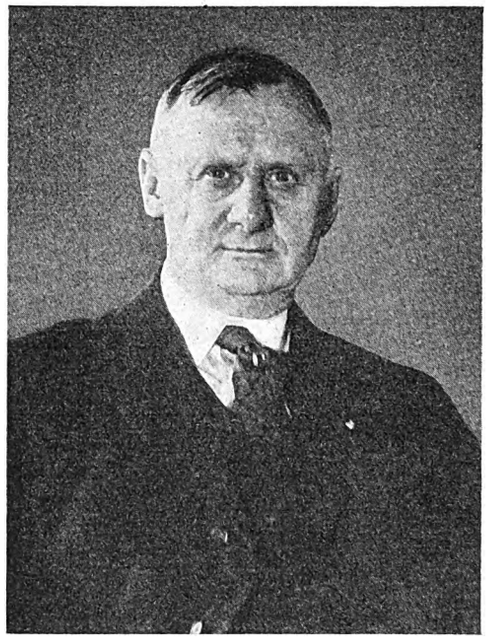
Entire Industry Shocked by Death of John Stanley

Veteran Leader Passes Away from Heart Failure on First Day of Convention—Delegates Unite in Testifying to Ability and Sterling Character of Cleveland Railway's President

"IN the midst of life we are in death." Seldom have the words of the psalmist been more forcibly brought home than they were in the sudden death last Monday night of John J. Stanley, president of the Cleveland Railway, during the progress of the convention of the American Electric Railway Association in that city. In that call not only his immediate associates mourned, but a whole city suffered a loss wellnigh irreparable.



JOHN J. STANLEY

The gracious host who made possible the Cleveland convention died from heart failure at the Union Club about 9:30 p.m., shortly after the close of a dinner he had given to visiting electric railway executives.

During the dinner, Mr. Stanley was apparently at his best. With some 60 leaders of the industry and life-long friends as his guests at the club, he acted as toastmaster. At 8:55 p.m. he announced that the dinner would adjourn to the auditorium for the president's reception. The guests tarried and were gradually leaving. All but a dozen or so had left and Mr. Stanley was chatting with some of his friends in the lobby of the club when he suddenly called to Paul Wilson, secretary of the Cleveland Railway, who was with him, "Come quickly, Paul, I want a doctor." This was a little after 9 p.m. Dr. Henry Prill, assistant surgeon of the Cleveland Railway, was soon located in the Statler Hotel across the street. But when he arrived five minutes later the genial host of the convention was beyond medical aid.

His best friends said of Mr. Stanley that he died as he had always wished—"in the harness." This 45th convention, for which he worked so hard, was a climax to his career as a pioneer in the industry which he loved so well and to which he had devoted practically his entire business life.

John J. Stanley typified the hard-working, aggressive man who has devoted a whole working lifetime to the upbuilding of an industry. Born on March 5, 1862, he soon made up his mind that the destinies of the transportation business were to be his own. His father had been president of the old Broadway & Newburgh Railway, forerunner of the present Cleveland Railway system. Perhaps that explained John Stanley's choice of a career. At any rate, his own pathway was not strewn with roses.

He entered the railway business at the age of 14 years. His duties were those of "hill boy," in the horse-car days. Although the son of the president of the company, his early days were difficult ones. No great esteem for the railway filled the minds of patrons. But through it all John Stanley came triumphant. He was first promoted to be an inspector and at the age of 29 years was the youngest general manager in the country. This was in 1891.

When the Tayler grant was put into effect sixteen years ago John Stanley was elected president of the Cleveland Railway. Previously he had been vice-president and general manager. The creditable record was his of having been president of a metropolitan railway company longer than any other man in the country.

Mr. Stanley's activities throughout his career have been directed, not only to the furthering of the street railway fortunes, but to the end of general civic growth and betterment. His love of the city in which his life has been lived was great. Opportunities in other sections of the country were frequently offered to him. But he had set out to do a big job there and with single-minded intent, he stuck to his task through adversity and ultimately achieved success. His place was a great one—his memory, and the breadth of his interest in the city of Cleveland and its transportation future will live with Cleveland and with the electric railway industry.

It is very easy to grow laudatory; but words, no matter how forcefully or gracefully used, do not convey the message that is carried in acts. And it was the acts of John J. Stanley that made the man what he was. When a whole city goes into mourning for a man, when flags are at half mast for him, when police and firemen

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Resolution by the American Electric Railway Association

The committee appointed by the Executive Committee to prepare a memorial on the death of Mr. Stanley submitted the following:

ALMOST at the start of this great convention of the electric railway industry, the man whose enthusiasm, whose executive ability and whose generosity was in large measure responsible for its being, has been stricken by the hand of Death.

John J. Stanley is no more, and the industry, this association as an organization and its members as individuals have suffered an irreparable loss.

A pioneer in the electric operation of street railways, through his long career as an executive, John J. Stanley kept abreast with progress; a man of human understanding and human sympathies; he maintained with the public he so well served friendly relations worthy of our emulation; a man of keen business knowledge and acumen, he successfully conducted the affairs of the public service corporation of which he was the head; a man of fairness and justice, John J. Stanley had the respect and love of those who served under him. These attributes made him a leader in the industry which this association represents, and gave to his advice and counsel a peculiar value. His service to the association while its president and as a member of its executive and other committees cannot be overestimated. But it is as a loyal and faithful friend, genial, kindly and self-sacrificing, that all who knew John J. Stanley will best remember him, and these memories of his friendship will forever remain in our hearts.

Our sympathy is extended to the family and personal associates of our dead leader. We realize to the full the extent of their loss and we share with them their sorrow.

Let this memorial be spread upon the association minutes and a copy be sent to the family of John J. Stanley.

pay a citizen in private life the respect the residents of Cleveland did Mr. Stanley, there is something tremendous that moves the public. The Cleveland system shows it as the outward symbol. The public reflected it by their acts of respect to the man who had died.

It is not unusual in these United States for men to rise to power and riches from humble beginnings, but too often men forget their beginnings. This Mr. Stanley never did. As the psalmist said: "He heapeth up riches; and can not tell who shall gather them." Of the riches Mr. Stanley heaped up for his beloved city all Cleveland will share. He was a refuge for Clevelanders for generations. There was a natural body and a spiritual body to John Stanley, and despite all the turmoil of the past in Cleveland at all times the spiritual took precedence in this man. Long after the present generation that knew Mr. Stanley as railway president and as a civic force shall have passed, the recollection of him as a civic force will endure. His work assures that.

Tribute from Railway Executives

At the opening of the session of the American Electric Railway Association on Tuesday morning, resolutions of the executive committee on the death of Mr. Stanley were read and approved. In addition four executives paid individual tribute to Mr. Stanley's memory.

From remarks of
THOMAS N. McCARTER

"Mr. Stanley was to my way of thinking the most successful type of operator that the industry has known, and the result is the wonderful Cleveland Railway system which has passed so many vicissitudes; which is, perhaps, the premier electric railway of the country. Mr. Stanley believed in what was right and he went after it.

"Personally, I feel I have lost an intimate friend. His work will go on. He has a splendid organization here in Cleveland. No man cou'd run a great company without this. The industry will sorely miss him."

From remarks of
GEN. GUY E. TRIPP

"A man, to be a successful street railway manager, must be honest minded, he must be sincere and truthful, he must hold steadfastly to principles and that is what John Stanley was and did.

"Cleveland has lost a great asset because there aren't many citizens in any city like John Stanley; men who are public spirited, men who try to do things for the public good with the least possible selfishness involved in it. Therefore, Cleveland has lost a valuable citizen. It has also lost a very valuable servant, a valuable public servant, because it is obvious that there is no better operating transportation system anywhere than you see here in Cleveland."

From remarks of
LUCIUS S. STORRS

"Doubtless there is no man in the electric railway industry of America whose advice and counsel were sought more by those who were confronted in their individual relations, with their own particular problems, or in the possible change in relation from one property to another, than John Stanley. The trail to John's door has been beaten by the feet of many of the men here today. We feel a great loss and those of us in the association feel the loss of advice and counsel which he always gave with so deep an appreciation of human problems."

From remarks of
ARTHUR W. BRADY

"No member of this association could have passed away whose death would have created a greater sense of personal bereavement among so many members of the association as that of the man who passed beyond last night.

"One feature that I think all of us felt, whether we knew John J. Stanley well or whether we knew him only slightly, is that in him the electric railway industry had at the head of one of its most important agencies an individual who was a real man, quiet, unassuming, loyal and a true friend to every man whom he knew, and fair and just to the public that he served, as well as to those who joined with him in giving the service which has created the magnificent railway that exists in the City of Cleveland."

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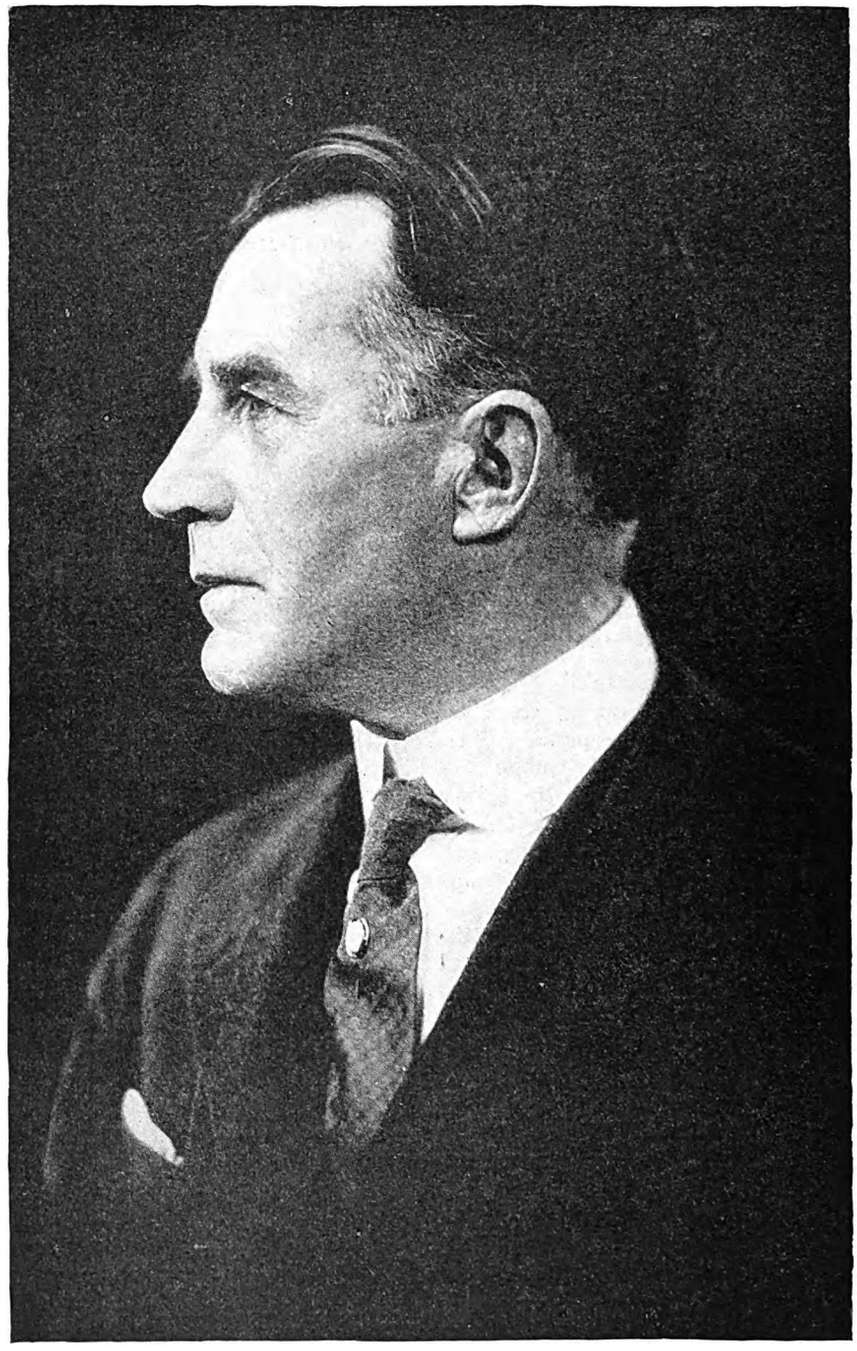
Willits Herbert Sawyer

Newly-Elected President of the A.E.R.A.



EVER since his entry into the electric railway field W. H. Sawyer has been active in the affairs of the American Electric Railway Association and its predecessors. This last year he has been vice-president of the association, chairman of the policy committee and a member of the Coffin award committee and the public speaking committee. In 1925 he was second vice-president of the association, member of the policy committee, chairman of the subjects and meetings committee, member of the committee on constitution and by-laws. The record of his committee and other activities in the interests of the industry is a similar one back through the years. That record indicates the verisimilitude of the man in that it has included work by him on committees dealing with such diversified subjects as fare systems, state and national associations, electrolysis and valuation.

An Engineer and Operator of Wide Experience

His professional career as an engineer and his business career as a manager have also been diversified. He started out after his graduation from the University of Nebraska in 1894 with the degree of B.S. by spending two years with several street railways, but he knew that one of the greatest post-graduate courses in the country was to be had at the plant of the General Electric Company. There he went for more experience, and there he remained for nine years. Next he entered the employ of Ford, Bacon & Davis. There he remained another nine years. So when in 1914 he went with the E. W. Clark & Company Management Corporation as vice-president with headquarters in Columbus, Ohio, he had behind him a record of engineering experience that even the wide holdings of that organization failed to exhaust. One of the so-called Clark holdings was the East St. Louis & Suburban Railway and affiliated properties, and five years later he was elected president of that group. When these properties passed to the ownership of the North American Company he was continued in his capacity as chief executive. Now that the North American Company has bought into the Illinois Power & Light Corporation, Mr. Sawyer finds himself affiliated with one of the biggest aggregations of capital operating anywhere in the public utility field.

Advocate of Organization and Teamwork

He is an engineer-manager with a keen appreciation of the value of good public relations. He also has an enviable record in his management of men. Naturally as an engineer he recognizes the value of organization and of team-work, and he gets both, not by arbitrarily demanding them, but by careful planning and judicious selection of personnel.

This last year Mr. Sawyer had paid to him one of the greatest compliments that has come to any man in a profession akin to his. This was his retention by the government of Australia to inquire into the power supply there for the Victorian government. The story of that achievement by Mr. Sawyer has been told before in the Electric Railway Journal.

A keen mind, broad knowledge and experience are combined with a delightful personality, a generous and sympathetic understanding of human relationships, and a deep seated love and loyalty for his chosen industry. Bill Sawyer, as he is known to his host of friends, is a builder—a man careful in making decisions and fearless in carrying them out. The association and the industry may well look forward with confidence to the coming year with Sawyer at the helm.

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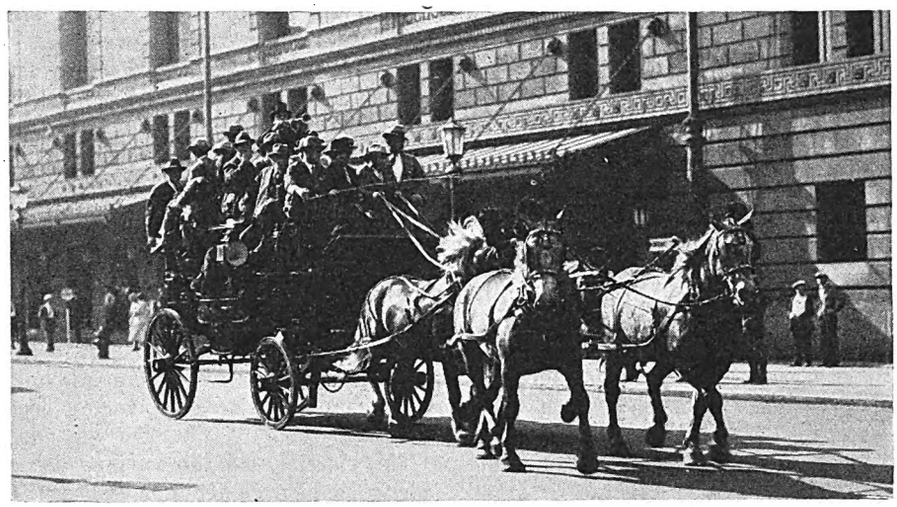
Vision Without Being Visionary

Forty-fifth Annual Convention of the American Electric Railway Association Summarizes Progress Made in Solving Vital Problems that Confront the Industry—Renewed Spirit and Determination Bring Concrete Results



Cleveland City Council Escorted by the Late John Stanley Arrived in State on a Tally-ho to Open the Convention

RAILWAY executives, operators, manufacturers and guests thronged into Cleveland, Ohio, this week to attend the 45th annual convention of the American Electric Railway Association, which lasted from Monday, Oct. 4, to Friday, Oct. 8. Final registration figures are not available, but indications at last report were that the total attendance will run well over 10,000, or 25 per cent more than at last year's convention, which was the largest held up to that time.

In many other respects than in mere size was the convention noteworthy. For the first time in four years it was held away from Atlantic City. Greatly increased space for the exhibit was provided through the efforts of the city authorities and the Cleveland Railway. Consequently the display, both in size and in excellence, far exceeded anything that had gone before.

While the untimely death of President John Stanley of the Cleveland Railway, who had done a great deal of the planning and had taken no small part in the actual work of preparing for the convention, made it necessary to cancel the entertainment features, the convention was carried through with only minor changes in the program.

The programs of the American and the affiliated associations were replete with excellent addresses and discussions. The material presented was constructive and the topics covered vital problems of the industry. In this brief résumé only a few of the major points can be taken up. Full reports of the sessions of the American, Engineering and Transportation & Traffic Associations and abstracts of the papers and committee reports are given in this issue, while those on the Accountants' and Claims Associations will be given next week.

Although the convention was not formally opened until Monday morning many of the members and guests were on hand Sunday. The excellent facilities provided for placing exhibit material had made it possible to arrange the greater share of the displays on Saturday and everything was in place before the opening.

On Monday morning, promptly at 9:30, the 40-piece brass band of the Pittsburgh Railways marched into the arena of the auditorium and assembled on the stage. The City Council came in a tally-ho, under the guidance of Mr. Stanley. After the presentation of the new association flag and a short address of welcome the meeting adjourned to the hall where the sessions were held.

City Manager Hopkins' speech was more than an address of welcome. It was a serious talk on the topic of the morning, "Unified Transportation Service in the Public Interest." "In rendering this service you face difficulties," he declared, "that no other public utility faces, because you must render it in the face of those difficulties from which they are free. You have no control over the elements which affect your service and determine its qualities as they have. So it isn't strange that this service, which is absolutely fundamental to the life of any modern community and rendered with the most difficulty of any public service, is the least appreciated."

Frank R. Coates in his presidential address outlined the progress that has been made by the industry during the past year, much of which is along the lines laid down by Mr. Hopkins. Various phases of the problem were taken up by speakers representing city and interurban railway operation and manufacturing interests. All are agreed that good service must be provided and sold to the public. Modern cars as salesmen of the service can do much to attract customers, but they must

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be run in such a manner as to improve the transportation offered, was the opinion of the speakers.

Tuesday morning's session was devoted to the topic of street congestion. The high cost being paid for misuse of street facilities, the business of street management and traffic control and provision for the future were discussed by city and company men. Recognition of the city's responsibility for conditions and the essential service rendered by the street railways to the majority of the people was apparent. Widening of existing thoroughfares, separation of grades at intersections, building of subways and elevated roads will not solve the problem. The more room there is provided the more vehicles there will be clamoring for the privilege of using it. The ultimate, according to G. B. Anderson, would be when in the central district all the space is devoted to roadway and none to business.

Tuesday evening's session, which opened with a popular concert, was devoted largely to the report of the Advisory Council, which was presented by B. C. Cobb, its chairman. His view of the situation indicates that the view of the owners is becoming more hopeful; although much work lies ahead.

Management problems occupied the closing session, held on Thursday morning. The work of the committee on management and operation, which has attracted a great deal of attention throughout the industry, was explained by Chairman R. F. Carbutt and Regional Directors J. K. Punderford and W. H. Burke.

Several views of the motor bus and rail problem were given by leaders in the transportation field, such as Lord Ashfield, A. H. Swayne and H. L. Doherty.

A complete change of scene took place when the meeting was turned over to Chairman Edward Dana of the committee on education. The value of better knowledge on the part of employees as demonstrated by Prof. H. H. Norris and the group of foremen recruited from a number of railways will long be remembered by the audience as making a constructive step toward better management.

Affiliated Associations Discuss Technique of Transportation

As usual the members of the affiliated associations discussed vital operating problems. The engineers are proceeding with their work of investigation and standardization. They are, however, taking up these matters with a view to their influence on attracting car riders and forming favorable public opinion. The transportation and traffic men concerned themselves largely with merchandising of transportation and bus operation. The Accountants' Association considered the progress of the year in classification of accounts and of bus accounting, while the claims men took up better physical standards for employees.

A joint session was held by the Claims and T. & T. men on accident prevention and one by the engineers and accountants on engineering accounting and depreciation.

The elections of the various associations resulted in the choice of presidents as follows: American, Frank R. Coates; Accountants, L. E. Lippett; Claims, C. B. Proctor; Engineering, Daniel Durie; Transportation & Traffic, J. V. Sullivan.

President Coolidge

sends his greetings to the 45th Convention

DELEGATES to the last two midwinter meetings held in Washington remember the active interest taken by President Coolidge at both of those times. During the first session, at which time he was vice-president, he presented an address before the meeting, and at the next midwinter meeting, during his Presidency, he greeted the entire delegation on the White House grounds. This year he thoughtfully sent a message of greeting to the association through Mr. Storrs, its managing director, as follows:

WASHINGTON, D. C., Oct. 4, 1926.

LUCIUS S. STORRS,
Cleveland, Ohio.

Please extend to your association my best wishes for a profitable meeting. Public service in the truest sense of the word brings the largest measure of success, and I trust that the convention will continue the constructive work in the solution of vital transportation problems which has marked its previous sessions.

CALVIN COOLIDGE.

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Make the Service Right, then Sell It

First Day's Session of the American Association Was Devoted to a Discussion of the Elements that Make Up Good Service and Methods Used to Bring It Into the Favor of the Public

UNIFIED transportation service in the public interest was the theme of the opening meeting held on Monday morning, Oct. 4. This theme was developed in a number of ways by the various speakers. All were agreed that the first requisite is to have the service of a type that will appeal to the present-day car rider. This calls for modern cars, good headways and reliability, along with courtesy to the rider and fair play to the community as a whole. Even with this, it is also necessary to let the public know that the product is good and to employ the best methods of salesmanship to induce them to become customers.

Of great importance in developing this theme was the address of welcome by City Manager W. R. Hopkins. In welcoming the delegates to Cleveland, he pointed out the essentiality of surface transportation for a great modern city. Only with its aid is it possible for the residents to live at great distances from their work. There are many factors, he said, which are much more difficult in the business of furnishing transportation than in that of giving other utility services, such as the supply of gas or electricity. Modernization of cars is to a certain extent beyond the control of the railway, since there are conditions on the streets and delays due to traffic which are inherent to the business. Then, too, when the purchaser pays 60 or more times a month, he is more likely to feel minor irritations incident to the service than when he settles only once a month, and then usually by check. Transportation is the poorest paid of all the utility services. Any of the others find it easier to make a profit. However, the speaker concluded that the public cannot well be served for a long time by a low quality of transportation, but given the proper service he feels confident that the necessary relief will be obtained.

President Coates in his annual address continued on the same theme. He outlined the real progress that has been made during the past year and the plans that have been prepared for continuing with even better work next year.

SELLING THE SERVICE

The sale of electric railway service was considered from two angles—city and intercity. Britton I. Budd, president Chicago, North Shore & Milwaukee Railroad and other companies in the Insull group, considered the intercity viewpoint. In Mr. Budd's absence his paper was read by H. A. Johnson, general manager Chicago Rapid Transit Company. On this group of properties the desire to have the men become salesmen has been developed to the point that they are urged to sell anything the company has to sell. That spirit seems to be behind the entire organization. Frequent conferences of the men are held, so that they can interchange their views and become better acquainted with the purposes of the companies and what they are doing. A point made by Mr. Budd is that everything done by a public service company has a bearing upon the reception of its product. For this reason he held that everything done by the utility should be very carefully watched so that wrong moves will not be made.

FRANK R. COATES

Sales service from the viewpoint of the city railway was considered by Thomas Fitzgerald, vice-president Pittsburgh Railways. While there are differences in detail from the intercity service, the general principles are identical, said the speaker. Men with vision regarding the whole field should analyze all of the facts and from this analysis should select ideas which differ from the ordinary and which can be used to advantage in furthering the interest of the service. An open mind is needed, he averred. Many things which the railway operator considers impracticable may be worked out to the advantage of the company and of the public.

There is no doubt but that political leaders are just as vitally interested in doing what they can to make their cities go forward as are the utility men. They will in general be found reasonable and will be willing to work with the railways in the interest of better service, if they can be shown that the plans proposed really will improve conditions.

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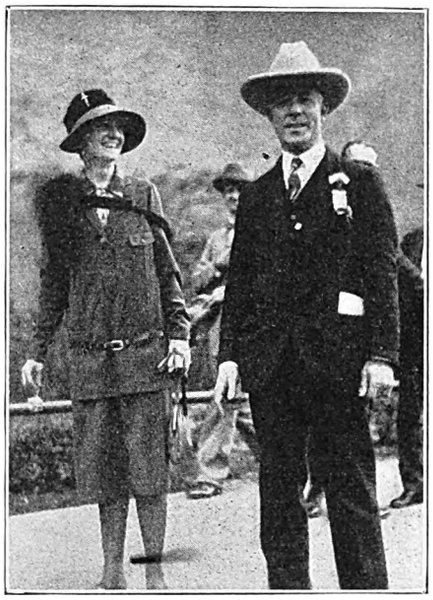
Mr. Fitzgerald admitted that in a number of cases public officials and others have made suggestions which were opposed by him and the other railway men. Instead of refusing to make the changes proposed, the railway did its best to try the methods and in many cases they have been found workable and have resulted in better service. The public and those who proposed the changes appreciated the efforts of the railway, so that much good was accomplished from a public relations standpoint.



J. W. WELSH AND MRS. WELSH

CARS MAKE GOOD SALESMEN

The value of modern equipment in selling the service was emphasized in two able papers, one by Samuel M. Curwen, president the J. G. Brill Company, and the other by Edwin B. Meissner, president and general manager St. Louis Car Company. Both speakers held that the car is the show window of the industry and that unless it is properly dressed the railway will not be able to attract patrons. Old-style cars fail to get the public into the habit of riding. Then, too, the many new devices and improvements that have been made in street cars during the past few years have greatly increased their possibilities for giving service. Exemplifying the value of attractive features and their influence on ride selling, Mr. Meissner told of what has been accomplished by the new Grand Rapids cars. Many other roads are now copying the attractive features of these cars and are finding that they are very valuable as business getters. The new cars seem to have a psychological effect all over the system. Other parts of the property are brightened up and the men take more interest in their work. As a result earnings have increased. However, with the 25,000 obsolete cars that still are in service, there is much room for further developments.

WICKWIRE INTRODUCES THE KAHUNAVIK

Following these somewhat serious talks on salesmanship, E. F. Wickwire, vice-president Ohio Brass Company, gave an example of salesmanship in one of his inimitable addresses. He characterized the Kahunavik, who, he said, was first aid to the Automotivik, as a person who stands as an obstacle to progress. The Kahunavik is not willing to adopt new ideas and is willing to allow the industry to drift with the current. In somewhat more serious vein, Mr. Wickwire told of a recent trip he made to Grand Rapids, and quoted comments by a number of leading men there showing the great value of the new cars and their results in changing the attitude of the public toward the railway.

Street Congestion—Let's Reduce It

Enormous Sums of Money Are Wasted Through Inefficient Use of the Streets, According to Speakers at the Tuesday Session of the American Association—Present Conditions Can Be Improved and Future Layouts Can Be Made that Will Give Relief

BEFORE proceeding with the regular business of the meeting on Tuesday President Coates said a few words in commemoration of the late John Stanley, after which the entire audience stood in silent tribute. A. W. Brady, T. N. McCarter, Gen. Guy E. Tripp and L. S. Storrs spoke briefly of Mr. Stanley and their regard for him, personally and in a business way.

Tuesday's session was devoted to the subject of transportation of the masses between their homes and places of work. This constitutes a major problem today, in the opinion of the speakers, and it was attacked from a number of different angles.

Col. C. O. Sherrill, City Manager of Cincinnati, Ohio, opened the discussion with a paper on the high cost of congested streets. He held the tremendous price the public is paying for misuse of street facilities has been overlooked by transportation men and the public generally, and should be considered. A parked car takes up space in the public streets worth perhaps $2,000.

The merchants have learned that all parking keeps business away and builds up competition in outlying districts. It was pointed out that a comparatively few automobiles, perhaps representing 10 per cent of the possible shoppers by auto, will pre-empt the available parking space so that others will not be able to drive their cars into the heart of the congested district. This means that other auto shoppers will be driven away and will do their purchasing in outlying districts. One solution suggested by Colonel Sherrill is that women shoppers should visit the congested district between 9 a.m. and 4 p.m. so as to escape the rush hours of morning and evening. Abolition of parking, he contended, will do much toward the solution of traffic congestion.

The essential service that is rendered by the street railways will serve by far the greater portion of the public. Since street cars carry so large a share of the purchasing population, they should have right of way over other vehicles. This will give recognition to the rights of the majority and will make easier the work of the transportation company in rendering service. The speaker worked out in considerable detail the ways by means of which the various traffic elements may be coordinated so as to get best results from our present street layouts.

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Provision for future transportation needs was discussed by Col. Sidney D. Waldon, president Rapid Transit Commission, Detroit, Mich., and co-operation in transportation and traffic control by Major R. F. Kelker of Chicago. Abstracts of the papers by these two speakers appear elsewhere in this issue.

George Baker Anderson, manager of transportation Los Angeles Railway, believes that better, more scientific and more orderly use of the streets is necessary in order to keep pace with the present-day requirements. It is foolish, he stated, to use the streets for making deliveries of certain things during the day. Delivery of material can in many cases be made at night so that it will not interfere with the use of the streets for the transportation of people during the day.

With regard to the plans for increasing street widths so as to improve the traffic conditions, Mr. Anderson pointed out that it will be easy to reach the *reductio ad absurdum* when the streets are widened so that the downtown district is all street and no room is left for business purposes. He also stated that much good has come in Los Angeles from the restriction of pedestrians. Walkers are now made to cross the streets when the traffic signals are set for them. Jaywalkers have been practically eliminated. This has assisted greatly, he said, in speeding up traffic.

The duty of the railway men is to place the transportation problem before the city authorities, not as a problem of the railway alone, but as a problem of the community. The economics of transportation should be pointed out, he said, so that the authorities will understand that it is wrong to embarrass established agencies of public transportation for the benefit of a comparatively small number of drivers of private automobiles. Only in this way will it be possible to get the best results.

Conditions for Success Laid Down

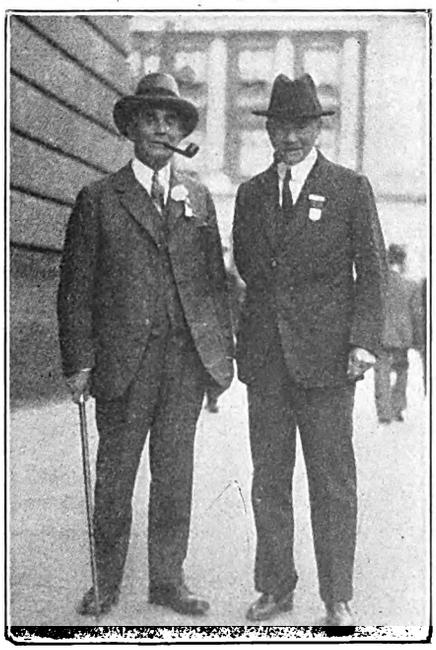
B. C. Cobb, Reporting for the Advisory Council, Considers that Co-operation Between the Corporation, Its Employees and the Public Is a Cardinal Principle—Hon. W. Irving Glover Discusses Possibilities of Airplane as a Transportation Method

SUCCESS of the electric railway industry requires complete co-operation among the corporation, its employees and the public. This is a fundamental principle underlying the code presented by B. C. Cobb in reporting for the Advisory Council. Mr. Cobb's talk was a straight-from-the-shoulder presentation of conditions as they exist today in the industry, and the methods which should be used to improve them. While progress has been made in the solution of some of the problems and difficulties of great import that were seen last year, many things are yet unsolved and there are still many stony places in our pathways.

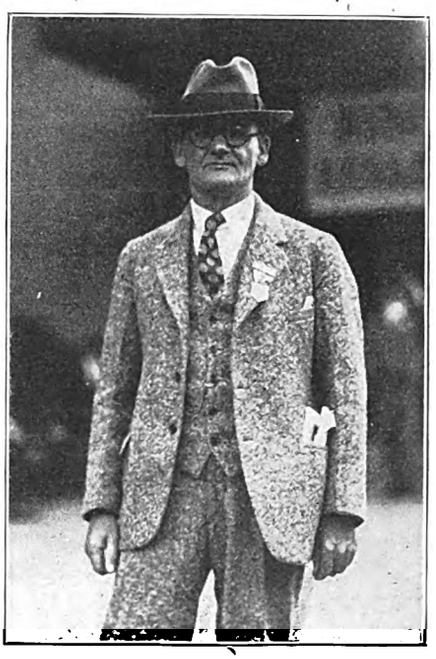
Mr. Cobb's report, unlike many addresses made on public occasions, did not mince words. He pointed out frankly and fully the status of the industry and showed that much remains to be accomplished.

Salesmanship is needed in the electric railway business just as much as in any other business, is the opinion of Mr. Cobb. The best salesmanship in this particular instance is a frank statement of the facts about the condition of the industry.

Hon. W. Irving Glover, second assistant postmaster-general, gave the address of the evening. He discussed the possibilities of commercial aviation. His experience in connection



At left, W. H. Sawyer and W. B. Potter. Above, C. S. McCalla, and at right, R. N. Graham, both of the Pennsylvania-Ohio Electric Company, Coffin Prize winner.



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LUCIUS S. STORRS

with the air mail service of the post office department placed him in excellent position to discuss this topic. Commercial aviation, he said, will open up its own field of business, rather than replace any existing transportation agencies. The electric railways need have no fear that any air transportation company will seriously cut into the earnings of their business.

The session under the auspices of the Advisory Council was preceded by a popular concert by the Cleveland Festival Orchestra, led by Walter Logan, with selections by the Orpheus Male Choir, under the direction of Charles D. Dawe.

At the close of the session the award of the Coffin prize was made by President Coates to the Pennsylvania-Ohio Electric Company.

Good Management Can Solve Industry Problems

Possibilities for Business and Methods of Showing the Public Results of Good Management the Leading Issues—Relations of Motor Bus and Car Considered from Different Viewpoints —Education of Transportation Employees Demonstrated

PROBLEMS of management were considered in considerable detail at the Thursday morning session of the American Association. The session opened with a short talk by R. F. Carbutt, chairman of the committee on management and operation, who outlined the study that has been made by the regional directors and members of his committee in developing methods for better operation. If there is nothing in the material that has been gathered by these men but can be applied to a company, it must be more than 99.44 per cent pure.

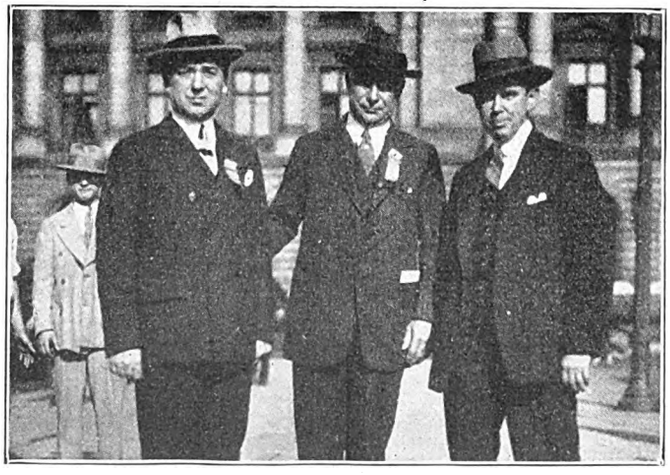
Mr. Carbutt then introduced J. K. Punderford and W. H. Burke, regional directors, who outlined briefly what they had done in their respective districts. Mr. Burke stated that his district is practically free from the Kahunavik which Mr. Wickwire told about.

FREIGHT SERVICE PRESENTS OPPORTUNITY

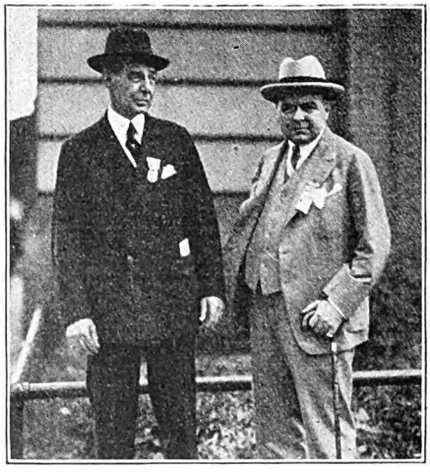
Possibilities for the development of interurban transportation were discussed by T. A. Kenney, vice-president Hodenpyl, Hardy & Company. Originally the electric railways were built for passenger business, but with the advent of the motor car, these companies have had to find other ways of obtaining revenue. The results obtained have been very satisfactory in some cases. Mr. Kenney outlined a number of instances where freight business has become the backbone of the service.

Co-ordination of bus, tram and rapid transit lines was discussed in an able paper by the Right Hon. Lord Ashfield. In his absence it was read by J. McKinnon, superintendent of schedules London Underground System. His conclusion is that competition delays real progress and that it has no place under modern conditions.

A. H. Swayne, vice-president General Motors Corporation, feels that the motor vehicle industry has been of great assistance to the railways, as the loss of business has been made up by freight incident to the transportation of motor vehicles and materials for producing them by the railroads. As to whether the motor bus will replace the trolley, he said that the final answer is not yet known and that the picture is neither all black nor all white. We must, however, remember that this is 1926 and not 1900. He feels that the motor bus



E. C. FABER, BARRON COLLIER AND LABERT ST. CLAIR



B. C. COBB AND T. A. KENNEY

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principles adopted by the association last winter are generally sound. The bus is a new transportation tool and should be used where it can be used to advantage. Management in working out the problem should have vision without being visionary.

Called on by the president, Henry L. Doherty, president H. L. Doherty & Company, made a stirring talk. He stated that he is becoming more and more of an optimist on the electric railway situation, not on the statistics, but on conditions that exist and which can be capitalized. If we should lose our entire investment, that would be a small matter compared with the loss to the community. It is entirely possible to make the city men realize that it is their problem rather than that of the electric railway man himself. It can be shown, according to Mr. Doherty, that railroad values are a mere bagatelle compared with what others stand to lose.

As an industry, we are in the business of furnishing transportation and always have been. We should take the tools that are available and use them.

Industrial Education Demonstrated

A brief brought by Edward Dana, general manager Boston Elevated Railway, discussed education of workers in the electric railway business. Mr. Dana reviewed very briefly the work of the committee on education during the past year. He then introduced H. H. Norris, educational adviser Boston Elevated Railway, who conducted a demonstration of a group conference of foremen. These men had been recruited from a number of electric railways and had received a small amount of instruction from Mr. Norris previous to the conference, which demonstration showed the value of getting men of this type to have a better knowledge of their work and to co-operate better with other departments.

Following the conference of foremen, the award of the *Forbes Magazine* public relations contest was made by Walter Drey. The material submitted in this contest, he said, was of exceedingly high grade. The winner of the first prize, which was a cup, was the Chicago Rapid Transit Company. Second honors went to the Pittsburgh Railways and third honors to the Pennsylvania-Ohio Electric Company. The cup was accepted by Harley A. Johnson, general manager Chicago Rapid Transit Company.

J. H. Hanna and Mrs. Hanna

E. B. Meissner

Presentation of the *Electric Traction* speed contest award was made by J. P. Barnes, chairman of the committee. The cup was awarded for the second time to the Galveston-Houston Electric Railway. The reply was made by F. L. Alexander.

G. H. Clifford, southwestern manager Stone & Webster, reported for the resolutions committee. Appropriate resolutions regarding the death of Mr. Stanley and the convention arrangements were adopted.

New Officers Installed

Mr. Coates next called to the platform the newly elected officers for the ensuing year. These were then installed, after which President Sawyer declared the convention adjourned. The new officers elected are:

President, W. H. Sawyer, president East St. Louis & Suburban Railway.

First vice-president, R. P. Stevens, president Republic Railway & Light Company, New York.

Second vice-president, James P. Barnes, president Louisville Railway.

Third vice-president, Paul Shoup, president Pacific Electric Railway, Los Angeles, Cal.

Fourth vice-president, J. H. Hanna, president Capital Traction Company, Washington, D. C.

Treasurer, Barron Collier, president Barron G. Collier, Inc., New York City.

Operating members of the executive committee to serve for three-year terms ending in 1929: Luke C. Bradley, president Virginia Electric & Power Company, Richmond; C. E. Groesbeck, vice-president Electric Bond & Share Company, New York City.

Manufacturer members to serve for similar terms: Harry L. Brown, secretary the Ohio Brass Company, Mansfield, Ohio; T. W. Casey, vice-president National Pneumatic Company, New York City; E. B. Meissner, president and general manager St. Louis Car Company.

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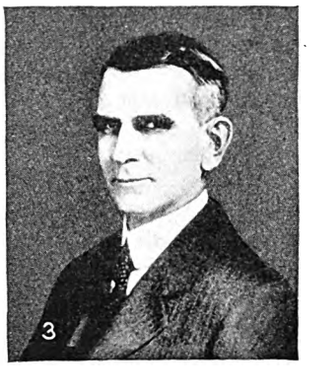
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Newly-Elected Officers of the American Electric Railway Association

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Vice-Presidents:
1. R. P. Stevens
2. J. P. Barnes
3. Paul Shoup
4. J. H. Hanna

Treasurer:
5. Barron Collier

President:
6. W. H. Sawyer

New Members Executive Committee:
7. L. C. Bradley
8. C. E. Groesbeck
9. H. L. Brown
10. T. W. Casey
11. E. B. Meissner

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Improved Service Based on

Co-operation Among Affiliated Associations

Engineers, T.&T. Men, Accountants and Claims Men Are Working Together Harmoniously So that Their Companies Can Give the Public the Best Possible Transportation Service

PROCEEDINGS of the affiliated Transportation & Traffic, Engineering, Accountants and Claims Associations indicate a new realization that successful electric railway operation depends upon the united efforts of all departments of the organization. Undoubtedly the most outstanding impression created by the 45th annual convention of the American Electric Railway Association was that members representing different phases of operation realize better than ever before their mutual interdependence. Members of the Engineering Association are interested in ways by which their technical knowledge can be used to improve the quality of transportation service. Claims and transportation men are working together harmoniously to the end that the number of accidents may be reduced. Accountants are looking for ways by which the information they gather can be made most useful to other departments.

Specifically, the engineers are thinking how they can be helpful in selling transportation along the following lines: Improving the appearance of cars, making them more comfortable and convenient for the passenger, increasing the speed of operation, eliminating all unnecessary noise and insuring the reliability of power supply and the continuity of service. Also of great importance in the activities of this association has been the study of means of reducing the cost of operation. Other activities engaged the attention of the members of the Engineering Association to a certain extent, but it was evident that the chief interest lay in those subjects which promised to make electric railway service more popular. In short, if the electric railway engineer has not yet actually become a salesman of transportation, he realizes that he is the designer of machinery for producing a marketable commodity.

Transportation men showed by their attitude at the meetings of the T. & T. Association that they realize clearly the necessity to co-operate not only with other members of their own organization but with the outside world as well. As one speaker said, "It is the railway's job to be not only a good railway but also a good citizen and a good neighbor." At the joint meeting of the Claims and Transportation & Traffic Associations, mention was made of the fact that while a few years ago a transportation man and a claims man of the same company meeting on the street would hardly speak to each other, now it is common practice for them to visit in each other's offices and confer together nearly every day.

With the Accountants, too, co-operation has become a habit. Great interest centers in the subject of classification of accounts. Every effort is being made to secure uniform classification for railway and bus accounting in the various states. At the same time, efforts are being made to harmonize the many conflicting views concerning the best classification of bus accounts and develop a classification that will be satisfactory to electric railways, steam railroads and other operating agencies.

At least two association presidents remarked that the work of the committee and the meeting of delegates to the convention would be wasted effort unless the ideas were put to work in the operations under the control of the delegates. One president in emphasizing this matter further said there was too much printed matter and not enough discussion.

The material and thought growing out of the year's activities can be generally grouped into two parts. First, the committee reports completed and distributed a few weeks before the October convention are reviewed and abstracted in one section of this issue devoted to the Transportation & Traffic and Engineering Associations. The articles that follow are founded on the meetings held during convention week at Cleveland, and cover the presentation of reports by individual sub-committee chairmen and discussions that followed.

On the one hand the abstracted reports present the combined committee activities, while reported meetings give a cross-section over even a wider field.

There is a growing tendency for committee chairmen to present the reports along broader lines than by simply reading the verbatim report. By this means much information of an individual nature is presented that taken together presents a wealth of operating material.

Committee work has kept well abreast of the times and there is no immediate need for hasty decisions that might prove disastrous. But all problems are gradually focused and developed to a logical conclusion.

An examination of the exhibits, especially that of the 41 cars spread over 2,000 ft. of track, is indicative of results of much committee work. In the growing bus industry the work of the national bodies will prevent to a large measure the unfortunate and uneconomic developments that marked the early history of the electric railway expansion.

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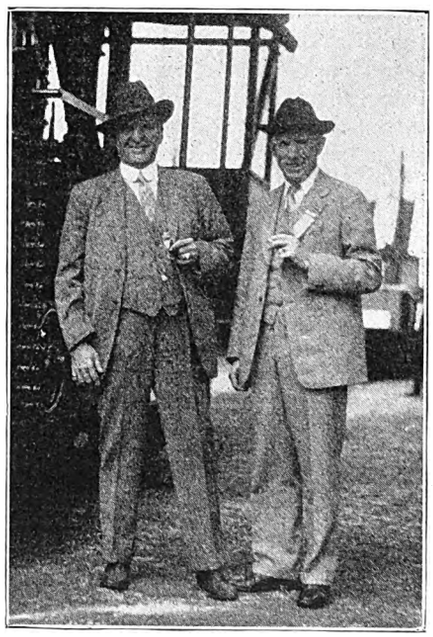
Engineers Consider Ways to Aid in Merchandising Transportation

Rolling Stock Improvement, Reduction of Noise in Car Operation, Prevention of Rail Corrugation and Reliability of Power Supply Aroused Particular Interest at Sessions—More Companies Urged to Follow Association Standards

WHILE part of the problem of merchandising transportation is purely the function of the Transportation & Traffic Association, a very considerable part of it is essentially the work of the Engineering Association. This was brought out clearly in all the sessions of the latter organization. In his presidential address Charles Rufus Harte stated that it is incumbent on the engineers to produce at the lowest possible cost a ride which will be as swift, quiet, comfortable and convenient as that furnished by the private automobile without the disadvantages attached to the latter. The growth and improvement of the automotive vehicle have given the trolley a competitor which may not show the dollars and cents operating efficiency of the latter, but which has captured the favor of the riding public to a considerable extent. That the supposed greater speed, comfort and convenience of the automobile are largely imaginary is little help to the trolley operators whose balance sheets show heavy losses on this account. So long as the public itself refuses to see the injustice of handicapping the trolley with fare regulations and with paving and similar burdens from which its competitor is almost entirely free, this can be remedied only by making the trolley ride sufficiently attractive to get the business regardless of economies.



PAST-PRESIDENTS
C. H. CLARK AND H. F. FLOWERS

Two main directions are open, Mr. Harte said. As yet there is nothing which at all closely approaches the trolley car in over-all efficiency for handling mass traffic, but it must be admitted that a considerable proportion of the cars now in service leave much to be desired in the direction of comfort. While there are yet savings to be effected in roadbed and overhead, the field which today offers the greatest opportunity for help to the industry is that of the rolling stock. Moreover, it is a field which cannot be left alone unless the industry is prepared to accept shortly heavy losses through forced abandonment of track and line.

The bus also demands careful consideration. With the number of electric railways using buses practically doubled during the year 1925, it is obvious that the bus does meet a demand, even though that demand may be an unwise one. On the other hand the doleful returns from much of this operation show equally clearly the need for improvement if it is to be continued. Again it is to our equipment men that we must turn for developments which will give better efficiency in operation.

These major problems carry with them a host of related matters. Noise, disturbing in itself, producing irritation on the part of the public and helping to turn riders to the quieter rubber-tired vehicle, is but a symptom of conditions which make no small amount of trolley riding uncomfortable.

Rail corrugation and noise in car operation go hand in hand, although the real relation is yet to be learned. Ventilation of automatic substations involves not only the losses and interruptions due to faulty behavior but also the noise, fear of which frequently leads to opposition to the economic location for the building. Trolley wire failures in busy locations cause traffic interference and publicity of a kind not to be desired.

Standardization and simplification are helps or hindrances, according to how they are done or administered. Year after year member companies at very considerable expense and inconvenience give the services of men supposedly best qualified to determine what materials, methods and practices will return to the industry as a whole the greatest dividends if generally employed. Year after year the recommendations of these picked men are reported at the convention, receive a more or less perfunctory consideration, if approved are included in the Manual, and are used by a part, but very often only a small part, of the membership. Why is this so? Are they too hastily adopted? Are the differing standards of some of the non-using companies really better? Or is it due to failure on the part of the companies to pay any attention either to the possible economies by their use or to what they really mean to the industry?

When standards or recommendations are issued, Mr. Harte urged that if they cannot be adopted outright,

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they should at least be given a fair trial. Unless valid reasons can be shown for non-acceptance of standards, they should be adopted and employed by all companies. If this is not done it is a grave question whether the committee activities are worth the cost. Abstracts of the reports of the affiliated associations appear elsewhere in this issue.

Way and Structures Discussed

Interest at Monday Session Centered on Causes and Prevention of Rail Corrugation, Switch Tongues, Welded Rail Joints, Crossings and Garages

RAIL corrugation, its causes and methods of prevention, was the subject of lively discussion at the Monday afternoon meeting of the Engineering Association. The report of the committee, presented by Prof. D. D. Ewing, brought out that there appears to be a relation between vibrations, noise and corrugation. Thus far the committee has collected a considerable amount of valuable data, but not enough to permit reaching definite conclusions.

J. Ormondroyd suggested that metallurgical analyses of corrugated rail would probably produce interesting evidence, and W. W. Wysor, chairman of the special committee, said that it was the intention to undertake such investigations in the near future. In reply to a question by L. C. F. Bellamy, general manager Hongkong Tramways, A. T. Spencer said that the *In-situ* process of rail treatment delays corrugation. E. L. Lockman stated that the sorbitic treatment and its relation to corrugation is being studied on the Boston Elevated Railway. Mr. Bellamy referred to experience of British tramways, indicating that sorbitic treatment prevents corrugation. Extensive tests made by the London Underground were mentioned by A. V. Mason, deputy general manager and the engineer. He was of the opinion that corrugation is caused by vibration. No trouble has been experienced on this system with rail treated by the *In-situ* process.

In reply to a question by C. A. Smith, Mr. Wysor said that the experience of the committee led to the conclusion that corrugation occurs on all kinds of track, but investigations have not yet been carried sufficiently far to determine on which type of track construction it is most prevalent. Mr. Ormondroyd was of the opinion that it was worse with rigid construction. On the Chicago Surface Lines, according to J. Wolf, all theories concerning its cause have been alternately proved and disproved. R. H. Dalgleish stated that experience with rigid track construction in Washington, D. C., indicates that rigidity is not necessarily a cause of corrugation.

In conclusion Professor Ewing said that it was his belief that corrugation is the result of a number of variables and that all of the causes mentioned may contribute to its occurrence. Until the investigations have been carried further, however, it will be impossible to determine which of these causes, or which combination of causes, has the most serious effect.

The meeting was opened by the address of the president, Charles Rufus Harte, who stressed the importance to the industry of adopting standards and adhering to them after adoption. The report of the executive committee and that of the secretary-treasurer were presented by G. C. Hecker.

Changes in the Engineering Manual were suggested by a special committee of which W. R. Dunham, Jr., was chairman. Approval of the recommendations was given by the meeting except in so far as certain specifications of other associations are concerned. On the suggestion of C. A. Alden, this section of the report was referred back for consideration by the incoming committee.

E. M. T. Ryder described the progress made by the special committee studying the design of switch tongues and hard centers for special trackwork. The cost of the suggested designs and the probable extent to which they would be used were discussed at considerable length. Mr. Alden expressed the opinion that they would cost no more than those now in use, and several of those present predicted that under such circumstances they would be widely used.

Work of the special committee on co-operation with the welded rail joint committee was the subject of a brief progress report submitted by W. W. Wysor. This had already been printed and distributed some time prior to the convention. Inasmuch as the way and structures committee is well represented on the welded rail joint committee it was recommended that this subject be discontinued as a special committee assignment.

Experience of the Boston Elevated Railway with welded rail joints was described in a paper by E. L. Lockman. He gave a historical sketch telling what had been done in the past by his company and outlining its present practices. F. B. Walker told of the experience of the Eastern Massachusetts Street Railway, stressing particularly its experience with welded joints in open track. He expressed an optimistic view of the situation and stated as his opinion that the rail joint problem has practically been solved.

A. T. Spencer presented the report of the special commitee on surface hardening of rails. Sufficient data have not yet been collected to permit the formation of definite conclusions as to the exact value of this process.

With the completion this year of a design for a steam and electric railway crossing below 45 deg. and to 30 deg., inclusive, the special committee studying this subject believes that the series of recommended designs is complete and recommended that the subject be discontinued. This suggestion was approved. On account of the death during the year of Victor Angerer, chairman of the special committee, the report was presented by E. B. Entwisle, who paid a sincere tribute to Mr. Angerer.

A progress report on arc welding processes for repairs to rails and manganese steel was presented by C. F. Gailor.

Design of buildings for maintenance, storage and operation of buses was the subject of a special committee report presented by John R. McKay. The danger of constructing garages with too large a floor area was stressed. In reply to a question, R. B. Harding said that the fire insurance interests consider 10,000 sq.ft. the maximum desirable floor area for buildings not equipped with sprinklers and 20,000 sq.ft. for those so equipped. W. H. MacAloney and Mr. Harte discussed methods of placing buses in a garage.

Reports upon electric railway carhouses and cars and on wood preservation were presented by H. E. Bachman and A. P. Way, respectively. P. J. Howe of the American Telephone & Telegraph Company emphasized the value of wood preservation as shown by the experi-

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ence of large communication companies. H. H. George presented the report of the standing committee on way and structures, indicating the action taken on the findings and recommendations of the various special committees.

It is the recommendation of the committee on way and structures that next year two special committees be organized—one to handle the subject of design of buildings for maintenance, storage and operation of buses and the other to study the subject of design of joint railway and bus terminals. As previously assigned, the subject covers too broad a field for one committee to handle satisfactorily.

Depreciation Considered

Subjects Common to Engineering and Accountants' Associations Receive Attention at Joint Session on Tuesday—Noise Reduction Report Developed Lively Discussion

ONCE each year the Engineering and Accountants' Associations hold a joint session. This year an instructive paper on depreciation and obsolescence was read by Henry G. Riggs, professor of civil engineering of the University of Michigan. It appears in abstract elsewhere in this issue.

In discussion of Professor Riggs' paper, H. F. Brown made the statement that obsolescence should not be charged to present consumers, but the costs arising from this factor should be borne by future users of the service. E. D. Dreyfus, however, advanced the theory that sufficient reserve funds should be built up, depending upon the individual cases, as an insurance against major replacements due to obsolescence in the future. To this Professor Riggs replied that railway operation as a business was subject to drastic changes in operation and design and that he believed that such reserves should be built up.

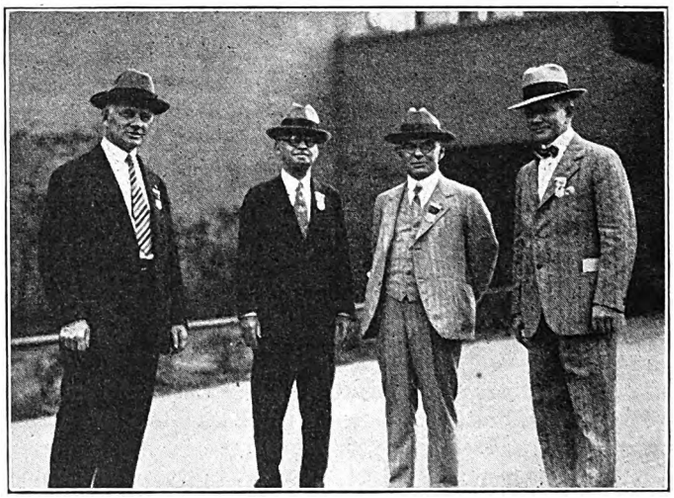
At the opening of the joint session R. M. Rifenberick, consulting engineer, Toledo, read the joint report of the committee on engineering accounting. Mr. Rifenberick said that in the past there has been a tendency toward too extensive subdivisions of accounts, in an attempt to establish unit costs. It seemed desirable in past years to maintain accounts so that valuations can readily be made. Today this does not appear to be as necessary, and the committee recommends the discontinuance of further subdivisions of accounts as unworkable and too costly to obtain. Accountants have no way of obtaining the necessary information for further subdivision except through the engineers, and engineering departments have not been allowed the necessary funds to provide such detailed data.

After the close of the joint session the engineers continued with reports from their seven sub-committees. The outstanding thought characterizing the meeting was the desire to co-operate in furnishing superior transportation through the adoption of better engineering and maintenance practices. The urge for improvements is here and the engineers are prepared to meet it.

C. W. Squier, associate editor ELECTRIC RAILWAY JOURNAL, read the report of H. W. Codding on engineering symbols, which after discussion was adopted for information, but was not included in the Engineering Manual. Charles Rufus Harte, from the chair, reported briefly on the progress made by the committee on the Engineering Manual. The report of the heavy electric traction committee was abstracted by Chairman H. F. Brown. A report on equipment was presented by P. V. C. See. H. H. Adams presented the report on unification of car design.

H. S. Williams, in presenting the report of the subcommittee on the reduction of noise in car operation, told of an instrument that has been developed for the measurement of car noise. This instrument was described in this paper Sept. 11, 1926, page 413. Mr. Williams stated that much of the unnecessary noise could be avoided by superior maintenance. Gearing with worn teeth should be discarded. Bearing fits should be kept tight; axle bearings should be individually fitted to obtain the best results.

The report developed a lively discussion, in which H. E. Bean took up the desirability of eliminating track noises, first by remedying defects due to lack of maintenance and then by reducing noise by perfecting a better type of track with particular reference to paving construction. L. D. Bale called the attention of the committee to the suppression of machinery noise in recent substations constructed by the Cleveland Railway. H. M. Wheeler spoke of some tests made with canvas skirts and shrouds built of wood, but was not enthusiastic as to the results obtained. Prof. D. D. Ewing of Purdue University considered the subject of very great importance and one that should be taken up actively by the association.



A. H. ARMSTRONG, JOHN A. BEELER, J. M. BOSENBURY AND A. R. MYERS

H. A. Johnson told the association that the Chicago Rapid Transit Company had spent thousands of dollars trying to reduce noise on the elevated lines. Some of the attempts have been closer spacing of ties and use of 60-ft. rails at some locations. With reference to rattling noises, Mr. Johnson stated that this is generally the result of poor maintenance and can be greatly reduced without the expenditure of much money. Daniel Durie spoke of the work done by his company in reducing noise of various parts of the car unit. He believes that the use of helical gearing has reduced noise of operation.

The meeting was honored by the presence of members of the delegation representing the London Underground group. The session closed with the presentation of the report on wheel mounting and check gages, presented by C. W. Squier.

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Engineers Study Power

Design and Control of Automatic Substations and Their Operation and Maintenance Occupied Thursday Meeting—Advantages of Mercury Arc Rectifiers Brought Out

BETTERMENT of electric railway operation with a view to improving public relations was again the dominating note of the meeting of the Engineering Association. A progress report of the committee to co-operate with the American Society for Municipal Improvement was presented by C. L. Hawkins. Continuation of this work next year was recommended. H. H. Adams offered a resolution of regret on account of the death of John J. Stanley.

Economics of automatic substations was the subject of a committee report presented by Adrian Hughes, Jr. C. A. Butcher discussed the relative merits of the cut-and-try method and the analytical method of determining the most economical number and location of substations. In order to assure reliability of service, he said that the number of substations used probably will be larger than is indicated by a purely mathematical solution of the problem. Praise of the work of this committee was voiced by J. F. Neild. How four independent investigations arrived at practically identical solutions of the problem of substation design and location in Cincinnati was told by F. W. Peters.

A brief report of the committee on purchases and stores was presented by Chairman P. F. McCall. The recommendations were approved.

Power generation and conversion then occupied the attention of the meeting for a considerable time. L. D. Bale presented the general findings of the committee and called upon various members to discuss the phases of the subject to which they had devoted particular attention. W. E. Bryan spoke on supervisory and remote control systems. George I. Wright told of the investigations made by the committee in connection with the use of the mercury arc power rectifier for electric railway service. Ventilation of automatic substations was discussed by F. W. Peters.

Co-operation Needed Between Power and Equipment Departments

On the suggestion of C. H. Jones, actual experience in the maintenance of automatic substations on the North Shore Line was described by C. Antoniono. A thorough inspection once a month is far more satisfactory than a casual daily inspection, in his opinion. Supervisory control in Baltimore was discussed briefly by Mr. Hughes. Mr. Jones spoke of a new installation of a carrier current supervisory control system on the Chicago, South Shore & South Bend Railroad. The equipment has not been in operation long enough for definite data to be available. Mr. Butcher referred to the loss of power efficiency due to the use of improper gear ratios on electric railway cars. Co-operation between the power, equipment and transportation departments is the solution of such a problem, in the opinion of Mr. Hughes. Mr. Bryan said that during the coming year the committee would study the question of efficiency, not only of the power generation and distribution system, but also in connection with the electrical equipment of cars.

Advantages of mercury arc rectifiers in the matter of quiet operation were brought out by Mr. Wright in the presentation of his section of the committee report. Mr. Antoniono told of the experience of the North Shore Line with a new mercury arc rectifier installed immediately before the recent Eucharistic Congress. The successful meeting of the severe test imposed at that time furnishes a good indication of its reliability, he said. C. H. Jones urged that railway companies make every effort to give rectifiers a trial. He said, however, that the characteristics of this apparatus are not yet sufficiently well understood to justify the establishment of standard ratings. Mr. Bale differed with this opinion. Foreign experience has been sufficiently extensive to justify the adoption of ratings in this country, he said. Mr. Harte urged that a standard be adopted as soon as possible. That the adoption of ratings would clarify the situation was the opinion of Mr. Peters, even though it might be necessary to change the standards at a later date. W. Neaf confirmed the opinion expressed by Mr. Bale and said that mercury arc rectifier ratings are firmly established in Europe. The chief difference between conditions there and in the United States is in the size of the load, rather than in its character, he said. R. L. Weber urged that ratings be made the subject of study by the committee during the coming year. Mr. Bryan assured the meeting that the committee would give careful attention to this matter.

Power transmission and distribution was the subject of a committee report presented by Mr. Jones. Owing to the lateness of the hour, there was little discussion of this subject.

The report of the committee to co-operate with the United States Department of Commerce on simplification and standardization was presented by R. H. Dalgleish. Mr. Harte presented the report of representatives on the main committee of the American Engineering Standards Committee.

Nominations of officers for the ensuing year were announced by L. C. Datz, chairman of the committee on nominations. The following names were submitted:

For president, Daniel Durie, general superintendent West Penn Railways, Connellsville.

For first vice-president, R. H. Dalgleish, chief engineer Capital Traction Company, Washington, D. C.

For second vice-president, F. H. Miller, vice-president and general manager Louisville Railway.

For third vice-president, W. F. Graves, chief engineer Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis.

For secretary-treasurer, J. W. Welsh, executive secretary American Electric Railway Association.

Executive committee nominations were submitted as follows:

W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore; L. D. Bale, superintendent of power Cleveland Railway; C. H. Jones, general manager Chicago, South Shore & South Bend Railroad, Michigan City, Ind.; P. V. C. See, superintendent of equipment Northern Ohio Traction & Light Company, Akron.

All were unanimously elected. Speeches were made by the new officers and members of the new executive committee. A past-president's badge was presented by Mr. Durie to R. C. Cram in appreciation of his service in this capacity during the first part of the year. In the absence of Mr. Cram, G. C. Hecker accepted the badge. A similar past-president's badge was presented to Mr. Harte in behalf of his service during the latter part of the year.

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Newly-Elected Presidents

DANIEL DURIE

DANIEL DURIE

SINCE 1916, when Mr. Durie took up active work in the Engineering Association, he has been quite closely affiliated with the different branches but has majored in the activities of equipment and transportation. A comparatively young man, Mr. Durie is no novice in railway work. His first experience was with the Paterson Railway, now a part of the Public Service Railway of New Jersey. In August, 1901, as a mere lad he went to western Pennsylvania to work for M. R. McAdoo at that time general manager of the Pittsburgh, McKeesport & Connellsville Railway and formerly connected with the New Jersey Company. Thus Mr. Durie took up his new duties with a company that has since developed into one of the most active in the country. This company is the West Penn System. Other than his service with the New Jersey company, Mr. Durie's entire career has been with the West Penn System.

Mr. Durie began as a wireman and assistant superintendent of the power plant at Tarr Station, Pa., on Aug. 22, 1901. His first job was to get some new cars ready for service and look after their maintenance. For a period following, Mr. Durie turned his attention to transportation matters, but the serious need of a man with high-class maintenance qualifications resulted in his return to the mechanical department. He was next made foreman of Iron Bridge carhouse and shops, and in 1904 was transferred to Connellsville, main shops, as repair shop foreman.

In April, 1909, he was made master mechanic of the entire system. From 1909 to 1913 additional properties were taken over and many cars, different in type, and carhouses and shops, varying in size and in the nature of their equipment, were added.

In June, 1915, the resignation of M. A. Coffey, superintendent of transportation, left a vacancy at the head of that department. Mr. Durie's general knowledge of the essentials in the various operating departments resulted in his promotion to general superintendent of railway operation. In addition he was on Oct. 25, 1917, made general superintendent of equipment.

J. V. SULLIVAN

JOSEPH V. SULLIVAN, assistant to the vice-president and general manager, Chicago Surface Lines, is the new president of the American Electric Railway Transportation & Traffic Association. His activities as a member of the Association's Executive Committee have been extensive. He has been chairman of the committee on rush-hour service, chairman of the committee on definitions, member for four terms and then chairman of the committee on fares and transfers, member of the standards committee, member of the committee on education and on accident prevention, chairman of the committee on subjects. During the past year he acted as first vice-president of the association and member of the committee on bus operation.

Mr. Sullivan was born in Chicago on Nov. 1, 1878. He was graduated from Notre Dame University in 1897 and then spent seven years in newspaper work in Chicago. His railway experience began in 1904, when he became connected with the traction companies operating on the north and west sides of Chicago, the predecessors of the Chicago Railways, as general passenger agent. He served in this capacity for one year and was then promoted to the position of general supervisor, which he held until the operating consolidation of the Chicago Railways and the Chicago City Railway in 1914 to form the Chicago Surface Lines. He then became statistician for the company. In 1920 he was promoted to the position of assistant to the president when he worked with John A. Beeler, who was then making an extended study of traffic conditions, equipment and organization of the Surface Lines. Thereafter he was closely associated with Williston Fish, general manager, in carrying out Mr. Beeler's recommendations and in bringing about operating economies and general improvements in the service. In 1924 he was appointed assistant to the Vice-President and General Manager Guy A. Richardson, a position which he holds today.

Mr. Sullivan has been a frequent contributor to the pages of ELECTRIC RAILWAY JOURNAL.

J. V. SULLIVAN

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# of Affiliated Associations

L. E. LIPPITT

LAURENCE E. LIPPITT, manager of the Auburn & Syracuse Electric Railroad, Auburn, N. Y., who heads the American Electric Railway Accountants' Association for the coming year, is one of the youngest electric railway executives in central New York State, being only 37 years old. He began his career as an employee of the Oneida Construction Company, which electrified the West Shore Railroad between Syracuse and Utica, a line now operated by the New York State Railways. This was in 1906.

In September, 1907, he entered the employ of the New York State Railways and served in various positions in the accounting department. His next step up the ladder took place in July, 1913, when he was appointed auditor of the Syracuse & Suburban Railroad under the management of Allen & Peck, Inc. Three years later he became auditor-treasurer of the Auburn & Syracuse Electric Railroad under the management of Peck, Shannahan & Cherry, Inc.

He held this position until July 1, 1926, when he was named general manager of the company to succeed W. J. Harvie, resigned. The Auburn & Syracuse operates between Syracuse and Auburn and also lines in Auburn and to Owasco Lake, where it controls Lakeside Park.

Mr. Lippitt's activities with the Accountants' Association began in 1921, when he was appointed member of the committee on express and freight traffic promotion and costs. In 1923 and 1924 he served as member of the executive committee. In 1925 he was made second vice-president and during 1926 served as first vice-president.

LAURENCE E. LIPPITT

C. B. PROCTOR

C. B. PROCTOR

IF C. B. PROCTOR, the newly-elected president of the American Electric Railway Claims Association, has a slogan it is: "Don't Use Unnecessary Words." And he lives up to it. His letters exemplify brevity with completeness. When he was asked for a statement regarding himself he said to the biographer: "Cut it to the bone; make it short and sweet." The most characteristic fact, perhaps, about Mr. Proctor's office administration is his thoroughness and the brevity of his records.

For more than 34 years Mr. Proctor has been identified with the claims departments of transportation companies. He has been actively identified with the affairs of the American Electric Railway Claims Association practically since the time of its formation. He has served in the capacities of third, second and first vice-president at different times, and in addition has been a member of the executive committee for a number of years.

For the past 21 years Mr. Proctor has been claim agent for the Memphis Street Railway, and since the early part of 1923 his work has included that of being joint claim agent for the Memphis Power & Light Company and the Memphis Street Railway.

He entered claims work in 1892 with the East Tennessee, Virginia & Georgia Railroad at Knoxville. In 1894, when that company consolidated as a part of the Southern Railway System, Mr. Proctor was transferred to Washington, where he remained for about 6 years as an executive in the freight claim department of the Southern Railway.

In 1900 he was made route agent in charge of the freight claim department for the Louisville lines of the Southern Railway, being transferred to Louisville, Ky., the headquarters of his office. He remained there for about 3 years and during the latter part of 1903 was reassigned to Knoxville as route agent for the same road.

On April 1, 1905, Mr. Proctor went to Memphis from Knoxville and took up there the duties of claim agent for the Memphis Street Railway, which had just been reorganized under the adminstration of the Ford, Bacon & Davis interests. There he has been ever since.

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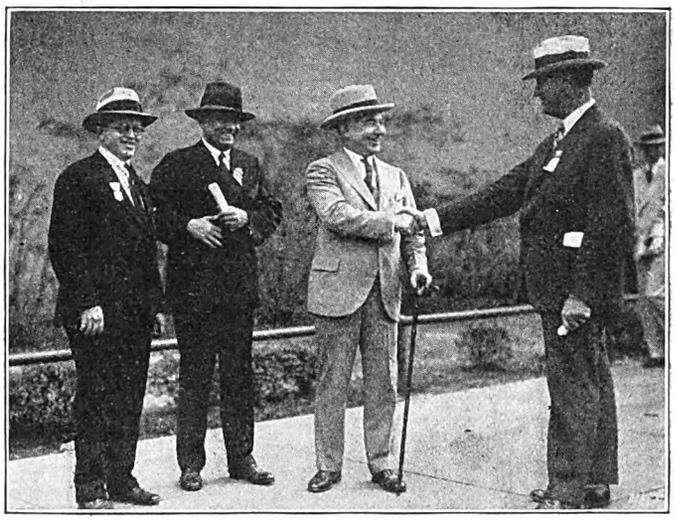
Transportation and Traffic Men Make Definite Suggestions

Valuable Material Contained in the Four Committee Reports that Deserve to Be Put Into Action by All Companies — George H. Clifford Presides Over Well-Attended Meetings —J. V. Sullivan Was Elected New President

RECOMMENDATIONS by committees that are brought to life only to be presented at the annual convention are of little value unless they are put into practice. Many valuable suggestions, representing hours of effort spent at considerable expense to member companies, are contained in the pages of the four reports representing the work of the Transportation & Traffic Association. Subjects covered were merchandising transportation, divided into six chapters; traffic congestion; accident prevention; and bus operation, which was treated under fifteen general subdivisions.



PAUL E. WILSON, E. F. WICKWIRE, JERRY STANTON AND GEORGE H. CLIFFORD

Both in the formal presentations and the discussions, definite recommendations were made that represent the best practices. The reports are drawn from outstanding companies and the thoughts contained are a veritable text of modern operation.

MERCHANDISING PLANS WELL DEFINED

"Take the ideas home and put them to work," was the meat of President George H. Clifford's extemporaneous address. Mr. Clifford further asked, "Do we practice what we preach and do we get the proper action in response to the work accomplished by the many committees that make valuable reports each year at the time of the convention?" Other points made by him follow:

Employees of our companies are entitled to know as much as possible, not only about the particular business in which they are engaged but about the progress that is mapped out by the committees at the time of the annual conventions. It is incumbent upon the delegates, if they believe in the reports, to carry the messages home to the many employees and salesmen of transportation in their own companies. All of the reports are made by men keenly interested in the work accomplished by the various committees this year.

Many of the committee members are men actively engaged in the operation of transportation properties, and these members and many others have taken valuable time to visit the operations of other companies. Their studies and findings represent a cross-section of best operating practices that should play an important part in bringing the transportation utilities to a plane of better service.

Many may disagree with some of the findings of a committee. If they do, now is the time to set these disagreements before the association as a whole so that the differences may be ironed out and the message representing the year's work of the association may be of the greatest value to the industry.

After the president's extemporaneous, yet well-pointed, address the meeting was turned over to the merchandising transportation committee, and its chairman, R. N. Graham, was called upon to preside. Mr. Graham emphasized the fact that the report this year was dogmatic in the extreme. "Must or should is used in all the recommendations," he said, but he explained that the individual opinions of members were submerged in the committee report where they were at variance with those of the majority.

Clinton D. Smith, in presenting the section of the report on special prices of service and rates of fare, declared that the rider who desires a superior service is willing to pay a higher fare if the service is satisfactory. A specific example cited by Mr. Smith was the "Ceramic Flyer" of the Steubenville, East Liverpool & Beaver Valley Traction Company. An example mentioned of special classes of service was the sale of transportation to the American Legion on the part of the Northern Texas Traction Company. In this case, the American Legion issued free transportation tickets which were presented by the Northern Texas Traction Company at the end of the convention and netted nearly $1,500.

S. E. Emmons presented the section of the committee's report on "Maximum Use of Existing Facilities." This is only another way, Mr. Emmons said, of expressing efficiency of operation. Recently 130 new cars were

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added in Baltimore and 111 old single-truck cars were retired. There is no single-truck equipment in Baltimore at present. As a result of these changes, passenger riding has increased one-half of 1 per cent, and while the car-miles have decreased 2.1 per cent, the seat-miles operated have increased 0.9 per cent. A $100,000 saving in operating expenses was accomplished by concentrating on these methods.

Company interest in civic problems was summarized by J. B. Donley, in saying that a railway company should not only be a good citizen but a good neighbor. The different members of the staff should belong to civic clubs, and the company should pay the dues. They should also enter into the work and discussions of these organizations as a good member might be expected to do. The local safety council should be the particular pride of the railway operating in the community.

The advertising theme permeated many of the talks during the session. A. C. Spurr was sponsor for that section of the report and declared that a brief message several times a week in the daily newspapers was better than a full page used a few times a year. Something definite must be said, but such topics are not difficult to find on the average railway property.

John A. Dewhurst saw in the car exhibit of this year's convention tremendous strides in the modernization of cars that were designed to appeal to the car rider. He referred to recent cars built in Paris and Berlin that appeared to be even broader steps toward the ultimate end of obtaining comfort and easy riding and the elimination of noise. A design along somewhat similar lines as the Paris and Berlin cars has been worked out in this country, but to date no means has been found to construct such a unit and to give it the acid test of operation. It seems inevitable that such a design will need at least a year of test and development before it can be turned out as a finished product, and it is to be hoped that some means will be found by which either this American design can be built or one of the European cars can be brought to the United States for test and study so that the coming year will not be lost to the art of better transportation.

Considerable time was spent in the discussion of the various chapters of the report. Jeff Alexander reported that the riding in Houston is increasing from 5 to 8.5 per cent over last year, and he lays it largely to the improved appearance of the cars.

George Baker Anderson told of the improvement made in Los Angeles in what he called the company's "step-ladder" cars. The low-level light-weight cars now used with wide exits and automatic doors are a big improvement. The report was further discussed by G. S. Wills, C. E. Morgan, C. R. Havinghurst, executive secretary of the Beaver Falls Chamber of Commerce; Harry Mitchell, W. E. Wood and several other delegates who were present.

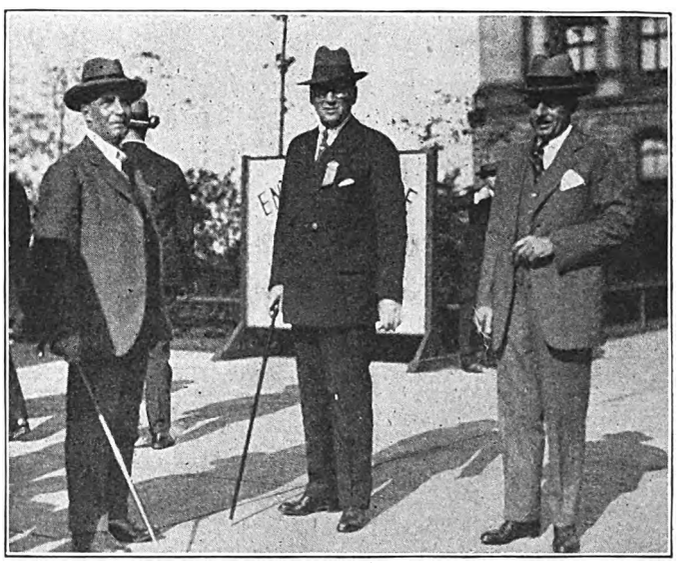
Pointed Shop Talks on Publicity

Following the close of the presentation of the merchandising report, Major J. S. S. Richardson gave a heart to heart talk on the value of advertising. He said: "If you only come to life in advertising once in a while, you'll have a fat chance to make an impression on the public when you want to." The railway or any utility must keep telling its message to the public and not give the impression that it advertises only when it wants something. Major Richardson's impressions are that many platform men know more about public relations and the handling of the public than the executives of their companies. He thinks as a whole they are a good lot.

Major Richardson told of the activities of many of the state committees on public utility information. A recent survey made by several of these committees of the courses on economics, as given in the grade and high schools of our country, is of particular interest. He said that the text books used were filled with false and misleading data, tending to promote public ownership, which we know too well means political ownership. Good work has been done by technical sub-committees, working under the general direction of these state committees and acting for several utilities in their relationship with the street programs of communities.

Louis Selzer of the Cleveland *Press* presented a paper giving his impression of four years of progress toward a better understanding between public utilities and the public.

Frank Le Roy Blanchard became so enthusiastic over advertising that he left his paper in the envelope and talked straight from the heart on the value of carrying a message continuously to the public. Mr. Blanchard believes there is much work to be done in advertising to draw the public away from the private automobile to the electric railways.



W. H. Sawyer, R. P. Stevens and C. R. Ellicott

Joint Session Held with Claims Association

Traffic Congestion Report Based on Hoover Conference—Merits of Traffic Lights Discussed—Report on Claims Showed Ever-Growing Co-operation Between Transportation and Claims Departments

From comments made at the Tuesday afternoon joint session of the Transportation & Traffic and Claims Associations, the report of the Hoover Conference on highway safety appeared to be the most important single development during the year in connection with traffic congestion. Findings of this conference occupied a prominent place in the report of the committee on

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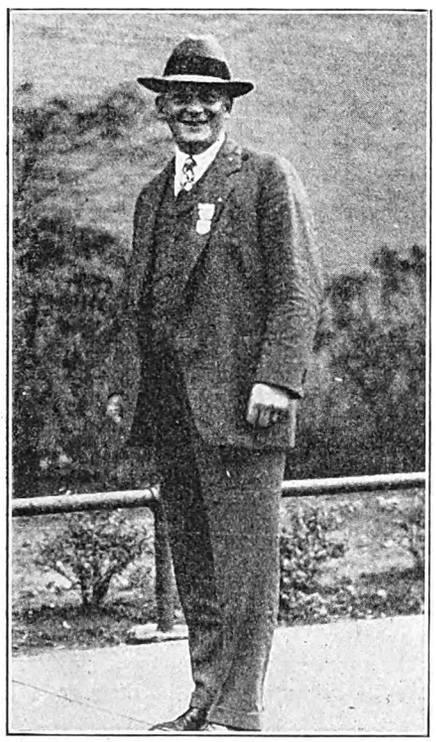
traffic congestion presented by A. R. Myers. An abstract of this report is published elsewhere in this issue.

That the recommendations of the committees are incomplete was the contention of Stanley Good, captain of traffic El Paso Police Department. He said that liability insurance for automobilists was urgently needed. Uniform traffic regulations are desirable but hardly feasible, he said. Police officers are preferable to automatic traffic signal control, in his opinion. Burton W. Marsh, traffic engineer Pittsburgh, Pa., said that unless it is put to some useful purpose, the report of the committee is no good. It should be subdivided, he thought, and the local railway men must push the various recommendations. Limitations of the height of buildings is a basic need.

Current discussion of traffic congestion is blind to the future in experimenting for an immediate solution, according to J. Rowland Bibbins, consulting engineer, Washington. An abstract of his paper appears elsewhere.



S. W. GREENLAND

At the conclusion of the discussion of traffic congestion, G. W. Clifford, president of the T. & T. Association, turned over the chair to J. H. Handlon, president of the Claims Association. Mr. Handlon spoke a few words of greeting and stressed the growing co-operation between transportation and claims men.

Hearty approval of the report of the Hoover conference was given in the report of the joint committee on accident prevention, presented by M. W. Bridges. R. H. Hadsell spoke of the good results obtained through co-operation between the railway and the local police. A note of optimism was struck by H. K. Bennett, co-chairman of the committee. He quoted figures to show the improved accident record of a large group of companies for 1925 as compared with 1924. More attention to the needs of the street railways might have been given by the Hoover conference, in the opinion of G. B. Anderson. He mentioned also the advantage of boulevard stops.

Accident prevention methods in El Paso was the subject of a discussion by Tom Walker. He spoke of the beneficial results obtained by bringing this matter strongly to the attention of the trainmen. More emphasis is needed on this phase of the work, in the opinion of L. H. Butterworth. G. B. Powell said that in Louisville it is the custom of the railway to accept the trainman's word concerning the responsibility for an accident. On a large property this practice is not feasible, in the opinion of A. J. D. Van Brunt. B. C. Wood described the methods in use on the Pennsylvania-Ohio System. He said it is customary to charge a trainman with three accidents for each failure to make a report as required. Seth Baldwin and Arthur G. Jack discussed other phases of the problem.

Traffic Men Learn About the Bus

Bus Operations Well Defined as Based on Practices of Many Companies Operating Buses in Conjunction with Rail Lines—Valuable Statistics Developed in Discussions

HOW, where and why to operate buses both in competitive and co-ordinated service was discussed in the report of the committee on bus operation. It is published, in abstract, among the committee reports in this issue. J. B. Stewart, Jr., chairman of the committee, read the general introduction to the report explaining the extensive work carried on by the committee during the past year. The idea incorporated in the report is to place the bus business on a sound basis so that it will not have to go through the trying transition conditions which proved disastrous to many electric railway lines.

Statistics on bus operations were given by Mr. Stewart, indicating the rapid growth in the use of the bus by electric railways. In September, 1925, according to association figures, there were 4,425 operated by 251 railway companies. In September, 1926, there were 6,439 buses, operated by 336 companies. These figures show a gain of 33.8 per cent in the number of companies operating buses and 45 per cent in the number of buses operated. Assuming that each one of these buses carried 300 passengers per day, the 6,469 buses transported 388,000,000 passengers per year. At an assumed gross revenue of $30 per day, the income from such operation approximates $77,000,000 per year.

E. D. Dreyfus of the West Penn Railways, Pittsburgh, discussed that portion of the report dealing with rates of fare on interurban buses. It was his opinion that the rate must of necessity be higher than on city buses. He gave as his reason the sparsity of population which would be reflected in low load factors. Long bus lines would not pay unless both terminals are cities having populations in excess of 25,000. As bus operation is normally a more expensive form of transportation than the rail car systems, the public must be educated to pay a fare adequate for the service.

At this point in the discussion, Mr. Coates, president of the American Electric Railway Association, was presented and gave the assembled delegates a brief talk on the successful work which they have accomplished.

That bus service should not be established unless it can pay its own way was the opinion of D. A. Scanlon of the Northern Ohio Power & Light Company, Akron, Ohio. It has been the policy of this company not to establish competing parallel bus service with its rail lines unless such bus service can show a profit from the start.

Original development of the bus business by independents was watched with considerable interest by steam and electric railway operators, said A. Shapiro, assistant manager Washington Rapid Transit Company. However, the use of the bus by the steam and electric railways has been rather backward. In establishing bus

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service, the steam and electric railway companies will no doubt enter into competition with each other. This may or may not represent a difficult problem. Mr. Shapiro told of experiences of the Milwaukee Electric Railway & Light Company in operating buses over approximately 900 miles of highway routes in Wisconsin. In this same territory, two steam railroads furnish both passenger and freight service. Up to the present time, however, neither of these companies has entered the motor transportation field. It was Mr. Shapiro's opinion that steam railroads could to advantage enter into agreements with electric railways for furnishing motor transportation in many competitive situations.

In the absence of S. W. Greenland, L. M. Bennett, Cleveland Railway Company, discussed that section of the report dealing with "terms of franchise." According to Mr. Bennett a franchise is a privilege granted by governmental authorities. He said that the street railway industry has an opportunity now to learn from the automobile and the bus industry. At the same time he feared that the bus industry had not taken advantage of the priceless lessons taught by the railway industry. Originally, the street railway fare was 5 cents, for no good reason at all. Early establishment of urban bus operation led to the adoption of a 10-cent fare for the same reason. The nickel of street railway fame was found to be too small for bus operation so the dime was substituted.

Chartered coach and bus operation was described by Adrian Hughes, superintendent of bus transportation, the United Railways & Electric Company of Baltimore. He explained that although his company had entered the bus business in 1915, it was not until the summer of 1925 that it went into this special business of a chartered service. The aim in rendering this service has been to develop the business not competitive with rail lines of the company. The company through purchase of independent operators acquired a charter for sightseeing business for Baltimore from the Gray Lines Association. The business so far has made use of equipment in off-peak hours which otherwise would be inactive. From the time service was inaugurated until Dec. 31, 1925, it showed a profit of $1,200. In the first six months of 1926 the gross business has resulted in a profit of $6,200 out of $74,000 taken in. Of this $74,000, $56,000 was derived from chartered business. Everything pertaining to the cost of this service is charged up to its operation.

Three divisions are set up for establishing cost data on this special and charter bus business. These are: the bus or bus year; the bus hour and the bus mile. Records are kept of all items of expense and are set up under these three divisions. From this study it has been possible for this company to establish the true value of bus operation. For the purpose it is necessary to divide the operation into two parts, i.e., competitive and railway. He showed charts to illustrate the allocation of costs and revenue between these two forms of operation. In 1925, the bus business operated by his company showed a deficit of $37,000. However, the competitive lines, i.e., those operating independently or in competition with the railways, showed a profit of $20,600. The railway bus lines, supplementing the rail lines, showed a deficit of $57,400. Hence, the deficit on the whole property was $36,800.

Better public relations can be developed through the use of the bus in establishing this service in the territories where it would be both impractical and uneconomical to build rail lines was the gist of the remarks made by C. H. Chapman, manager of the Connecticut Company. The bus fits into the general scheme of transportation as a means of trying out an extension of the parent system. Such service is particularly suited for tapping live communities which desire rail transportation. Mr. Chapman gave other examples illustrating possibilities of the use of the bus in completing a system of urban transportation. It was his opinion that the existence of bus lines will stimulate riding on the system as a whole. He warned the members that he was not subsidized by any bus manufacturer when rendering the opinion that in certain cases it may be economical to discontinue track operations and substitute buses if the company cannot refinance reconstruction of its roadway.

E. M. WALKER

Two fundamental principles governing successful bus operation were presented by A. T. Warner, assistant to the vice-president in charge of operations, Public Service Railway Company, Newark, N. J., who discussed that section of the report dealing with "steps to be taken to protect rate base with respect to development expense." One of these was that the company should not carry unsuccessful bus operations on the books for too long a period. The second principle was that a fare should be established at the time bus service is inaugurated which should be high enough to cover cost of such operation. In working out these two principles, his company takes a census of the territory which it proposes to serve with buses. A reasonable riding habit is prescribed from this census and then the rate of fare to cover cost of operation is established from this base.

J. B. Stewart, Jr., was again called upon to read the section of the report on tire mileage contracts. M. L. Harry, chairman of the sub-committee which prepared this chapter, included a brief description of the history which has led the tire manufacturers and operators to enter into such agreements.

Resolutions presented by the resolutions committee of the association included tributes to Mr. Stanley and Mr. Maltbie, two prominent electric railway officials who had died during the past year. J. V. Sullivan, president-elect of the association, was escorted to the platform and the gavel was presented to him by President Clifford. Mr. Sullivan reciprocated by pinning the badge of past-president on Mr. Clifford's coat.

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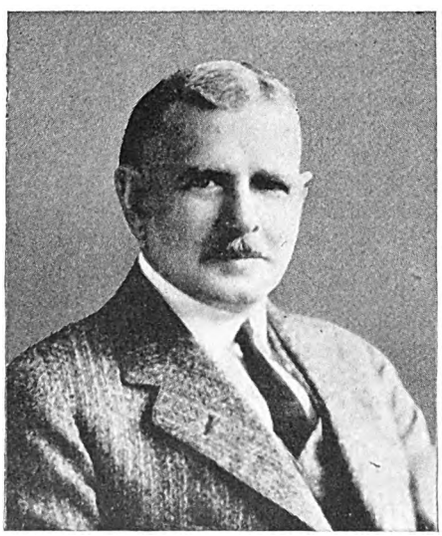
Retiring Presidents of the American and Affiliated Associations

FRANK R. COATES
American

CHARLES RUFUS HARTE
Engineers

GEORGE H. CLIFFORD
Traffic & Transportation



JOHN J. DUCK
Accountants

JOHN H. HANDLON
Claims

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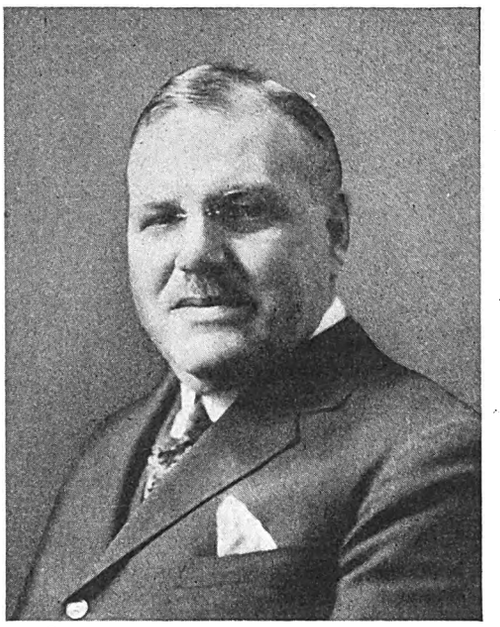
Co-operation by All Transit Agencies Means Progress*

Transportation a Civic Necessity, and to Cripple Its Effectiveness and Power Properly to Function Would Hamper Seriously the Municipality as a Whole

By **Frank R. Coates**
President American Electric Railway Association,
President Community Traction Company, Toledo, Ohio

IN OPENING this, the 45th annual convention of the American Electric Railway Association, I have a feeling of pride in our industry, a pride which I believe is justified. A few short years ago there were those who professed to see the electric lines skidding into innocuous desuetude. Today, in this great auditorium, what do we see? The greatest convention this association ever has had, the greatest assemblage of transportation men, the greatest exhibit of transportation equipment and material. That's going some for an industry that was supposed, five years ago, to be due for the scrap pile.



FRANK R. COATES

Real progress in our organization work has been made by the thorough co-operation of the executive committee, the Advisory Council, the managing director, the headquarters staff, under the able guidance of the executive secretary; committee chairmen and committee members.

At the outset of this administration the Advisory Council recommended the discontinuance of the mid-winter meetings, but to have territorial meetings in their place. The first one of these was held in Chicago in February, the second in New York during June. The discussions were behind closed doors, and from the excellent results obtained it is my strong recommendation that these be continued by future administrations.

During the year we have invited the committee chairmen to meet with the executive committee at each of its sessions. We feel that this has brought the committee work closer to the association and has been an aid to the chairmen. The continuance of this policy is recommended. Our publicity department has provided a series of eight talks on the electric railway situation, which have been given wide distribution among executives and public information bureaus, with the request that they be made the basis of public talks before business clubs, chambers of commerce, schools and, in fact, before any gathering where our representatives appear.

For the first time our association has been represented on the advisory board of the visitors' committee to the Massachusetts Institute of Technology. It is amazing to learn through this source how much thought and study are being given to the higher education of the student. It is my suggestion that the association appropriately express its appreciation to Dr. Sargent for having given it the opportunity, through its president, of placing the electric railways' problems before the Institute.

Executives or representatives of your association have appeared before all sectional meetings in the United States this year. It has gratified me especially to attend a number of these meetings personally. From each of them I carried away the thought that these meetings are of a very high standard and that real results are being accomplished. To prevent duplication of effort and to further our work for the common good of the industry there should be some tie-in between the sectional associations and the American Electric Railway Association. Your president mentioned this in an address before the Midwest Electric Railway Association, and it unanimously approved the idea. It is my suggestion to our executive committee

*Abstract of an address presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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that the president of each sectional association be invited to meet with the committee whenever it is in session. This would bring the organizations into closer contact. It is not the desire or thought to have the American Electric Railway Association dictate in the slightest degree to the sectional organizations, but simply to have a point of contact which will insure more perfect co-operation.

Loss of Rails a Blow that Would Cripple the Community

There is no evidence at this time nor is there any probability that dense traffic can be handled efficiently other than by electric cars on rails. There is also a place for the bus. But we hear so much nowadays about tearing up electric railway tracks that apparently the proponents of these drastic measures never give any serious consideration to the needs of the future. We have been told in a number of instances that electric railway equipment should be junked and buses substituted. The politicians and leaders of public thought who advocate such a procedure in our larger communities would hand down to posterity a heritage which would so cripple transportation that the very growth and well-being of the community so affected would be dealt a paralyzing blow. Transportation is a civic necessity, and to cripple its effectiveness and power properly to function would be to hamper seriously the municipality as a whole.

Are we as transportation men doing our full duty toward offsetting this mistaken notion? Are we effectively and squarely meeting this issue? It is our duty in the community we serve to keep hammering away at the future necessity for electric tracks to handle mass transportation in our larger cities. If we do not, we are failing in our duty to our companies and to the public at large. We are failing just as wrongfully as those in positions of civic trust who, utterly unmindful of the future dire consequences to the communities they represent, would wreck the foundation of their transportation structure that they may gain some advantage, in their narrow-minded view, for their own political preferment.

Ample Rate of Fare Essential

It is unfortunate that we must fight these elements for our existence. Whenever there is friction there is waste. Fights and educational campaigns cost money, and yet in the majority of cases the attacker keeps calling for lower fares.

We cannot discuss service without considering it in relation to the fare question. Some people evidently think that everything else has a higher value since the war except city car fares. Every factor which goes to make up transportation service has gone up in price, yet there are a few communities in this country which that the user of the service is fixing the price.

Further, the rate should provide sufficient money properly to care for maintenance and depreciation, and for all obsolescence as well. In the vast majority of cases our American rate is a single fare for each ride. Usage may have established this, but it is not just. Why should the passenger who lives a mile from his place of daily labor pay the same as his fellow worker who lives 3 miles away? The latter is getting something for nothing, something for which the short rider is paying.

Consider the advantage to all property in a community when there is an adequate transportation system. The car rider pays for it. No man is more opposed to any branch of our government carrying on any business than my chief, Henry L. Doherty, but he has repeatedly stated that an adequate common transportation system is so necessary to every community and so essential to its growth and development that the payment of readiness to serve expenses of the transportation system could be justified as a tax on the property of the community. He has also held that the property owner would be better off paying these expenses as a property tax than to risk depreciated land values through retarded growth of the community, or failure to secure appreciation in land values due to natural growth. Under such a plan the car rider would pay only that portion of transportation cost which is based on the distance traveled.

This will undoubtedly impress you as a very cumbersome and unnecessary method of charging. However, it has such elements of equity that in my judgment some such method will ultimately become standard practice.

Parking Is Civic Waste

Our public streets were built originally to accommodate traffic. One would not think so today; most of them are used for automobile storage. Automobile drivers will park their machines blocks from their places of business and walk the remainder of the distance.

This matter is being discussed today from all angles. It is an expensive accommodation for the few to the detriment of the vast majority of the population in any city. The parking problem is not alone the business of the transportation company to combat, but it is a civic problem and should be cared for by the municipality. We should become aggressive in our local organizations to have the parking nuisance abated.

The street railway is a necessity. We were threatened at one time by the jitney. This form of competition held sway for a short while and then died out. Then came the buses. Their competition with the electric railways has reached its peak and is now waning. But in the bus is found something we can use to advantage. While as an individual system the bus cannot compete with the electric car under the same rates, yet co-ordinated with the electric system we have found a place for the bus where it can be used, and used to advantage.

Manufacturers Helping to Stimulate Modernization

The manufacturers of electric railway equipment have done wonderful work in modernization. We ask that their studies and development work be continued, with the twofold object of bringing about modernization and reducing costs. Thus, with the manufacturers working to accomplish the results suggested and the operator studying the situation and carrying out his advanced ideas on the underlying principles of co-ordinated service, rate of return, and meeting the opposition to the electric railway squarely and fairly, we will find the recognition for which we have been striving.

The steam roads are gradually turning toward the electrification of certain parts of their systems; they realize the possibilities and necessity for this form of transportation. And until something is presented other than that which has been offered up to this time as a substitute for the electric car it is in no imminent danger of being supplanted.

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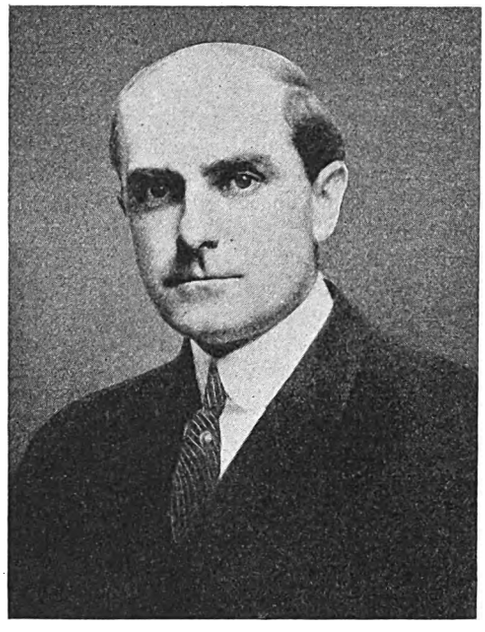
Electric Railway Service Can Be Sold*

In the Past Most Executives Have Overlooked Latent Power of Employees as a Selling Force—Better Business Campaign of North Shore Line Cited as a Practical Example of Methods that Can Be Used

By **Britton I. Budd**
President Chicago North Shore & Milwaukee Railroad and Allied Companies

SELLING transportation service is a subject which has been engaging the attention of electric railway executives a great deal in the last few years. The old theory held by many that electric railway service, being a necessity was used only in case of necessity, and therefore did not require any special effort to sell it, has been generally discarded. Today I think we all agree that electric railway service can be sold; that is, that the operating revenues of our companies can be increased by well-directed sales efforts. I think we are agreed, also, that at no time in the history of electric railways has the need for intensive sales efforts been as great as it is now.



BRITTON I. BUDD

Being agreed, therefore, on the main propositions that properly directed sales efforts bring results and that the necessity for such efforts is pressing, the question before us is what are the best methods to employ.

I believe that most electric railway executives in the past have overlooked the potential power of the employees of a company as a selling force. I do not mean simply in the way of giving courteous, efficient service, which means the creating of good will and indirectly increasing business, but as actual sales agents. I wish briefly to sketch an experiment which we are trying.

On the North Shore Line we have an active traffic department made up of men who are experts in the line of selling transportation service. Such a department is a necessity for every company engaged in a line of work similar to ours. The experiment which we are trying out, of having all our employees act as sales agents, does not in any way take the place of our traffic department. On the contrary, it makes the work of that department even more of a necessity, for it follows up those "tips" of new business which the employee salesman cannot close.

The employee sales effort includes every one in the company and even members of their families. For example, the wife of a trainman has been responsible for a very substantial amount of new business and has been an award winner. All services of the railroad have been subdivided and listed as "products" which the company has to sell. The employees are urged to sell anything that the company has to sell, to comb their communities intensively for business and to take advantage of contacts with their grocer, butcher or dry goods man, or their lodge, club or other organizations.

To carry out this work a thorough organization was perfected. The movement was launched at the beginning of the year under the name of the "Better Business Campaign." The interest of every employee of the company was aroused. Seventeen separate teams, or groups, were organized, each one under a captain who appointed his own aids and subdivided his group into separate smaller units. A spirit of rivalry has been stirred up among the various teams, and individual and group money prizes were offered to the individuals and teams making the best showing.

Our employees' publication, the *Highball*, each month devotes pages of space to news of the campaign. It prints the pictures of the prize winners, feature stories about them and in every way helps to arouse and keep up interest. Group meetings are held almost daily and, in addition, circular letters are mailed from time to time to the home address of every employee. Members of employees' families are interested in the campaign through the employees' publication and the circular letters, so that the effect is cumulative and widespread.

DIFFICULT TO MEASURE VALUE

It is difficult to estimate the value of this campaign in dollars and cents. Both passenger and freight traffic increased substantially over the corresponding months

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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of the previous year and it may be assumed that a part of the increase is due to the sales activities of the employees. In the first six months of the campaign, 4,954 business "tips" were turned in from employees, and to show how alive they are it may be cited that one piece of prospective business brought as many as five separate "tips" from as many employees.

But the value of a campaign such as I have sketched is not to be measured by the amount of new business which might be traced to it directly. Its chief value lies in the enthusiasm it has aroused among the employees and the effect which that enthusiasm has in the various communities in which the employees live. When a company has a force of 2,000 employees, bubbling over with enthusiasm, talking about the company among their acquaintances and neighbors, such a company has a selling force the value of which is inestimable.

Public Admires Loyal Employees

We know definitely that the campaign has had the effect of personalizing and popularizing the company in the various communities it serves. We know of merchants who have called their employees into conference and spoken to them on the spirit of the employees of the North Shore Line. We know that the campaign has increased the feeling of good will among our customers and that it has been worth while.

An important result of the campaign is the effect it has produced on the morale of the employees. The fact that the North Shore Line is subject to strong competition has been a factor in the success of the campaign.

Competition creates a company spirit. It puts men on their toes and makes them fight. They feel that business going to a competitor is a personal loss to them. They are alert to take advantage of every opportunity to get new business for their company.

A Transportation Sales Convention

Guided by our experience in the "Better Business Campaign" of the North Shore Line, we are preparing to carry out the same idea, perhaps on somewhat different lines, on the other railway properties with which I am connected. On Sept. 16 and 17 we held an inter-company convention which we termed a "General Transportation Sales Conference." The delegates in attendance were selected by the general managers of the North Shore Line, Chicago, South Shore & South Bend Railroad, Chicago, Aurora & Elgin Railroad, and the Chicago Rapid Transit Company.

We held two full-day sessions, beginning at 9 o'clock in the morning and lasting until 5 o'clock in the afternoon. The delegates were on company time and a full attendance was insisted upon. A program was prepared and definite assignments made in advance. Main papers were limited to twenty minutes and discussion to five minutes. A great deal of valuable information was developed which each delegate was instructed to present in summarized form to the employees in the department which he represented.

All the topics discussed at this convention had to do directly with the selling of transportation service. To give an idea of the scope and nature of the conference, a few of the main subjects may be mentioned:

A general review of electric railroad facilities in the Chicago metropolitan area.
Motor coach facilities in the territory of the companies represented.
Merchandise despatch and l.c.l. facilities and how business may be built up.
Carload freight business, interconnections with steam railroads, through rates, demurrage, etc.
Diner and parlor car business.
Concession business.
Good public relations as business builder.
Paid advertising; its purpose and how to make it effective.
Employee and customer publications; their purpose.
Publicity—what does it mean?
Speaking activities as a selling agency.
How can the "valley" in transportation be raised closer to the "peaks"?

There were in all 24 main papers on the program and each was discussed by from three to five speakers in five-minute discussions.

The main purpose of the convention was to give the representatives of each company a broader vision of the whole transportation problem in the metropolitan area and to point out ways of all working together for mutual benefit. The entire program was just another method of selling transportation service.

Product Must Be Constantly Improved

Actuated by the motive that it is necessary to have a constantly improved product, particularly in the merchandising end of it, we are working hard on another phase of the sales end of it even beyond the purely physical problem of providing still better tracks and equipment. We have inaugurated a service improvement program on the North Shore Line which has been in effect for some time, and with success, on the Chicago Rapid Transit Company lines.

First a careful survey was made by experts (1) to determine customer attitude toward the service and (2) employee attitude toward the customer. The employees are called together in small groups for a series of meetings and discuss, under the guidance of a trained director, practices which will lead to betterment of contacts with the customer and eliminate annoyances on the part of users of the service. In other words, they are developing, themselves, standards of practice not only for themselves to follow, but which will be the rule and guide for newcomers in the organization.

Advertising—Of Course!

I am not going to say much about advertising—either newspaper, poster, billboard, car card, direct-by-mail, or the other forms which may be used effectively if handled by some one skilled in presenting sales arguments to the mass mind. To do that would merely be a reiteration of emphatic statements I have made previously on that subject. The company today, whatever it sells, that does not advertise efficiently will, I believe, soon find plenty of capacity in its old equipment. The competitor who knows how to advertise will have the business.

There are so many ways by which transportation service can be sold that I have not attempted to cover the entire subject, but only to point out two or three methods being tried out on our properties. In the last analysis, everything done by a public utility has a direct or indirect bearing on the selling of its product.

Of course, the best method of selling transportation service is to give your customers all and just a little more than they expect in the way of service. When that is done the selling is made much easier. When it is not done, when the service is open to serious criticism, the best selling methods known will not be entirely successful.

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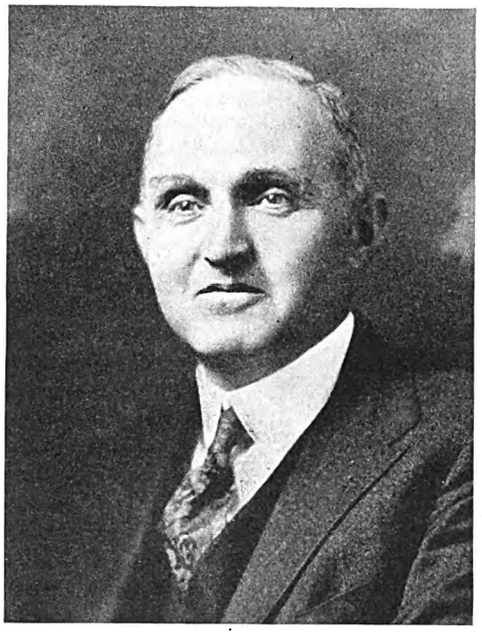
Winning Public Support

Is First Step in Selling City Service*

Every Employee Should Be Saturated with Information Regarding His Property and Should Broadcast It Widely

By **Thomas Fitzgerald**
Vice-President Pittsburgh Railways,
Pittsburgh, Pa.



THOMAS FITZGERALD

"WITH public opinion nothing can fail—against public opinion nothing can succeed." Whether or not this thought expressed by Lincoln is true, it is believed to be an entirely safe idea on which to base a campaign for selling street railway service.

The exact causes and effects of favorable or unfavorable public opinion have not yet been determined. The many obscure and complicated factors which work upon the mass mind make the possibility of a clear and convincing solution of the problem remote indeed. Certainly it does not lie within the ability of a single mind, beset with difficulties, problems and annoyances attendant in the operation of one comparatively insignificant street railway system, to analyze the relation of causes and effects in the fundamentals of this problem and convincingly demonstrate them to so tremendous an industry as the street railway utility. It would seem that the men who are best qualified to analyze and demonstrate the fundamentals underlying our industry are those whose work puts them in touch with the industry as a whole and not with any small part of it.

The officials of the A.E.R.A. and the editors of the journals devoted to the upbuilding of the industry are in an infinitely better position to analyze and demonstrate facts regarding our problems than any small group of men whose activities are localized in a comparatively insignificant part of the whole industry. It seems to be incontrovertible that the answer to the fundamentals underlying our local problems must come from men whose vision embraces the whole field. We as local men should supply them freely with whatever pertinent information we may have for the purpose of bringing out in a scientific way all of the available facts regarding cause and effect.

Incidentally it may be said that one of the most important influences upon the correction of erroneous conclusions and practices should be meetings such as these, where men from different localities can meet and by criticism and discussions demonstrate to the man with a mind open to ideas different from his own that there is a great opportunity to broaden his vision and to increase his usefulness to himself, his company, and his community. The moderately successful man, especially he whose success has created the conviction that the solution of his problems has been accomplished, should benefit by these contacts. If he is to be an asset rather than a liability to his property, changing conditions must find his mind open and receptive to suggestions, ideas and practices developed successfully elsewhere and which may be applied with equal success in his own locality.

First, then, it appears that the selling of service requires that every one connected with that service be saturated to the limit of his ability to absorb information, and it seems that the best way to secure and spread information is through free and full interchange of ideas through all available channels. This group, organized for the purpose of discussion and criticism of problems confronting every one of us, presents the most important medium.

KNOWLEDGE BREEDS UNDERSTANDING

The principal obligation of the railway representative is to see that his facts are stated as facts and his opinions as opinions. Placing the information before a group of councilmen or city officials is not an easy matter and frequently requires all the tact, patience and courage that a man possesses.

It is not enough that one man or one small group of men have knowledge of the facts regarding street railway problems affecting the public of a large community. Strive as hard as they may, a small group can spread very little knowledge in a convincing manner—especially to a large community whose people feel that their close physical contact with the street railway service qualifies them to judge the "facts" presented by the printed page better than a small group. This is par-

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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ticularly true if that small group is suspected of making little contact with the facts of the service. It seems almost an impossibility to bring the public to realize the value of street railway service unless the whole railway group or a large portion thereof bends every effort to dispense authentic information so that the public may come to an adequate understanding of the problem. The only restriction to be made upon the practical application of this theory should be that facts ought to be stated as *facts* and opinions stated as *opinions*.

Free Discussion Advocated

On the basis of this theory, with its one restriction, the officers and employees on one property have been invited by the management to discuss any of the company's affairs with any one. Two years of this policy have not presented a single incident embarrassing to the management, and it is believed that discussion of its affairs along this line has benefited public relations and will continue to do so without embarrassing results.

The trainmen, who make the greatest and most effective contact between the railway management and the public, offer the greatest single opportunity for the improvement of public relations. Whatever methods may be necessary to secure their interested effort to render good service and inform the public properly should be adopted. In one case representatives of the trainmen to the number of 80 or 100 and an equal number of street railway officials meet at frequent intervals for the discussion and criticism of operating practices.

Give Newspapers Complete Facts

Placing newspapers in possession of the complete facts regarding matters in which the public is interested offers a valuable field for efforts to inform. Their possession of all the facts quite often makes it possible to arrive at an amicable arrangement in matters of controversial nature without incurring premature animosities generated by public discussion based on inadequate information.

A concrete example of this policy with the newspapers was the amicable signing of a labor contract, during the discussion of which the newspaper men were informed by both sides and the situation completely explained to them. Where formerly there had been bad feeling and misunderstanding, in this case the newspaper men were convinced that the public interest was being served by allowing the two parties to proceed with negotiations without undue publicity. The final accomplishment was looked upon as the best solution to both parties under the conditions, and the newspapers proceeded to compliment both sides on the arrangement made.

Civic Bodies Interested

Information should flow not only through the railway's personnel and news columns but through all forms of advertising—newspapers, posters on streets, posters on and in cars and billboards—any decent method of bringing before the public the facts regarding the street railway problems should be used.

It has been assumed that the attitude of the street railway men is that of a real public servant making every effort to accommodate his views to the desires of the representatives of the public and of the public itself. It would seem highly desirable that a city street railway man should look upon the public officials of his community as being representative of public opinion and to try in every possible way to comply with the suggestions and instructions issued by them. It is surprising how few detrimental suggestions are made or insisted upon by influential political representatives of the people. Suggestions, when complied with, carry with them a certain responsibility for the suggestor. It is pleasing at times to see the response of a suggestor to the idea that a sincere attempt will be made to carry out his suggestion successfully, assuming that he will take full responsibility.

Local Regulation May Sometimes Help

In one case, at least, local regulation has been tremendously beneficial to a local street railway. In this case the character of the men composing the regulatory body is of the highest type—all sincerely interested in serving the public to the best of their ability. While there have been numerous disagreements and decisions adverse to the opinions of the street railway's management, still there has been none which impaired the rights of the stockholders, management or employees or in any way adversely affected the ability of the railway system to serve. A general survey will show that public good will gained by a local regulatory body has in this case rendered completely insignificant any differences of opinion regarding minor matters. While there have been no secret meetings of this board, publicity on controversial matters which might lead to misunderstandings has been avoided and, in all cases so far, the company has been able to accept the board's decisions.

With the sunlight of understanding illuminating street railway companies' practices, bad methods cannot survive, and the extent to which this understanding and free flow of information is accomplished, to that extent the details of operating and selling methods approach perfection.

Long-Haul Rates Restrict Riding

One important feature in selling city street railway service is to recognize that it is fundamentally a short-haul service. When we try to sell long hauls we are opposing the natural functions of the facility, and to sell short-haul service at a long-haul rate seems to be the height of foolishness.

In most of our large cities empty cars may be seen on the streets and in the carhouses at the off-peak hours of the day. To sell those empty seats on the road for any small amount of money would increase the net return. There are people walking along the streets or staying at home during off-peak hours who would be glad to pay a small sum for the large amount of service which city railways are producing and wasting.

The speaker believes that the weekly pass offers the best present possibility for progress along this line. But until we have found some way of selling at a profitable price this off-peak by-product, there seems to be no justification for any one assuming to advise a group of electric railway men on the subject of selling.

Increasingly favorable public opinion, in spite of our failure, indicates the generosity of the public toward ineffective public servants. If we can find some way to become really effective public servants, who can predict the rewards which may be ours?

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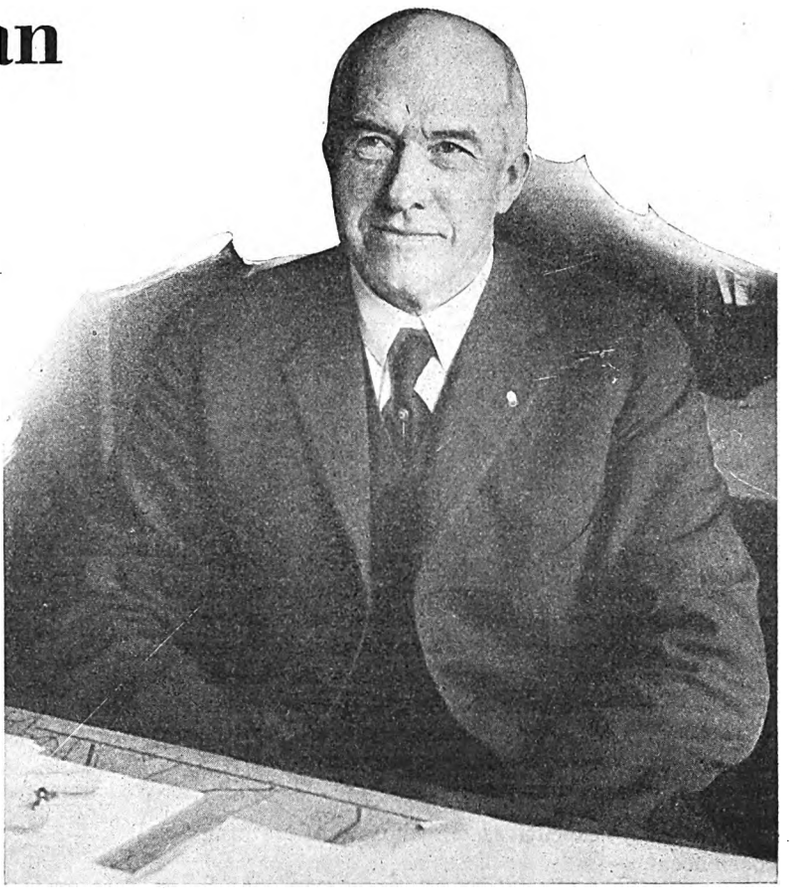
Street Management Needed in American Cities*

By G. B. Anderson
Manager of Transportation
Los Angeles Railway



GEORGE BAKER ANDERSON

STREETS have generally been created, owned and maintained by the state. Their purpose has largely been an economic one. In their use little control has been exercised until recently because their use was available on a basis of equality to every one; that is to say, economically the use of the streets was "free goods," like the air and other unlimited privileges enjoyed by mankind.

When the invention of the automobile made an individual vehicle available for every American family, effecting a revolution in methods of individual transportation, a different economic principle automatically superseded that of "free goods." This is the principle of economic value derived from scarcity. An exemplification of this principle is to be seen in the gradual change in the economic status of many natural resources. At first the land, water resources and like derivations of a rich and unclaimed world were to be had for the asking. As population increased, scarcity, relative to use, changed the economic aspect of these resources, and a more careful political disposition of the use of this wealth had to be set up. In the same way the streets will have to be subjected to a political disposition and control which is new and at present almost unthought of.

Speed in Transportation Is a Highly Valuable Element of Production—Properly Organized Control May Add Time with a Value of $2,000,000,000 Annually — Street Railway Managements Should Take Initiative in Placing Traffic Situation Before Their Public

Success to some degree has attended the efforts to secure, through the partial enlightenment of the public, what we now realize are for the most part palliative, temporizing measures only, but we seem about to enter upon a day when such measures will have lost their virtue, and when the complaisance of the public, largely still ignorant of the fact that it is the worst sufferer, must be disturbed. That disturbance inevitably will follow realization that the public is paying the penalty.

In these days speed in transportation is a highly valuable element of production. Rapid transit is a labor-saving and time-saving institution. It has become an economic necessity. Conservative Old World critics are amazed at and critical of the high speed at which most of us work and travel and think, but America's great lead in prosperity, the wonder of twentieth century civilization, is due very largely to the fact that by reason of such speed we hoe more rows of corn in a day and transport workers more miles in an hour than do the people of any other nation on earth.

The minutes thus saved each day to the average American, multiplied by the total population engaged in productive industry, run into a value of many millions of dollars annually, giving us the edge over other nations. If students of the problem have not been exaggeratedly enthusiastic in their estimates and conclusions, the additional minutes that might be thus capitalized under a properly ordered system of control over existing unnecessary impediments to the movement of urban traffic would have a cash value of not far from two billion dollars annually.

In May of this year President Coates assured the transportation and communications group of the Chamber of Commerce of the United States of the desire of the electric railways to co-operate with that

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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body in bringing about a solution of the problem of street congestion that will promote the orderly progress of commerce and industry, as well as to insure the safety of the public and prevent the enormous waste of life, money and time that is being recorded each year. He said that he was urging the electric railway people to regard themselves not simply as electric railway experts but as transportation experts, so well acquainted with the transportation needs of their communities that they can say just what transportation the community should have. Their duty, he declared, is to give the community the best possible transportation advice.

It is that plea for orderly progress that I am seconding. It is a plea for full recognition of not only the opportunity that presents itself but the obligation under which, being responsible for the safe, speedy and economical movement of the mass of people, we rest. To use a colloquial expression, we are all "sold" on the postulate that the prime cause of delay to traffic is congestion, and that the prime cause of congestion is the abuse of the privilege of the streets by vehicles used for the convenience or pleasure of private individuals, or minor special interests, as distinguished from their actual necessities.

Must Expedite "Necessity" Traffic

Private enterprise in America has made unparalleled advances because of the executive genius that has been applied to it. The cause of our failure to exhibit a similar productivity in the operation of the public streets and highways lies in the comparative newness of the necessity, the widespread lack of understanding of the seriousness of the economic aspects of the problem and the control of regulation by transient public officials who are but incidentally concerned or interested, instead of by executives of thorough training and experience.

Urban highways have become one of the greatest productive agencies employed by the people. Their uses are sometimes conflicting, and some uses are more important than others. Recognition of this fact has resulted in the use by students of the qualifying terms "necessity traffic" and "non-necessity traffic." Those uses which are for the good of the community at large are classified as "necessity traffic" and are of highest economic value. Some uses are in the nature of special privilege from which gain accrues to individuals or groups at the expense of others, or of the community as a whole.

The paramount problem involved in mass transportation today lies in the tremendous increase of automobile traffic and the resultant congestion of the streets. It being manifestly unwise, undesirable and impossible to legislate the automobile off the streets, the question resolves itself into one of equity and economics. Any plan to be successful must be based on sound economic principles, with interference to public "necessity" traffic reduced to the minimum.

The first necessity of a community is that it must earn its living. The safeguarding of life and property is purely incidental to living. The workers as a mass, therefore, must receive first consideration as to the time of day when the necessity for their movement is greatest.

The functions of the city as a market center, with the consequent movement of buyers and sellers, must next be considered.

The movement of the wares of commerce is, of course, as necessary as the movement of the workers and of the buyers and sellers, but in general these movements are less rigidly confined to the time factor. Here is a vast field for reform. Many such movements could be made at night without serious inconvenience or loss, and to the great advantage of daylight movements which could not be assigned to the night period. The greater freedom of movement of commercial wares at night in many cities would in itself produce very large economies.

Closer control ultimately must be set up, with authority to insure the most economical use of the streets for the greatest good to the community. If such control, implying the arbitrary allotment of time and space, is to be classified as modern business, it must not be unscientific local political control, subject to the whims of changing administrations, which has resulted in the strewing of wrecks along the highways of transportation progress.

What apparently should be the next step is not advocacy of immensely costly extensions of street facilities, but rather a more intensive use of those we now possess, with possibly some minor additions of room and short cuts. By adopting such a program we will avoid the destruction of millions of dollars' worth of business structures, escape huge increases in our tax bills and thereby enormously increase the prospects of a continued well-being and prosperity.

Nor will the widening of existing thoroughfares, separation of grades at intersections, building of subways and elevated roads solve the problem. The more room there is provided the more vehicles will there be clamoring for the privilege of using it. The ultimate, in central business districts of the average city, would be a *reductio ad absurdum*—all roadway, no private business property.

That a political control is necessary under existing conditions seems obvious. The streets are public property whose use is not now governed by sound economic considerations. The state only has adequate authority to control for the public welfare. The reasonably satisfactory development arising from the establishment of the Interstate Commerce Commission and the state railroad commissions and public service commissions is an augury of the results that may be expected from these proposals. A controlling body should be composed of factors beyond the reach of individual or composite interests.

Metropolitan Transit Commissions Needed

This political body may be designated as a "Metropolitan Transit Commission," to be appointed, preferably, by the state Governor. This origin, somewhat removed from local influence, combined with long terms of office and salaries commensurate with the economic importance of the problems involved, would do much to place the city streets in their true position as the most valuable material asset of the community.

Such a commission should have power to provide for an allocation of the use of the streets for the greatest economic welfare of the city as a wealth-producing unit, for the streets are community capital; that is, tools of production.

As an administrative body the commission should employ two main types of subordinates. The adequate functioning of the work planned would have to be based on full information in detail as to traffic conditions and

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requirements. Such knowledge is not to be secured by a tabulation of opinions, but by exact engineering fact-finding.

Likewise the enforcement work should be in the hands of the commission. Under police administration this work has had an almost exclusively punitive aspect. I believe that a better control can be maintained, both as to order and safety, if the educational work is emphasized. Street car companies have very greatly reduced the liability of their conveyances as a cause of serious accidents by making their trainmen responsible under an adequate system of safety rules. By the same analogy the scientific use of the streets secured by modern schedules on the electric railways might be extended to free-wheel vehicles.

The committee on traffic congestion this year presents numerous recommendations which in my judgment should be incorporated in a plan for action on the part of street railway managements. Most of us have probably been a trifle too diffident, or perhaps meticulous, to urge upon the constituted authorities adoption of curative or at least alleviative projects which our own analysis and experience have shown to be desirable, even necessary, if urban transportation is to be saved from descent into a chaotic condition. In view of the fact that quasi-public and some regulative bodies with little more back of them than a moral force, or power to lead public sentiment, are generally disposed to be guided to a great extent by the recommendations of street railway operators in matters pertaining to relief from congestion, it seems not illogical to assume that constitutional legislative and executive authorities might be similarly willing to lend attentive ears to programs advanced by the industry as a whole, representing as it does the best thought of experts with ample facilities for gathering and analyzing the facts.

Interest in Modern Equipment Opens New Possibilities*

By **S. M. Curwen**
President J. G. Brill Corporation

IN MY mind there is no subject which requires greater attention at this convention than the character of the rolling stock with which you will continue to provide that necessary commodity, public transportation. There is no doubt in my mind, and I don't believe there can be any in yours, but that every passing day produces further assurance of the permanency of our industry, and that no vehicle has been developed up to the present time which can equal the electric car in handling large crowds quickly, particularly in densely populated cities.

SAMUEL M. CURWEN

It therefore seems apparent that while parking restrictions and necessary regulation directed toward the private automobile and the motor bus will contribute their share toward improved conditions, the extent of the electric car's future utility will depend particularly upon the efficiency with which it renders service in keeping with the higher standard which the American people apparently are now requiring. Although the automobile has disadvantages as well as advantages, the public is educated to its higher standard of transportation comfort and convenience, and presents a problem for our electric railways to meet if this large and growing part of the public is to be rewon as patrons.

Great strides forward have been made by our electric railways in the adoption of improved power plant equipment, with which you are all generally familiar, and it is needless for me to say that throughout the country there are many instances where the possibilities for reduction in operating cost and increased patronage by the use of improved types of rolling stock are being recognized.

In discussing this subject of modern equipment, or possibly I should say more efficient equipment, for after all that is what it really signifies, let me remind you that practically every industry of importance throughout the world is striving to take advantage of the economies and increased efficiency resulting from the application of new devices or developments in design of equipment. By the introduction of new auxiliary devices and other improvements in motive power equipment the steam railroads have not only been able to handle longer trains faster, but according to public information based on the records of the past three

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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years the Class I roads showed a saving equal to 20 per cent of their present rate of fuel consumption. For the first six months of this year this represented almost 10,000,000 net tons of coal and more than 198,000,000 gallons of fuel oil. It is evident, therefore, that the steam railroads appreciate the advantages in economy and service accomplished through modern equipment performance.

Last year, during our convention in Atlantic City, Mr. McGraw called together a number of executives to reveal the astounding information that approximately 28,000 cars more than twenty years old were then in operation on the electric railways of the United States. While it was recognized that this condition was generally the result of increased operating costs and inadequate fares, the extent of deferred equipment replacements was a subject of much concern. It was felt, and has since been conclusively proved, that the continued operation of such equipment, whether it has seen twenty years service more or less, depending upon its type and condition, is economically unsound. Excessive operating costs absorb essential profits, thus resulting in unsatisfactory service and lack of appeal to the traveling public.

In order to overcome this drawback to the industry and to promote efficiency in car equipment, there was appointed a committee on essential features of modern cars to make an exhaustive study of existing conditions, and to recommend certain types of cars for both city and interurban service. The report of this committee has since been submitted and published in the technical press. While it is voluminous, it represents an exhaustive effort on the part of the committee and is deserving of the earnest consideration of every one interested in the welfare of the electric railway industry. Copies of this report, in book form, I understand, are available at the association's headquarters. Summarizing this report briefly, it has two important parts:

First, it recognizes the lack of reasonable unification in car design and the existence of needless variations in dimensions, weights and general arrangements. It recommends certain designs of cars for the different classes of service, and asks railway companies and manufacturers to agree upon them in the interest of efficiency and economy.

Substantial Savings Possible

The advantages resulting from adherence to these uniform designs are, of course, quite apparent. In addition to savings through larger quantity purchases of raw materials, made possible by the uniformity in dimensions, reduced engineering expense, quantity production and elimination of numerous jigs, dies, etc., will result in lower selling price, quicker delivery, lower maintenance cost and the interchangeability of cars among various properties.

It is also important to note that the nearer equipment conforms to uniform designs the more acceptable it is for car trust purposes, thus making it more convenient for every company to take advantage of the more economically operated and attractive types of modern rolling stock.

Secondly, this report includes a number of outstanding illustrations of the results achieved within the past few years with light-weight modern cars, giving actual operating costs in comparison with the heavier obsolete equipment displaced. While these figures show returns on invested capital ranging from 13 to 65 per cent, I believe that with equipment built according to the uniform designs recommended, the results would have been even better.

The committee does not touch upon the subject of single-truck cars other than to state that, while the trend for the past few years has been toward double-truck equipment, builders are all prepared to furnish the Birney car wherever required and that nothing could be gained by attempting to select any additional types of single-truck cars for general use. As you know, the Birney safety car is the outstanding illustration of the possibilities of standard equipment. You have often heard of its economical accomplishments, and no doubt many of you enjoyed its economical operation.

Tendency Toward Greater Comfort

Since our convention last year purchasers of modern types of cars have shown a tendency toward deep spring upholstered seats, rubber tile floor covering, elaborate interior finish and other attractive features with which to stimulate their transportation business. Of course, the primary purpose of these innovations is to increase revenue passengers, and apparently the many instances in which they have been adopted is certainly evidence of the confidence of the railway officials that improved service conditions are important factors in increasing passenger travel.

While the committee on essential features of modern cars recommend certain designs and uniform dimensions, it does not restrict the manufacturer in construction details, but rather offers an incentive for increased activity toward progressive developments. The designs upon which operators and manufacturers are asked to agree are only the beginning. Progress is sure to be made. Further designs will be offered, all, of course, adhering to the lines of uniformity in fundamental dimensions in the interest of efficiency and economy. In closing, therefore, let me say that I do not believe there will be a manufacturer who will not welcome an adherence to uniform designs of cars not only for the opportunity which will be afforded for a more systematic process of manufacturing, but particularly for the advantages which these modern types of rolling stock will provide and the stimulating effect which these advantages will have upon the electric railway industry.

THE most progressive men in our industry are recognizing more and more that there is one outstanding fact which applies to every line of business and which our industry cannot escape, that no publicity and sales effort can be really successful unless the product itself is somewhere near right, especially when compared to the article with which it has to compete. And they are asking themselves: "Is our product what it really should be?" "Is our business an exception to this outstanding merchandising principle?"

—B. C. Cobb

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Transportation Service Presents Difficult Problem*

By **W. R. Hopkins**
City Manager, Cleveland, Ohio

I PRESUME I needn't tell you the fact that of all the public services, that branch to which you have devoted yourselves is by far the most difficult, the least appreciated and the poorest paid. Barring water alone, which is usually furnished by the city, surface transportation is the most fundamental requirement in the development of any modern city. There have been great cities without gas, without electricity, without telephones, but a great city, as we know great cities, would be absolutely impossible without surface transportation, not only on a large scale but at prices which permit its use constantly and daily by all of the population.

Therefore, the contribution of those concerns which furnish what we now call "mass transportation" is the fundamental, the initial and the most absolutely essential of all contributions to the development of the modern city. It has already made possible that one thing, permitting people to live at great distances from their work. As a matter of fact, it is with the development of the modern electric car that we began the development of modern American cities.

In rendering this service you face difficulties that no other public utility faces, because you must render it in the face of those difficulties from which they are free. You have no control over the elements which affect your service and determine its qualities as they have.

For example, the electric light company, the water company, the telephone company, the gas company, can carry their service directly to the consumer and can furnish it to him in his house, in his office, in his factory, without the interference of any other factor whatever. They have control of the ultimate delivery of their goods.

In your case, the user of your facility must come to you. In coming to you he must face whatever inconvenience is involved in a contest with the weather and with traffic, and when he gets somewhere near your vehicle he either must run to catch it or he must stand and wait for it to come to him. In the case of the street car, before he can get from the curb to your vehicle, he must run the risk of accident from traffic. In getting on your car he runs a further risk of accident, which is evidenced by the great sums which you pay annually for car-door and car-stop accidents.

In getting into the car and within the car itself he must encounter inconveniences from his fellow passengers, over whom you have no control at all, and sometimes from your employees, over whom your control is necessarily remote.

While he is waiting for your car he begrudges every minute that he spends in so doing. He postpones till the last possible moment starting for it, and from the time he starts until the time he leaves he is thinking only of the thing he wants to do and can't do until you have carried him to his destination.

So, all the time you have him on your hands he is impatient and almost an unwilling customer. Before he gets into your car he must hand over his fare first of all, and then, too, he must pay you 50 or 60 times a month. He buys his water, his gas, electricity, his telephone service, and he pays once a month at his convenience, and then mostly by check. In other words, you, at every turn, must not only reckon with and suffer from all sorts of factors and elements over which you have no control, but when you have done your utmost your passenger doesn't get the freedom from annoyance that other lines of business permit.

Fundamental Service Least Appreciated

So it isn't strange that this service, which is absolutely fundamental to the life of any modern community and rendered with the most difficulty of any public service, is the least appreciated. How many people seriously give any consideration to all the difficulties under which, of necessity, you render the service? Of course, the other thing naturally follows, that by and large this is the poorest paid of all public services. People pay for gas and for electricity and telephone service at rates which make all of those businesses uniformly profitable, and with very few exceptions all of the concerns in those lines of business find it entirely easy to pay large returns, larger than you have been paying.

It seems to me that this convention and this kind of thing represents precisely the thing that you need to do. The American people are not an ungenerous or mean people. By and large, unless they are provoked, or irritated or don't understand the situation, they mean to pay everybody a fair return for what he gives them. Any difficulties that may be encountered by public utility corporations are not due to any fundamental lack of generosity or fairness on the part of the American people. This great convention will give people a new notion of the extent to which this class of public service corporations are doing everything that is humanly possible to give the people the best possible service under the most favorable conditions and under the most favorable terms. In that work we are all interested because, after all, the public cannot be well served for long by underpaid service. The master who doesn't pay fairly for what he gets doesn't very long get the best that is to be had.

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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Advisory Council Outlines Fundamentals of Success

Progress of Past Year Reviewed—Some Conditions Have Improved, but Much Remains to Be Done — Success Lies Largely with the Companies and Their Employees

Presented by
B. C. Cobb
Chairman Advisory Council American Electric Railway Association
Vice-President Hodenpyl, Hardy & Company, New York City

B. C. Cobb

JUST one year ago this great organization, or rather representatives of this great industry—the electric railway industry—met in conference at Atlantic City. It was a great convention and our hearts were full of hope that the problems and difficulties that had been confronting and bothering us for eight years and more were beginning to be solved and put behind us. It is pleasing to report that since that time some effective work has been done and some progress has been made. There still are many problems yet unsolved and there are many stony places in the pathways we must follow. We are not, however, discouraged, for we can see some light ahead, but we would be dishonest and unworthy of our trust did we not frankly say that in order to solve our problems and smooth out our pathways we must have the earnest help and the continuous support of all of the people who use our service.

Our most difficult problem, in this age of automobiles, is the selling of our service to the people who need it, to the communities in which we operate. By this I mean getting the people to ride and the authorities to understand that a transportation company cannot succeed unless it earns a reasonable return on the value of the property used and useful in the business, after paying operating expenses, taxes, and the setting aside of rainy day reserves. Few electric railway companies are now doing such things, and yet the country is growing and is more prosperous than ever in its history. Such a condition is paradoxical and it does not seem as if it could continue.

In 1925 we boasted of carrying 16,000,000,000 passengers on our rail lines and buses, and we were looking forward to increasing this number in goodly measure during 1926. How have our hopes and prayers been answered? Not entirely to our liking. True, there has been some slight increase in the total number of passengers carried, but such increase has been almost entirely confined to the large cities. In the smaller cities the transportation companies have had hard sledding, for in those towns the ratio of private automobiles owned to the total population is much greater than in the larger cities, and this means, of course, greater automobile use per capita.

What are we going to do about it? My answer is, everything possible to sell our service, whether it be by rail or otherwise. Selling our service does not mean, however, simply buying new equipment and then sitting back and waiting for developments. It means much more than that—it means lively and continuous action all along the line; it means constant effort on the part of every officer and every employee to impress upon the people and their authorities the importance to them of public transportation; it means courtesy and attentive service, whether it be on a transportation vehicle, in the office, or elsewhere; it means telling truthfully our story in whatever way may seem best so that the people and those who represent them will understand our problems and therefore become ready and willing to help us. If they help us they will be only helping themselves. Surely, nothing could be fairer than that. It does not mean wearing a band of crepe on one's arm or carrying a sob handkerchief in one's hand. When that time comes, if it ever does, there will be only one thing left to do; that is, bury the corpse, no matter how painful the process may be.

In last year's report it was stated that automobile

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registration had grown from 450,000 in 1912 to 17,500,000 in 1924. It may be well now to say that this registration was approximately 20,000,000 at the end of the year 1925, and that probably December, 1926, will show the figure at upward of 22,500,000—just about one automobile to every five persons in the country. What 1927 will do remains to be seen. No doubt 25,000,000 automobiles will be the registration figure, and I hope it is, for we do not want our motor industry to suffer. Such a thing is unthinkable. It has become, perhaps, our greatest industry, and to have it hurt or be unsuccessful would be little short of a calamity.

We do, however, want the operation of all motor transportation more thoughtfully and rigidly regulated and controlled. No greater evil exists, and there is no more flagrant violation of the rules of the road than the present parking habit. Unregulated parking of vehicles is reprehensible in the extreme and sooner or later the authorities, the merchants and the people themselves are going to insist that business thoroughfares be kept free for travel at all times and during all hours of the day. Such regulation will, of course, help the transportation companies, and they surely need such help. It will not only do this but it will also help the shopkeeper, the pedestrian, and the automobile owner himself, who will gradually begin to learn that it makes for thrift and economy to use his automobile in a saner way.

Transportation by motor bus continues to grow. Much of such operation in the long run must prove unprofitable, and a great deal of it makes only for harm, because it is in many instances an unnecessary duplication of service. The regulation of such form of transportation by public authorities has only just begun, and while most of the states have enacted regulatory laws

Fundamental Principles established by the ADVISORY COUNCIL for the Guidance of the Industry

IT IS AN INCONTROVERTIBLE FACT that convenient, safe and dependable public transportation is absolutely essential, and that the success of such service requires complete co-operation between a corporation, its employees and the public; also that the revenue obtained from operation must be ample to meet all items of cost and permit payment of such a return upon the reasonable value of the plant as will induce the flow of new capital necessary for expansion and development. To accomplish this:

The companies must

1. Obtain the friendly co-operation of the public.
2. Establish a sound financial structure.
3. Adopt modern methods and equipment and sell their service in every legitimate way.
4. Give the best service possible with their income, and let the public know it through advertising.
5. Recognize that the private automobile is a competitor, and offer such class of service as will attract private car owners.
6. Control and co-ordinate with their railway systems bus operations throughout their territories and conduct an active campaign, openly and aboveboard, against the parking evil.
7. Have their executives always accessible to their employees and the public. Welcome suggestions made in the interest of the service, grant reasonable requests, and have a genuine interest in the welfare and progress of the communities in which they operate.
8. Above all else, give the fullest publicity to earnings and demonstrate to the public that if it wants electric railway service it must actively—and not passively—support it.

The employees must

Realize that their interests and those of the company are the same, and make every effort to be useful public servants in an honest endeavor to make friends for themselves and their company.

The public must

1. Favor a just system of regulation and consent to rates of fare that will make its transportation agent a solvent industry.
2. Understand that the best service at the lowest cost can only be obtained in a community through the operation of all public transportation by one efficient organization.
3. Realize that antiquated and burdensome taxes are reflected in the rates of fare; that the present system makes the railways act as tax collectors for the communities and states, and that the public itself will benefit by aiding in bringing about a more equitable taxation system by which the industry, in common with all others, will not be taxed beyond its ability to pay.
4. Realize that 75 per cent of the people use the public transportation service in their daily occupations, and insist that their authorities enact and enforce such effective traffic control that the public vehicles may have a relatively unobstructed use of the streets.

It seems to your council that the things fundamental to the success of the electric railway industry are substantially as outlined. There are, of course, a host of other things less fundamental which some may think should have been included in the list. Obviously, the prime essential for the success of the electric railways, as it is of any other business, is adequate revenue. Where it is secured practically all other things are possible, and it will then become easy to provide the best of service, with fine equipment excellently maintained, and do many other things that go to make a company popular. It is of prime importance that the management and the men should be in accord—that is to say, it is important that the entire organization should be working on a harmonious basis. The companies should give most careful consideration to the report of the 1925 Advisory Committee on Electric Railway Finance and to its recommendations.

The good will and active friendship of the public served is the greatest single asset an electric railway company can have. One of the most important elements in winning such good will is *courtesy*. This means courtesy all along the line from the president of the company down.

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governing intrastate operation, nothing has been done as yet in the way of regulating buses and trucks carrying on interstate business. Undoubtedly, the Congress at its next session will take remedial action to cover this situation.

Most of the electric railways throughout the country have co-ordinated bus service to a greater or lesser extent with their rail service, and to the very great advantage of their patrons. The tendency, however, in this particular branch of our business is to overdo, i.e., give more service than the conditions warrant, and usually at a lower rate of fare than that which is compensatory. This is to be regretted, for it cannot long continue without harmful effect to the companies serving and likewise to the people served. Wink at it if you like, but the fact remains that unless cities are served by one co-ordinated, properly regulated, responsible, and financially able transportation unit, they will not get the service they are entitled to.

The axiom that he who would render service must have earning power is just as true today as ever. What we need is patronage and compensatory rates of fare. The fixed fare always was a mistake, and the 5-cent fare fixed by franchise agreements, ordinances or other contracts has been all but ruinous to many companies and seriously damaging to the communities they served. It is gratifying indeed at the present time to note the willingness of the public to pay more just rates. The average cash fare in cities of 25,000 or more was 7.70 cents on Sept. 1 last. The tendency of fares has been upward for some months, and I look for further acquiescence on the part of the public toward rates of fare that not only will meet the costs of rendering service but which will also provide for a return on the value of the property devoted to the public interest. In all our medium-sized cities, and in most of our large ones, I believe a 10-cent cash fare to be necessary. I do not mean to advance a hard and fast rule that 10 cents should be the rate of fare everywhere; I do mean, however, that the railway companies, for their own good and for the good of the public, should never again tie themselves to a fixed fare. Fares should be increased when the costs of providing service increase; and they should be decreased when the cost of rendering service decreases; but never below the point where they will meet all expenses and provide a return on the value of the property used in the business.

Transit Conditions in New York City

You have read a great deal in the newspapers about transit conditions in New York City. It is a situation created entirely by politics. The metropolis of the country, which ought to have the best transportation in the land, has perhaps the worst. Human beings are herded together like cattle on the subway platforms, and crowded into the cars like sardines in a box. In no other place in the world would the people stand for such conditions. The authorities alone are responsible, and this means the politicians, who are not only cheating the railway companies but also cheating the people out of the service they are properly entitled to. There has been much talk lately, some of it propaganda and much of it irresponsible, about the abandonment of surface lines in New York City and their replacement by buses. I cannot imagine that such a thing will ever come about and if it does the people will rue the day, for their streets will become more congested than ever. In two of the most important automobile manufacturing centers in the country the automobile manufacturers themselves have only recently strenuously opposed the abandonment of rail service.

I think most all city railway systems, that is to say railway systems in cities of any size, will be successful notwithstanding their many present difficulties. I think also that some of the interurban railways will be successful, and on some of them at the present time tremendous sums of money are being spent in the way of development and improvement. Many of them, however, should not have been built at all, and if they do not succeed and are sent to the scrap pile they will be only paying the penalty for past lack of wisdom.

Don't Conceal Unpleasant Facts

Surely it would be a great mistake for the industry, through its officers and leading representatives, to tell anything other than the facts with reference to our progress. It would be misleading to say to the public that the railways are fast getting into better shape, for such is not the general condition. We have accomplished some gains, but at a price. We are rendering co-ordinated service, but we are not making the profits to which we are entitled. Far better for us to state the facts to the public, depending on the fairmindedness of the people to render us the help which we ask almost solely for the public good. If we do this, and continue along such lines, we will not only get help from the people but also help from the bankers through whom we must to a large extent finance.

We need salesmanship in the electric railway business just as much as it is needed in any other business, and to my way of thinking, as I have just stated, the best salesmanship in this particular instance is a frank statement of the facts about the condition of the industry.

Some people may think these remarks are pessimistic. If they are analyzed, however, they will not be so considered, for the underlying thought—in fact, the plain statement made—is that the people need electric railways and that electric railways will continue to serve them. If the people want to keep them, however, they must be awake, and this means foster and support them, giving them always a square deal and demanding only such in return.

Previously reference was made to what the employees of a company can do in a helpful way to promote the interests of the company by which they are employed, and this brings to mind the very human thought that the employees, the management, and the public should be tied together by closer bonds.

Fundamental Principles of Success

Your council has tried to keep in close touch with the many troublesome problems of the business, and has established a set of principles which it thinks are fundamental in making the industry successful. These principles are being broadcasted throughout the land. They are given in an accompanying panel.

These principles we place before you as the *fundamentals of success* in your industry. Let me urge upon you not to regard them as so many words put together for the sake of saying something to which everybody agrees; instead, let me urge that you take them seriously, that you make them your code for the conduct of your affairs, that you use them for all your dealings with the public and your employees. If they, or any other set of principles, are to be effective, they must have lively animation as well as pronunciation.

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The Kahunavik

First Aid to the Automotivik*

In One of His Inimitable Speeches the Chairman of the Committee on Co-operation with Manufacturers Tells of Need for Enthusiasm and New Thinking if the Industry Is to Progress

By **E. F. Wickwire**
Vice-President Ohio Brass Company

E. F. WICKWIRE

YOUR committee on co-operation with manufacturers works in close harmony with the association's general publicity committee, through the director of publicity, Mr. St. Clair. An outline of the activities of the committee during the past year is covered in a separate published report. While this combined effort has been productive of good results, yet we believe the association could advance the interests of the industry a great deal more rapidly if it had the whole-hearted co-operation of every manufacturer and every railway operator.

It is hard to estimate the detrimental effect of those who have so little faith and enthusiasm for the future of their business that they say to themselves, "Oh! what's the use," and fail to respond. Some one has suggested that we coin a name for that type—like the butler who called the Duke "Your Lordship" and the Admiral "Your Flagship." Until a better one is suggested, your committee suggests "Kahunavik." But send in your suggestions—we're going to give a prize for the best name. I suppose somebody will suggest that we call the fellow who *is* co-operating "Lux," because he doesn't shrink from his duty. For the benefit of those who may be long on electric currents and short on current events, it might be well to explain that the name Kahunavik is derived from a tribe in Hawaii which believes in the power of a native priest, known as the Kahuna, to pray them to death. When he aims his prayers at one of the tribe, the poor victim just curls up and dies, without a struggle.

There seems to be a similarity between these misguided Hawaiians and those in our own industry who have accepted, without argument, the statement of that rabid advocate of "Ride on Rubber," the "Automotivik," who has been shouting: "The electric railway is doomed. Motorized transportation is the only thing."

The Automotivik has pointed his finger at us and read the death sentence. The Kahunaviks seem to have closed their eyes to the facts and they have quit struggling. They need some of the fighting spirit possessed by a friend of mine who has always wanted twins. He has come within one of it eight times, and refuses to be discouraged.

The unfailing symptom of a chronic Kahunavik is his ability to find objections to everything constructive. For instance, there have been some objections that the publicity material sent out from headquarters does not exactly apply to certain specific local conditions. This general publicity material is intended to supplement rather than take the place of your local publicity work, and the idea is to use extracts which do apply, rather than accepting or rejecting the material as a whole.

A short slogan will often make a greater impression on the public than reams of literature. With this thought in mind, of quickly catching the public's eye, a hosiery manufacturer put out this slogan:

"Happiness Hose—for Contented Calves."

And the Grand Lodge of Graduated Grass Widows is attracting new members with this motto:

"What Good Is Alimony on a Cold Night?"

We are planning to try out a few slogans—some of them in question form, which we might call "Trolley-Queries." Here is the first attempt:

> ISN'T A TROLLEY TRIP WORTH MORE THAN A HAT TIP?

Our idea is to try "wooing" the public in the good old-fashioned way—by "popping the question" to them. Maybe we'll catch their eye quicker if we call these questions "Trolley-pops."

Lately I have heard more than one thinking railway man express the belief that if our industry is going to hold its own, to say nothing of going forward, we

*Abstract of a paper presented at the Annual Convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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must inject into it more of the same fundamental merchandising principles that have been successfully applied by other businesses. That the trade we are trying to sell will respond, in more or less degree, to the same treatment that we do when we buy something —whether it happens to be an automobile, an office desk or a gas stove.

The only modern thing I can think of that sells well because it looks ancient is new liquor in old bottles —and there again the bootlegger knows the sales value of appearance and carefully sprinkles dust on the bottle.

Other lines of business are cashing in on the appeal of appearance. We are trying to sell the same public as these other merchandisers and we are asking the platform men to be transportation salesmen and take more pride in their calling. It is true that we have given them improved equipment to a certain extent, but many railway men are commencing to be convinced that, as compared to other lines, we have not gone far enough by a long shot.

The most progressive men in our industry are recognizing more and more that there is one outstanding fact which applies to every line of business and which our industry cannot escape, *that no publicity and sales effort can be really successful unless the product itself is somewhere near right*, especially when compared to the article with which it has to compete. And they are asking themselves these questions: "Is our product what it really should be?" "Is our business an exception to this outstanding merchandising principle—the appeal of appearance—upon which people in other lines are so keenly concentrating their effort nowadays?"

Like the restaurant man, railway operators are realizing more than ever that while they can satisfy themselves on the solution of technical problems, the success or failure of their merchandising methods is in the hands of the public. Even the humble hot dog merchants of America have been doing some research work along these lines. They seem to be making money in spite of the fact that all the component parts of the delicacy—rolls, tights and horse meat—have gone up in cost. Nevertheless, it is claimed that there are more hot dog stands than trolley cars and more hot dogs sold than trolley rides—and mostly at higher prices. Yet is there really more value in a 4-in. hot dog than in a 4-mile trolley ride? That's another "Trolley-pop."

Everywhere we turn we see striking examples of how this fundamental principle of selling has been applied by other lines of business which appeal to the same class of trade. Movies, for instance, used to charge 5 cents, and the old movie houses were just about as comfortable and attractive as a 1910 model street car—and lots of people used to go to the movies to look under the seats for gum. More attractive theaters don't make the pictures any better, but they do make it easier to sleep through a poor one and more pleasure to watch a good one.

All of these illustrations tend to demonstrate that the most successful business nowadays recognizes that it must study its patrons and adapt its appeal to the way the public *does* react rather than to the way it *should* think and act. By constantly analyzing the reactions and requirements of their patrons the progressive merchants have been able to keep pace with changing tastes and they are continually seeking and finding ways and means to appeal to people's spending instincts. Progressive railway operators are expressing the belief that our industry should put forth strenuous efforts to make more rapid strides along these same lines.

One of the outstanding obstacles has been the fact that so many unscrupulous office-seekers have fooled the public by pledging themselves to "save the poor 'peepul' from financial suffering" at the rate of a penny a ride reduction in street car fares. Yet that type of politician doesn't hesitate about spending money freely to ride into office. He sheds "crocodile" tears at the appalling thought of the "plain peepul" paying a penny's increase for car fare, but the same fellow, after election, finds no difficulty in disposing of thousands, and even millions, of the people's money—without shedding anything but a few drops of ink.

Lessons from Grand Rapids

Like most of you, no doubt, I had heard some favorable comment regarding the new and unusual equipment placed in service in Grand Rapids. Recently I was in northern Michigan on a hunting trip (can y'imagine me hunting—anything but golf balls?). Coming back through Grand Rapids, I took advantage of the opportunity to look around and see for myself what impression the new equipment was making. While I was there I picked up some of the many letters that have been coming in to the company. There is only time to quote briefly from a few.

The Mayor of Grand Rapids makes some complimentary comments and finishes with this statement:

> Street cars undoubtedly offer the safest place in our streets. We know where they go—they can only run on their own rails. . . . We all ought to patronize the electric rail coaches and show our appreciation of the good work the street railway company is doing.

A State Senator writes:

> The most comfortable ride I ever had was on the new electric rail coaches. . . . The charter should be amended and the railway company not compelled to pave between the rails. Why should the street railway pay for paving between the tracks for me to run my auto on?

The Chamber of Commerce president says:

> It was a pleasant surprise to me to see the leather seats and air cushions and enjoy their comfort. . . . With these new coaches in service, there is a tendency for people to leave their autos at home and ride these comfortable coaches to and from their work.

You'll notice that he particularly mentions the leather seats, about which some fear has been expressed that the upkeep will be higher. This doesn't seem to worry them, especially if it's caused by increased wear and tear. They never have heard of any railway getting into financial difficulties from excessive seat abrasion.

Before reading the next and last one, I'd like to ask you a question, in all frankness. How many of you can imagine old and prominent families feeling complimented by having new street cars, of traditional design, named after their forefathers? Here's a letter which shows how much public sentiment changes for the better when car design changes for the better:

> We appreciate very much the honor bestowed upon us in naming one of your cars after our grandfather, William T. Powers. And in loving memory of our mother, his daughter, and as his grandchildren, we wish to thank you, and assure you that it will be a constant reminder of his cherished memory.

And it's signed by the whole family of grandchildren. Naming the new cars after old settlers has made quite a hit. But we must keep this fact in mind: it is not

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simply that the cars are new, but that their design is new—and better. They found that it wouldn't cost much more, but it was worth a whole lot more to get cars which possessed such desirable features as quietness, quicker acceleration, exceptionally low step and an inviting interior with a clean, bright floor covering and comfortable leather seats. Finally, the biggest thing they did was to give the new car a clean-cut, low-hung, streamline, flowing effect with an artistic finish. They embodied the appeal of appearance on which the automobile manufacturer has concentrated so strongly for years—and the feature which has been his biggest selling asset.

Summarizing the situation, for some years past, our industry has had a hard struggle to preserve itself. And on the whole it has put up a good fight against heavy odds. But it has been largely a defensive fight. No matter how good a defensive fight we make, we can't win by simply defending our goal; we must adopt offensive tactics and score some points for our side. If we don't carry on the battle along these lines, that time may come when we'll fold up and disappear—like a folding bed slipping back into a dark closet after a hard night.

It is not a simple task to convince the public and its officials that we are on the right track. But just because we can't see our way clear to the ultimate goal will keep no one but a Kahunavik from starting out in the right direction.

The Car—Show Window of the Industry*

The Railway Should Make a Good Display of Its Goods if It Would Attract Customers—Selling Principles Are the Same as Those of Any Other Merchant, as Results on Many Successful Railways Running Attractive New Cars Have Proved

By **E. B. Meissner**
President St. Louis Car Company

VIEWED solely from the standpoint of publicity, the displaying of merchandise has come to be recognized as the most valuable advertising, the greatest sales-producing medium, in the entire world of commerce. High salaried writers of advertising, who are artists in the handling of the printed word, may spend weeks upon the preparation of descriptive copy. The finest of printing may be used in publications, in which the page rate ranges into the thousands, but none of these descriptive phrases, none of these expensive layouts, has the sales power, the ability to open the purse of the prospect, that an actual display of the product itself possesses, providing, of course, the product or commodity for sale has quality and merit.

E. B. MEISSNER

But just what is a good window display? Is it one that is so powerful in its attention-attracting qualities that it almost reaches out and stops those who pass? Is it one which attracts because of its beauty, its atmosphere or its scenic effects? The test of a window display is whether or not it sells. If it does, it is a good show window, regardless of whether it is artistic or crude, cheap or expensive, beautiful or otherwise.

Not long ago in the New York press mention was made of an incident relevant here with reference to a show window on lower Fifth Avenue in New York. The location was a very small shop, with an out-of-proportionately large show window in which the merchant displayed his wares in an attractive manner. The daily receipts in this small store averaged $125. By accident the plate glass in the window was broken, necessitating boarding it up for two days until a new piece of glass could be installed. During these two days in which this show window was boarded up awaiting replacement of the broken glass the receipts inside the store dropped to $20 per day, and to prove the theory of the power of show window display it is related that when the glass was replaced and the former show window display was again in sight the receipts inside this small store immediately climbed back to the normal $125 per day.

ALL SELLING BASED ON SAME PRINCIPLES

In the minds of some of you who are listening to or reading this paper there may come the query as to what all this has to do with the electric railway industry.

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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Some might even say to themselves or others that this sounds like a department store staff meeting. But let me emphasize the fact that fundamentally the selling of merchandise, or service, or any other commodity must be accomplished in the same basic manner. To succeed you cannot wait for customers, or passengers, if you please, by reason of their own inertia to flow your way. You must sell your service to them by attracting their attention to it. In other words, you must display your service in a show case. By so doing, if what you have to offer has quality and merit, you attract attention, you arouse interest, you stimulate desire, and induce action in the form of creating business.

One of Shakespeare's characters in his play "As You Like It" says: "All the world's a stage, and all the men and women merely players." By that same token may I not say that your own city is your show window and the cars you operate are your display? Your show window, your city, is provided for you by others, and is being improved for you in most localities from time to time. Your display—your cars—are in attraction, design, safety, speed and comfort whatever you make them, which prompts the question whether you have kept your display in condition to attract trade. Fashions, if I may so term the style of cars, in electric railway equipment, as in clothes and other products, have changed. The up-to-date management keeps its cars in attractively painted condition—clean, light and airy, with safety appliances installed in them, with comfortable seats for passengers, and well maintained and quiet, thus merchandising their service, and by doing so increasing their net earnings and obtaining successful operation.

Modern Equipment Is Selling Service

Brooklyn, Grand Rapids, Johnstown, Memphis, Chicago, Milwaukee, Illinois Traction, and others, were leaders in this program, with the result that by reason of their courage and foresight they have won the confidence and co-operation of their public and are now carrying many more passengers, naturally materially and favorably affecting their balance sheet. In some localities it is a well-known fact that by reason of "dressing up their show window"—modernizing and attractively finishing their cars—results which were discouragingly in the red were in a short time changed to black, due solely to this enterprising departure.

It has not been but in recent years that the electric street and interurban operator has been made to recognize that his business is fundamentally no different from any other commercial enterprise, and when he became aware of this condition he devised ways and means to stimulate his business. Those operators who were "on the job," so to speak, and took immediate action toward "dressing up their show window" promptly benefited thereby, and their leadership, experience and success should be a lesson to those who are more conservative and who have not yet experienced the improvement awaiting them by commercializing their business.

Today's Public Shuns Dingy Surroundings

Cobweb days are over. Not so long ago banks were proud of the old, dingy, antique appearance of their banking rooms, having in mind, perhaps, the fact that this age-worn condition would convey to their patrons their stability by reason of having been in business for so many years. Look around your town today. Are the quarters of any of your progressive banking institutions musty? No, indeed. They are massively built, attractively decorated, spotlessly clean, and some even have comfortable rest rooms equipped with upholstered furniture, telephone service and other items of comfort.

The condition referred to in the foregoing is not applicable alone to city lines. On the contrary, it has been and should be more so applied to interurban roads. Propaganda had it, not so far back, that it would not be long until electric interurbans would be on the shelf. Some conservatives in our industry were impressed by this evil pessimism, but others, more courageous and far-sighted, took action, and decided to match their ability and experience against that of those who were trying to becloud and shadow and wreck their life's work. So what did they do? These outstanding operators improved their service, added lighter and more comfortable, faster and attractively painted cars, shortened up headways, cleaned up their right-of-way, painted their poles, freshened up their waiting stations, schooled their employees in serving the public with courtesy and promptness; again to find that this policy won out. Not only did they remain in business, but, to the surprise of some, their earnings increased beyond their own expectations, after but a short time of this new operating era.

Modern Equipment Essential

To sum up and review the situation briefly, let me urge you to fall in line with progress. Authentic reports of the American Electric Railway Association tell us that there are many thousand cars in service which are not a credit to their operators, certainly not a credit to the industry, and naturally not an asset, but a liability. To those to whose property this condition applies, I would say resolve now to plan improvement in the form of dressing up your show window. If for financial reasons you cannot immediately add brand-new equipment, at least clean up and modernize to some degree your present loss-creating cars. Ask those operators who have experienced this success what they did and how they did it. You will find them anxious to help you achieve the same end. You will find also that the car builder is ready to serve in any capacity possible with minimum effort on your part to place you in position to own and operate new, up-to-date, profit-earning equipment.

Summarizing the situation, for some years past, our industry has had a hard struggle to preserve itself. And on the whole it has put up a good fight against heavy odds. But it has been largely a defensive fight. No matter how good a defensive fight we make, we can't win by simply defending our goal; we must adopt offensive tactics and score some points for our side.

—E. F. Wickwire

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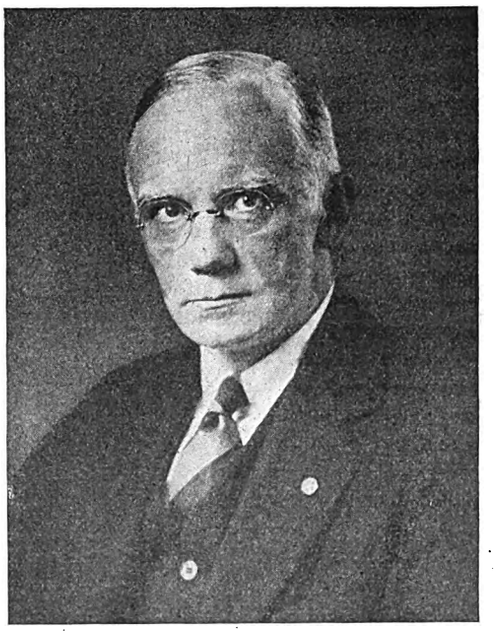
City and Company Co-operation Essential*

Experience in Chicago Shows that Much Can Be Gained by a Mutual Understanding of Traffic Control Problems—As the Benefits Accrue to All Concerned, Conflicts of Authority Will Only Retard Development

By **R. F. Kelker, Jr.**
Kelker, DeLeuw & Company, Consulting Engineers
Chicago, Ill.



R. F. KELKER, JR.

CHICAGO'S traction history presents an unusual opportunity of observing the good and bad effects produced by changes in the character of co-operation between public officials, business interests and the management of its various transportation companies. A brief review of it demonstrates that intelligent and sympathetic co-operation is one of the most important factors affecting the public relations throughout a great industry.

In 1907, after a number of years of negotiation, twenty-year grants were made to the two major companies now comprising the Chicago Surface Lines. At the time of acceptance the condition of the tracks and paving in the greater part of the city was deplorable and the equipment was inadequate. The immediate effect of these ordinances was the completion of a vast program of reconstruction and extension, a period of six years during which sound co-operation was the keynote of public and corporate relations. Then followed a period after the unification ordinance of 1913 when co-operation disappeared. It is of interest to note that during this period of nearly ten years no interest, other than casual, was shown by the business men of Chicago. While the conflict was on it was practically impossible to bring about any major improvements in service or in traffic conditions. In a measure the company was entirely in a state of defense up to the last change in our city officials in April, 1923. The present Mayor, in the early part of his administration, announced his policy as being one of willingness to co-operate in order to provide the transportation and traffic improvements that the people who elected him desired, and he further stated that he expected to utilize every means in his power to that end. Steps were immediately taken by the Law Department of the city to clear up the pending litigation, which had given so much trouble and had proved so costly both to the city and the Chicago Surface Lines.

Near the close of 1923, at a conference between the Mayor and the management of the Chicago Surface Lines, it was decided to prepare plans for rerouting of street cars in the downtown district in order to relieve as far as possible the then intolerable traffic situation. After a number of conferences between the city's representatives and the company's officials a joint plan was finally adopted in 1924 which brought about marked improvement and is in effect today. In the joint plan the traffic problem was put on an equality with the transportation problem; there was complete co-operation between the city and the company, and this co-operation was so effective that the commission, upon the testimony of one witness (presented by the city), set aside its former order and adopted the new plan as recommended, without change.

The improvements in transportation and traffic conditions were apparent to even the most casual observer and the commission has not been called upon to make any changes that would impair the plan. The rerouting plan enabled the company to give more and better service without increasing operating costs, it benefited the car riders, motorists and pedestrians and its adoption was made possible only by co-operation on the part of all parties concerned.

In the latter part of 1923 the Chief of Police had seriously considered the prohibition of the left-hand turn for vehicles in the central business district, but found that such a regulation would be impracticable unless left-hand turns by street cars were also eliminated. The practical elimination of left-hand turns by street cars brought about by the rerouting plan paved the way for a police order which was immediately issued by the Chief of Police prohibiting any vehicle from making a left-hand turn at 30 street intersections in the area bounded by Wabash Avenue, Van Buren Street, Franklin Street and Lake Street. These two changes, the complete rerouting of street cars and the prohibition of left-hand turns by vehicles, immediately facilitated all traffic movements in the downtown area

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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and the speed of street cars was increased more than 25 per cent. The benefits to all concerned were so marked that keen interest on the part of business men was awakened and since that time the Association of Commerce has joined in the co-operative work of the city and the company.

In the latter part of 1924 the city took up for consideration the use of traffic signals in the central business district. The street traffic committee of the Association of Commerce became interested and volunteered to make an investigation as to the possible advantages and disadvantages of traffic signals. The studies, made with the co-operation of the Chicago Surface Lines, developed the need for a system of signals so controlled that a progressive movement of traffic throughout the area could be had. The City Council made a liberal appropriation for traffic signals. After a thorough investigation signals far more substantial than any theretofore manufactured were designed. There was a complete agreement on the necessity of obtaining a control of the most flexible character in order to meet the varying requirements at each intersection. Therefore, a switchboard was designed to permit of a variation in the amount of time given to the red and green portions of the signal cycle at one intersection independent of such time given at any other intersection. The signals were placed in operation in February, 1926. Since then there has been a material increase in the speed of all street traffic, and this in turn has been reflected in an increase in the carrying capacity of the streets themselves.*

These improvements in traffic conditions in the downtown district during the past two years, notwithstanding the substantial increase in the number of motor vehicles registered, is a remarkable achievement made possible through the complete co-operation of the city administration, the business interests and the management of the Chicago Surface Lines. As a single illustration of the improved service the street railway company was enabled to give, it can be stated that the running time of cars passing through the business district on the heaviest traffic artery, State Street, was cut in two. The same spirit of co-operation has been applied with success toward the establishment of loading zones and the retention of the skip-stop plan of operation throughout the city.

The latest effort in co-operative work is the city-wide traffic survey now being conducted by the street traffic committee of the Association of Commerce. The committee, believing that much good could be accomplished by a broad survey and the making of a uniform traffic code, requested the city to undertake the work. It was found that the city was unable to finance the proposed program, and in response to a request of the Mayor the Association of Commerce offered to defray the entire cost. This work is now nearly completed under the direction of an enlarged committee, on which both the city and the Chicago Surface Lines are well represented.

The accomplishments which I have taken your time to outline were made possible by a complete change from the policy of warfare that had existed for so many years, during which no one was benefited. Similar results can be achieved in any city where a real and sincere desire to serve the public is a dominant and governing factor in the policy of public officials, business men and the management of the transportation lines.

The difficulty of obtaining co-operation between public and operating officials is due largely to the failure of one group to understand the limitations and responsibilities of the other. The furnishing of transportation service is an art. Transportation itself is but a tool with which the management endeavors to provide a convenient and satisfactory service. Necessarily the street railway management is busily engaged in routine operating matters, and consequently its perspective in the matter of improving service may be more or less limited. Therefore the investigations and recommendations on the part of the city officials should prove helpful, although not always practicable. On the other hand, it is rare that managers realize the plight of the public official who is continually besieged with requests for service improvements. The management must always consider the financial inhibitions to service improvement. The public official, as a general rule, considers only the needs of the public and not the financial limitations. As a result these two interests frequently clash.

If management can be made to understand the relations of public officials to their constituents and if public officials and business men will consider the financial responsibility and technical operating problems that surround the management of transportation lines, then these several interests can co-operate fully, with the result that the people served by the management, and the city as a whole, will receive the maximum benefit based upon the combined thought of the three groups, which unfortunately do not work in accord in a great many instances. The whole matter can be expressed in the single word "service." When the management gives the best service it possibly can and when public officials and business men endeavor to aid good management in providing that service, then we have a state of complete co-operation where the good of all is considered and where satisfactory service is rendered to the public.

Let me recall to you in closing the remark of the late Charles P. Steinmetz on this subject: "Co-operation is not a sentiment; it is an economic necessity."

*See ELECTRIC RAILWAY JOURNAL for March 27, 1926, page 536.

If management can be made to understand the relations of public officials to their constituents and if public officials and business men will consider the financial responsibility and technical operating problems that surround the management of transportation lines, then these several interests can co-operate fully. . . . The whole matter can be expressed in the single word "service." When the management gives the best service it possibly can and when public officials and business men endeavor to aid good management in providing that service, then we have a state of complete co-operation where the good of all is considered and where satisfactory service is rendered to the public.

—MAJOR R. F. KELKER, JR.

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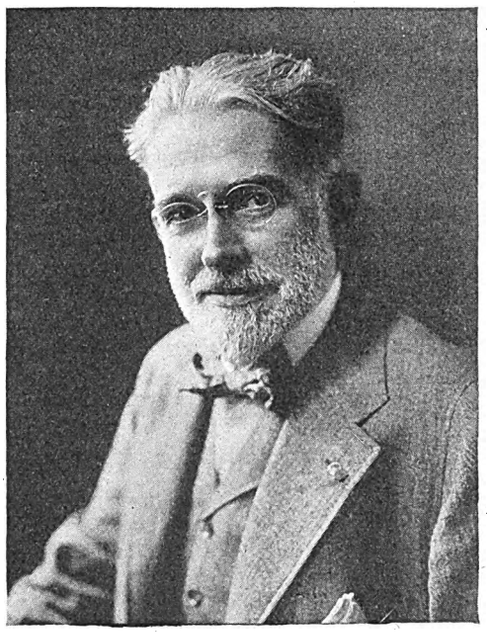
We Are in the Transportation Business*

Loss of the Railway Investment Would Be a Mere Bagatelle Compared with Loss to the Community if Service Fails—The Public Can Be Made to Understand the Need for Proper Treatment of the Utility that Furnishes It

By **Henry L. Doherty**
President Henry L. Doherty & Company, New York

I AM more and more of an optimist on the street railway situation; not, however, on the statistics that have been shown and some of the facts that have caused some of the other people to be optimistic, but on the conditions that exist and what we ourselves should be able to accomplish. It is perfectly idle for us to be the only ones, when it is necessary, to be compelled to walk the floor as to the matter of the transportation problem.



H. L. DOHERTY

No matter if we in some cases were to lose our entire investment, that would be a small matter compared with what the loss would be to the community as a whole where a thing of that sort occurs. I have tried to make that thing clear for a number of years. Perhaps I haven't been as industrious about it as I should have been; but I do know that it is possible—and I think a great many other people share the belief with me now—to make the public understand that it is their problem and it is perfectly idle for them to stand back and simply assume that we have that whole problem to wrestle with. You may say, "he is just talking stuff and we have heard him talk that way for a long time," but nevertheless it is talk that nobody has attempted to contradict. Even the enemies of the street railway situation have not attempted to contradict it, and just as long as no other fellow contradicts it I am going to keep on talking this way. I hold that every city must have a common transportation system. Without that, it means such an enormous loss and such an enormous retardation of the development and welfare of that city that any injury we suffer is nothing compared with the injury that is suffered by the city.

If the city is going to have its common transportation system, that system must be self-supporting, it must have credit, and it must have not a mere passing credit that just enables it to skin through, as it were. It must have a credit sufficient not only to meet the growth of that city but to anticipate and help with the growth of that city.

If anybody tries to answer you by saying, "We haven't had satisfactory transportation conditions in this city for a good many years, but we have continued to grow," you can say, "All right, if you are satisfied with that kind of an argument. We can point to places where they happened to discover oil and without any facilities they created a town over night. What they did was done in spite of conditions they had to meet, and no sane man can maintain that the greatest results in any city can possibly take place unless you have a proper and adequate common transportation system." I don't think any man can successfully combat that argument.

The value of the railroad property can be taken and spread over your entire city. You can show that the inevitable decrease in property is bound to be due to the growth of the population and you can show that your railroad values, which in some cases have been threatened with destruction, are a mere bagatelle in comparison with what the other people are bound to lose, provided that transportation is being offered to the public at a proper rate.

Transportation is not at all the matter of money we get as interest or dividends. Given a proper density of riding, and not a condition that is merely temporary and cannot long prevail, the entire interest and dividends that the street railway company has to collect would not be more than three-quarters of a cent on every paid passenger. Three-quarters of a cent is not the problem in giving transportation at a cost that is satisfactory. They would never notice the difference.

Just the lack of giving the transportation system a proper amount of return to maintain its credit has meant the difference between a satisfactory condition beneficial to everybody and a chaotic condition unfavorable to the company—hard on it and unfavorable to the city as a whole.

*Abstract of a discussion at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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I agree fully with the last speaker, Mr. Swayne, in some of the things he said. I think one of the biggest mistakes we men who were originally in the street railway business made was this—and it has been true of other branches of public service and will be true of other branches of public service: Just so long as any of us remain in public service we must remember that in every case we are giving a service. We mustn't assume, which is the mistake some of us made, that we are in the street railway business. We never were. We were in the business of transporting passengers. The public wants transportation—not necessarily street railways, not necessarily street cars. Whenever we are serving the public we must remember that many of the things we think of as being our business are simply our tools, and if better tools come it is up to us to use them and not let other people make competitive things out of these tools we should be the first to adopt and we should have the greatest facility to put into the public use.

I am trying, and there are other men doing the same thing, to make every man in the street railway business, and especially those who have the ability to get the matter before the people, to write and secure the reading of what they do write to carry the thought to the whole of the American people; that they are the ones who are primarily interested in seeing that there is a proper common transportation system in every one of their cities; that they are the ones who will suffer if they don't have it, and that the worst kind of a short-sighted policy would be to support anybody who puts an obstacle in the way of creating such a proper transportation system, and that they not only must not support those who oppose it but they must support those who are trying to give it. And they must even go further than that. If nobody is ready and willing and trying to give it to the public, they must go out and create conditions so that they will get it, because it is something they have to have.

Congested Streets Are Costly

By **Clarence O. Sherrill**
City Manager, Cincinnati, Ohio

VERY real is the revolution in our methods of living caused by the advent of the motor car. It is hardly equaled by the changes caused by some of the world's great upheavals. Out of this motor car revolution have grown a host of problems not yet solved. One of the most serious of these is the problem of the congestion of streets by traffic. Because this development has been so tremendously rapid, the physical means necessary to take care of it have not kept pace with the motor vehicle.

C. O. SHERRILL

Rapid means of transportation have immeasurably increased the joys of life by allowing people more and more to live in the open spaces far from the congested business centers where daily they go to work. It allows the farmers' families to visit neighbors many miles away, and the changes of scene it allows do more to broaden men's minds than any other one feature of modern life. But the motor car has not been an unmixed blessing by any means. I sometimes even feel that it is questionable if the sum total of human happiness is not less rather than greater as a result of the hurry and rush of the motor car and the evils it has brought with it.

The point has now arrived when the traffic problem must be recognized as second to none in the realm of city administration. It will tax the skill of the best minds of our traffic engineers to solve this problem. The very first step is to have complete information on vehicular and pedestrian traffic movement, density and character. The problem cannot be considered as solved by making so many restrictions as to force pedestrians or essential vehicles to stay out of business areas. There are many advantages in having ready access to the heart of the city for all vehicles, but the really important, vital thing is to get the mass of workers and shoppers to the stores, factories and offices in the shortest possible time, for every minute of wasted time is an increased cost to each individual.

This indicates the necessity of giving precedence to vehicles in the streets in the order of their capacity for moving the greatest number of riders in the least possible time and using the least possible space in doing so. This order is: First, street cars; second, motor buses; third, taxicabs; fourth, private motor cars. Of course, the proper place must be assigned in this priority to trucks making essential deliveries in the business districts.

All forms of vehicular traffic are useful only for the purpose of getting the riders to a point sufficiently near their destination to allow them quickly to arrive on foot along the sidewalks. It will therefore be evident that

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the order of restrictions to be placed on the movement of vehicles in the streets is the reverse of the above, namely: First, private motor cars; second, taxicabs; third, buses; fourth, street cars. Everything possible must be done to facilitate the movement of street cars and buses on account of the large numbers of riders they carry to the shopping districts, with a minimum of space occupied per passenger. A recent check of vehicular traffic on one of the principal thoroughfares of New York indicates that the average private automobile or taxicab carries 1.7 persons, exclusive of chauffeur. The roadway space occupied by an automobile is about 100 sq.ft., so that each passenger takes up approximately 50 sq.ft. of the city street. A street car of average size occupies approximately 320 sq.ft., seating 40 passengers and carrying more than 80 when filled. The space required, therefore, for each passenger seated is about 8 sq.ft., or, when the car is filled, about 4 sq.ft. The roadway space required for each person transported by private motor car is therefore from six to twelve times as much as is required to carry him by street car.

Private Car Wasteful of Street Space

This is not all of the story, however, for not only does the private motor car occupy roadway space while it is carrying passengers into and out of the congested area, but also when it is parked without passengers for a longer or shorter period of time while its owner is in his office, theater, store or restaurant.

This points to the crux of the traffic situation, the parking evil. On every street where traffic is dense lines of parked cars can be seen along each curb. The available space for traffic on these streets is therefore reduced by two full traffic lanes, which is usually from one-third to one-half of the street's capacity. From the above, it appears obvious that there is only one real and absolute solution of the problem of traffic congestion, and that is the enforcement of necessary laws forbidding the parking of private motor cars in congested areas. This would at once make all streets fully effective, except where interference would occur due to loading and unloading of trucks, which could be so regulated as to have this work done during the hours when traffic is not dense. Not only would this law automatically release two full lanes of traffic in each street, but indirectly it would be of equally great importance in discouraging the movement into the restricted areas of large numbers of motor cars now driven in and parked there unnecessarily. In some cases during periods of greatest density of traffic it may even be necessary to forbid stopping of cars as well as parking, because a car stopped momentarily at intervals along each square destroys the lane of traffic adjacent to the curb. A motorist seeing ahead of him a motor car stopped will not risk being caught behind it, so he at once works over into the second lane. (Note:—The term "parking" in this paper means to stop longer than necessary to load or unload passengers or freight.)

Parking Serves Few at Expense of Many

When we consider the exceedingly small number of cars that can be parked in the congested area of any city, it will be apparent that certain motor car owners are a specially privileged class to be allowed to occupy so large a percentage of the street area with such a very small percentage of the motor cars. In Cincinnati the congested district has been estimated to provide parking space at the curbs for approximately 3,000 motor cars. There are registered in the city approximately 100,000 motor cars, and in the metropolitan area directly tributary not less than 150,000. Parking privilege, therefore, is granted to from 2 to 3 per cent of the car owners at the expense of the rest of the 97 or 98 per cent, or some 5,000 persons are given this privilege at the expense of some 400,000 residents who suffer from traffic congestion.

All studies by traffic experts now point to the same conclusion; that is, that the only solution of the problem of traffic congestion is the complete prohibition of parking within the congested district. In June of this year Chicago, on the occasion of the Eucharistic Congress, found it necessary to forbid all parking in the congested areas of the city. With this regulation it was found possible to handle without difficulty the tremendous crowds attending that event.

In connection with the survey of Chicago traffic conditions it was found that only about 8 per cent of the shoppers going to the downtown district use their own motor cars. A similar survey in Cleveland recently showed that 65 per cent of the shoppers travel on street cars, about 10 per cent on motor buses, 20 per cent in private motor cars and 5 per cent on foot. Two years ago a similar survey showed that 46 per cent came in motor cars, as compared with 20 per cent at the present time.

Streets for Moving Traffic—Not Storage

The streets are intended for and must be used more fully than ever before for traffic, reasonably rapid traffic, but, above everything, safe traffic, and this means that as traffic demands grow more acute the use of streets for other purposes must be more and more restricted. The first step in this direction is the elimination of interference with the free movement of vehicular traffic by various obstructions, of which parked cars are the principal offenders. Land in the heart of large American cities ranges from $10 to $100 per square foot. At a low average of, say, $30 per square foot a parked car takes up about $3,000 worth of space. In other words, each of the thousands of parked cars that you see in the congested area of Cleveland is costing the citizens as a whole, say, $150 a year to give a few hundred citizens preferential treatment, as against the 700,000 or 800,000 residents who are deprived of the proper use of this space for traffic purposes.

Retail merchants and other commercial interests were formerly a unit in opposition to restricted parking, but they are now fortunately beginning to realize that this parking benefits such a small number of individual shoppers as to be negligible in furnishing business to the stores. I feel sure that the time is approaching when parking will be entirely eliminated from the congested area of our principal cities on request of the retail merchants themselves. Owners of cars will leave them at home and ride in street cars and buses or will drive their cars to a convenient parking place outside of the congested district and from there walk, take a taxi, bus or street car to their places of business. I even feel that I can go further yet and see in the not far distant future a time when no cars driven by owners will be allowed to stop in the congested area, all streets then being devoted solely to street cars, buses, taxicabs (under strict restrictions) and pedestrians.

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I can also see the time not far distant when taxis will be forbidden to park in the streets in the congested areas and will be required to operate exclusively from garages on call, having telephone stations on the sidewalk from which they can be reached on a moment's notice. The evil of taxi cruising has become so serious in every large city as to justify the use of the most stringent means to break up this practice. The only justification for special privilege for any kinds of vehicles is on the ground of public welfare and necessity; that is, the greatest good to the greatest number, and this principle applies alike to all the various classes, namely, buses, street cars, taxis and private motor cars.

There is another essential use of the streets that must be controlled as to time and method, and that is the loading and unloading of freight from trucks. In the absence of adequate alleys for back-door loading, this must obviously be done in runways off the street or from the street proper, but must be ultimately so arranged in time and method as not to interfere with the free movement of traffic during busy hours. Trucks must be provided with means for side loading and most of their work will have to be done before 8 a.m. and after 6 p.m.

There are a host of constructive measures that are being tried out in all cities in the attempt to solve traffic congestion, such as the widening of streets, the cutting of new streets through beautiful forest and park areas or expensively developed building areas, bridging over intersections to give two levels of roadway. These measures, no matter how heroic, do not solve the problem, for they do not attack the real cause of traffic congestion, which, as said above, is the private motor car—riding habit. On account of the dammed up, unaccommodated mass of vehicular traffic only waiting for street space in which to pour, the very moment a new boulevard is opened up for relief, it is at once jammed with a flow of traffic that, like a raging torrent, bank full, races along its way. An authority on New York traffic says: "No one who has devoted any study to the traffic situation can doubt that within 30 days after opening a new thoroughfare parallel to Fifth Avenue the congestion would be as great as it is today."

Merchants Need Information

The Department of Commerce has made an extensive survey of "Vehicular Traffic Congestion and Retail Business," in the course of which more than 1,500 opinions were secured from retail merchants as to the nature and extent of interference due to traffic congestion. There was no disagreement as to real interference and real congestion, but one might say there were as many methods of relief proposed as the number of opinions given on the best way to get rid of the hindrance.

The survey of this study gives the following four principal causes of the traffic problem in the order named: Faulty traffic regulations, lack of parking facilities, narrow streets and the street cars. The above-mentioned study was based entirely on the views of a single class, namely, retail merchants, as would be indicated by the four causes of interference which are named above.

As an illustration of this limited viewpoint, three of the larger retail merchants in Cincinnati recently made a proposal that "no parking" be eliminated and one-hour parking be allowed in the vicinity of their stores, but insisted strenuously that the curbs immediately in front of their doors be kept open at all times for the convenience of their shoppers. It was then pointed out to them that if this same rule were applied to all merchants alike, space being taken out in front of the doors at the entrance of each establishment, also for fire plugs, taxicab stands, bus stops, etc., there would be practically no space left for parking of cars at all. This phase of the question evidently had not occurred to them before, for there has been no further complaint on their part on account of elimination of parking in the vicinity of their stores.

Street Cars Use Street Space Efficiently

In reference to congestion caused by street cars, it is true that street cars are a great obstruction to the free movement of traffic as compared with motor cars, but when the number of passengers carried per square foot of space is considered, the street car can hardly be considered as a serious offender.

There are many elements that go to make up the objectionable features caused by traffic congestion. Among them are the danger or hazard element to motorists and pedestrians, the loss of time in riding, the inconvenience to which the individual shopper is subjected, the anxiety caused by the delays and crowded conditions. These inconveniences result in diverting business, loss of business, increased cost of merchandise and oftentimes even a diversion of large numbers of shoppers to local neighborhood shopping areas.

Public service can be rendered by your association in helping to solve this problem and in educating the public as to the evils of unrestricted parking and the benefits of "no parking" in congested areas.

OUR most difficult problem, in this age of automobiles, is the selling of our service to the people who need it, to the communities in which we operate. By this I mean getting the people to ride and the authorities to understand that a transportation company cannot succeed unless it earns a reasonable return on the value of the property used and useful in the business, after paying operating expenses, taxes and the setting aside of rainy day reserves. Few electric railway companies are now doing such things, yet the country is growing and is more prosperous than ever in its history. Such a condition is paradoxical and it does not seem as if it could continue.

—B. C. Cobb.

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Intercity Business Possibilities*

Freight Service Can Be Developed by Many Electric Railways to Produce a Profit—Correct Equipment and Facilities Are Needed if Best Results Are to Be Secured—Passenger Business Also Can Be Increased

By **T. A. Kenney**
Vice-President Hodenpyl, Hardy & Company, New York City

I DON'T quite understand what was meant by the title of this address, "Intercity Business Possibilities," but I would like to say a few words about the interurban transportation business as conducted by electric railway companies. Obviously my remarks will have to do with profitable operation of such systems. My remarks also presuppose that there is an economic necessity or justification for the interurban transportation business.

T. A. KENNEY

Originally electric railroads, and that constituted the transportation systems of the electric companies, were constructed for the carrying of passengers alone. Later on, with changing economic conditions brought about by more general use of the automobile, these railway companies cast about to find ways and means to take up the slack in the local transportation business. First of all—and I am speaking now with reference to conditions in the vicinity of Cleveland—efforts were made to engage in the electric express business. Business of that character has been carried on for a great many years by several of the electric railway companies whose roads come into the city of Cleveland.

You can readily imagine that the competition in the electric express business is very keen. Following those efforts, which were more or less successful, several of the companies started in the freight business and that has been rapidly extended so that today a very large, and I say without hesitation, profitable freight business is now being conducted by not only the electric railroads that center in Cleveland but the connecting electric railroads that extend into the states of Michigan, Indiana and Kentucky.

FREIGHT PRESENTS NEW PROBLEMS

Starting in this new form of transportation business many problems were presented. At first some of the companies were unwilling to speculate by investing large sums of money in new equipment. Old passenger cars were remodeled for freight service. Existing buildings not designed for handling freight were made use of. Later on, as the business grew, new equipment was purchased. Here quite a problem was presented as to the type and size of car—a car that would fit all of the conditions with respect to the business offered in the several states I have just listed.

Fortunately the Central Electric Railway Association has among its members a number of very progressive managers. Some one conceived the idea of standardizing a freight car that could be used on the electric lines and that might be accepted and exchanged by some of the steam railroads. Such a car has been designed and placed in use.

These electric railroads are prepared to accept and are accepting freight of all kinds. One of the latest developments, engaged in by one or two companies, is the matter of handling cold storage materials. This required the designing and building of a refrigerating car. It was not an easy financing problem for many of these electric railway companies to purchase new equipment. It is only fair to say that the car manufacturers have rendered a great service by offering very favorable terms as to payment.

Purchase of the freight cars did not in itself build up the freight business. In order to accomplish that it was necessary to establish freight soliciting departments so that cars could be loaded to and from destination. Much success has been accomplished by the establishment of those soliciting departments.

Five years ago the gross earnings of the freight departments of the various electric railroads in the vicinity of Cleveland did not exceed $100,000, and for the year 1926 the gross earnings of those same roads from this freight business will aggregate something approximating $3,000,000. I mention those figures only for the purpose of showing that there is a real demand for the

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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freight service that can be given by electric railroads. There are instances where, between large cities in the vicinity of Cleveland and other cities in Michigan and Indiana, ten and fifteen days are required for the delivery of an ordinary freight car on the steam roads. In both cases to which I refer delivery can be made by electric railroads within 48 hours.

These same electric railroads, in addition to engaging in the freight business, have also had recourse to new ways and means of building up their passenger transportation business. To that end, although it may appear as being in direct competition with their own railroads, buses of modern type have been made use of.

The electric freight business will shortly be extended from Cleveland so that freight can be accepted and delivered in the region as far west as Chicago and other points in Illinois and somewhat later as far east as Albany, N. Y. What the possibilities for the future are when those connections are made, you can speculate as well as I.

Local Transportation Demands Have Changed*

Convenience of Personal Car Has Modified Desires of the People with Respect to Public Services—Electric Railways Still Render the Best Mass Transportation, but People Living Away from the Car Lines Want Service Brought Closer to Their Doors

By **Alfred H. Swayne**
Vice-President General Motors Corporation

WILL the motor bus replace the trolley car? That is the question most of us constantly either hear asked or discuss among ourselves. Pages and pages of news items quoting from the remarks of those engaged in operating both forms of passenger transportation, ranging from traffic and transportation experts to college professors and others, have been written on this subject. Newspaper editorials on the subject are almost as frequent as those on prohibition, but to many the question still remains unanswered.

Without attempting to give you the final answer, I would call your attention to certain things that appear to be important as indication of both what is happening in the local transportation field, and what we may expect from the natural progress of evolution.

A. H. SWAYNE

In 1662 there were only six stage coaches in all England. In 1798 the mail left London for Shrewsbury—162 miles—and took 27 hours for the run. Then the railways came. The first was opened to the public in 1830 between Liverpool and Manchester. Of the 30 coaches that had plied between the two towns all save a single one went off the road soon afterward. And now the motor bus—a highway vehicle—is in competition with the railway that 100 years ago eliminated highway transportation by coach. Evolution again wins out, but evolution is no respecter of persons, opinions or facilities.

Now let us review some of the significant facts. An editorial in the New York *Evening Post* of Aug. 27, entitled, "Buses and Trolleys as Transit Rivals," stated in part:

> In the rosy imagination of certain observers the bus is on the point of pushing the surface rail car off the map. Impressed by the rapid invasion of the bus, both local and intercity, they see it sweeping its way to early and complete triumph. Such a vision, however, is possible only by overlooking a few stubborn facts. In the forefront of these facts is the rather significant detail that more than 1,000,000,000 passengers were carried by the trolley or other surface rail lines in this city [New York] last year. What this means can be appreciated when it is added that these 1,000,000,000 passengers were almost two-thirds of the entire number of passengers carried by all the rapid transit lines. Two persons in every three who made use of our rapid transit

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct. 4-8, 1926.

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facilities took a trolley. Talk of scrapping so immense a public carrier overnight is obviously inane. The trolley may be doomed, but it is going to follow the example of Charles II and be an unconscionable time dying. The step for the immediate future is not the wholesale substitution of buses for trolleys but co-ordination of the two kinds of transportation.

Regarding the ability of motor buses to handle mass transportation, a few pertinent facts that must be considered as conclusive evidence on the subject are that:

In 1924 all tramways in Metropolitan London carried 968,000,000 passengers as compared to 1,484,000,000 carried by motor buses; in 1925 the tramways carried 978,000,000 and the buses 1,671,000,000, or an increase of 12.6 per cent, whereas the tramways increased only 1.1 per cent, a clear indication that over there the people like bus transportation. A still greater increase in bus transportation is shown by a study of the passenger travel statistics covering the period 1913 to 1925, when the total volume of traffic increased 63 per cent. Comparing tramway and bus for this period, it shows that tramway passengers increased only 21 per cent as compared to 127 per cent for the motor bus. At the Wembley Exposition the London General Omnibus Company on Whitmonday, 1924, moved 178 buses per hour in and out of the Forecourt Station, hauling 143,000 riders between early morning and midnight.

The lesson I learn from studying these figures is, first, that the motor bus is capable of moving masses of people, and secondly, that we cannot afford to ignore what others are accomplishing with the same tools we must use in solving problems in transportation that basically are quite alike. Circumstances alter cases, and each must be studied by itself, *but* in the light of experience and with the determination to use each facility, electric car and motor bus to the extreme limits of their respective inherent possibilities, not simply to the extent we wish to use them. The final answer is not yet known to anyone. We may all have decided opinions, but thus far haven't the experience to prove if we are correct. The answer is neither all black nor all white, it is shades of color and the wise man will view it so.

That your members are making a concerted effort to apply the bus to their transportation requirements is easily proved by the facts at hand. Three hundred electric railways now operate more than 6,000 motor buses over 12,000 miles of routes. Akron—the old chestnut where buses failed, etc.—now has express buses operated by the local railway. It is reported that out of $300,000,000 being spent this year by the electric railways of the country, $23,000,000 is for motor bus equipment and facilities.

The convenience of personal transportation has changed the desires of the people with respect to public transportation. Local transportation demands have changed; as we expect to get hot and cold water when we turn the respective taps in our bathrooms, so the riding public expect to find transportation facilities "on tap" when they happen to want to ride.

Generally speaking, electric railways still render the best service in mass transportation, but people living off the car lines want service brought closer to their doors than it is possible for rail lines to give. Others prefer to ride on rubber, and are willing to pay for it. The wise local transportation man will carefully survey his field and give the people the service they want. Of course, he will not attempt to satisfy whims and give a service which will not pay a fair profit.

I believe that local transportation will soon settle down on a basis of fair earnings for good service. Electric railway companies that are directed by men with vision and courage will probably control the transportation facilities, rail and bus, of their respective communities. If they won't see the light, and continue to view motor bus transportation as a passing fancy, then the business will be divided among them and others who are willing to give the service the people demand.

Not only must the transit facilities meet a necessity, they must fill a convenience in every sense of the word. This is 1926, not 1900. As a people we are more exacting, and I believe we are willing to pay the price for this kind of transportation when assured of value received.

Here I would call attention to the fact that the electric railways are frequently not only concerned with the transportation of passengers by motor bus, but have also found a place for the motor truck in the transportation of freight. An excellent example of where this is being done in a scientific manner—a truly co-ordinated rail and road transport service—is from Boston to Worcester and Springfield. Containers loaded with freight at the merchant's door are moved by motor truck and electric railway flat car to the door of the consignee. The advantages to all concerned of this class of service are very apparent. Where electric railways handle freight the motor truck can in many instances be used to great advantage and, therefore, its usefulness should be studied.

Your association has laid down certain principles regarding the motor bus and, generally speaking, they appear to be sound. Automotive men with whom I am associated believe that a proper and scientific co-ordination of electric railway and motor bus is the only solution for our local transportation problems. This new transportation tool, the bus, must be used wherever it can be done to advantage and without prejudice. Fighting the march of progress, gentlemen; trying to throttle bus transportation through drastic regulation or other means is useless, and I believe already relegated to the Dark Ages, and I think you believe so too. Both the electric railway and automotive industries now have men in command who have already shown a broad spirit of co-operation in working together for the solution of problems common to both sides. Let us continue to follow this policy, remembering that we can have vision without being visionary and that the public must be served with transportation "on tap" and that a co-ordinated rail and bus service is essential to accomplish the desired result.

LOCAL transportation will soon settle down on a basis of fair earnings for good service. Electric railway companies that are directed by men with vision and courage will probably control the transportation facilities, rail and bus, of their respective communities.

—A. H. SWAYNE.

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Providing for Future Transportation*

Intelligent City and Suburban Planning Includes a System of Thoroughfares—Super-Highways as Used in Detroit and Surrounding Territories Are Discussed—The Speaker Believes Every Town and Village Should Provide for Future Traffic Growth

By **Col. Sidney D. Waldon**
President Rapid Transit Commission, Detroit, Mich.

ULTIMATE capacity of any route depends on the width of right-of-way; that is to say, on the distance from the building line on one side to that on the other. This right-of-way width is what determines how much space can be devoted to roadway and sidewalks as well as what is available for rapid transit use. The greater the width of right-of-way the greater is the potential capacity of the route for surface and rapid transit traffic and the greater is the possible development of the territory traversed and served.

COL. S. D. WALDON

Originally regarded as an expensive luxury, the automobile has increased the owner's ability to earn and that of his family to enjoy life. It was inevitable, consequently, that once sensing these advantages, civilization would never relinquish the motor vehicle, but would rush overwhelmingly toward its universal adoption. In 1913, approximately 1,250,000 automobiles were registered in the United States. This number was increased seventeen times in the succeeding thirteen years and, as was to be expected, the increase has been going on at an accelerating rate.

The increase in the number of automobiles has been so great that it is useless to talk about shaving sidewalks for a few blocks to help the parking situation, when provision for one year's increase in Wayne County, Mich., which includes the city of Detroit, would require both sides of an 86-mile street. The parking problem is the business of the individual and not of the municipality, whereas the right-of-way space required for moving traffic at all times is one of the most vitally important concerns of the governing body. Great improvements can be made at relatively low costs in the open country, but the cost of the necessary measures for relief in the thickly built-up sections may be enormous.

A pedestrian takes up about 10 sq.ft. A moving automobile with a safe margin all around occupies 270 sq.ft. Assuming an average of two persons per vehicle, then each pedestrian requiring 10 sq.ft. on the sidewalk will as a motorist require 135 sq.ft. in the traffic space. Assuming that nothing but private passenger automobiles are to be used and that the full capacity of two 15-ft. sidewalks is to be balanced by a roadway of equal automobile capacity of two persons per car, there will be needed central traffic space of 198 ft. Adding two 8-ft. parking strips and the two 15-ft. sidewalks would make a total right-of-way of 244 ft. On the other hand, passengers in bus, street car and rapid transit train occupy only 5 to 10 sq.ft. —reasonably comparable with the space requirements of the pedestrian. While the pedestrian and the street car passenger occupy about the same square footage of street area as formerly, the average motorist requires approximately 13½ times as much space as either. If, in providing for future transportation, the automobile is to be regarded as a permanent factor, then the old standards of street and highway width are obsolete and new ones must be adopted.

CAR SPEED VERSUS ROADWAY CAPACITY

It is a serious fact and one not generally understood that the speed at which the greatest number of motor vehicles can pass a given point in a single lane is 15 to 20 m.p.h. The reason for this is that at each increase in vehicle speed there must be an increase in the face distance between vehicles. For a speed of 20 m.p.h. approximately 2,000 vehicles can pass per hour. This rated capacity is approximated every day when conditions are favorable upon the Detroit Grand Boulevard, but not for very long at a time, because one or another of the intersections is soon closed to boulevard travel to permit intersecting vehicles to have the right of way.

If two streets of equal width cross and each has equal traffic then the capacity of each is reduced at least 50

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per cent, because neither can occupy the crossing more than half of the time. The intersecting street or highway is the most frequently recurring handicap to the efficient movement of motor vehicles. This is because the cars approaching an intersection with the signal set against them will close up the gaps which are necessary while they are running. When the red signal changes to green, the vehicles begin to move and the operation is reversed. The last car in the line can do nothing until every vehicle in front has got under way in turn. This still further reduces the traffic efficiency of the intersections. If the number of lanes is multiplied by say three, the same number of vehicles will cross the intersections in one-third of the time.

Traffic figures show that the capacity of a single lane of traffic on lower Woodward Avenue, Detroit, which is controlled by traffic towers, averages less than 500 per hour. On Fifth Avenue in New York it rarely reaches, even for a few minutes, the rate of 600 vehicles per hour. This is less than one-third of the capacity of the same lane of vehicles if allowed to move continuously at 15 or 20 m.p.h.

Grade Separations Expensive

Grade separations for surface traffic purposes are extremely expensive and should not be undertaken without the most careful consideration of all of the factors involved. It is a grave question whether the demand for such expensive improvements does not indicate the need of an entirely new mode of transportation; that is, electric trains operating upon exclusive right-of-way. Except in very special cases, it would be foolish to embark upon piecemeal grade separations for surface traffic only, because most projects of this kind would simply result in moving the bottle neck to a new location a short distance away.

If, as a nation, we want to make the maximum use of the advantages offered by the automobile for individual rubber-tired rapid transit, then we must establish new standards of street and highway widths more generous than those that have been sufficient in the past. If, in the earlier development of our future cities, we provide the wide rights-of-way necessary adequately to take care of individual transportation by motor car, then we will, by so doing, be laying a proper foundation for meeting the needs of mass collective transportation later on.

The effect of increased accessibility resulting from any form of collective transportation is to stimulate development along the route and throughout the area served. Population is attracted because of the special service given. This in turn demands more service and so on, until the limit in capacity is reached of the particular form of transportation that is used.

When a beginning is made in rapid transit operation, the cycle of stimulated development begins anew, but with an added impetus given by street car and motor bus if used as feeders to the rapid transit line. Gradually the territory is built up to a new and higher standard of use, the two-track system becomes filled to capacity and there are also demands to lengthen the line into new territory. It is then economically possible, if the right-of-way is sufficient, to give a new and most valuable addition to the service by adding two more tracks. This will permit the running of express trains with limited stops so as greatly to increase the speed and consequently the area that can be reached within the same travel time of say 45 minutes.

Underground rapid transit is preferred by adjacent property owners to elevated forms because it does not interfere with light, air or surface traffic, and consequently, gives all the advantages of increased accessibility while retaining the full use of the pavement in the street that is occupied. Elevated or surface rapid transit are preferred by the riders because they are out in the open. In undeveloped territory, it is far cheaper to lay the rapid transit rails on the ground and to provide the necessary separations at logical station points than to build any form of elevated structure. For these reasons, the Detroit Rapid Transit Commission adopted underground rapid transit within the thickly built-up area and surface rapid transit upon super-highway rights-of-way for the suburban districts. It was also established as a principle that no two-track lines should be built without making provision at the time of construction for the increase in right-of-way necessary later to add the two additional tracks for express purposes.

Four tracks, together with main sewers and other sub-surface utilities, can be housed comfortably beneath a street measuring 120 ft. from building to building without disturbing the foundations on either side. This width may be considered as a basic measurement in plans for the major thoroughfares of a great city. If we let our minds run ahead to the further development of 50 to 100 years, 120 ft. becomes little enough.

Master Plans Provide for Growth

In the last 25 years Detroit has added 110 square miles of new territory and a population of 957,000. Facilities that will cost millions in future street openings and widenings would be in existence today at no expense to the city simply through the existence of such a plan. That cannot now be helped but it is never too late to make a beginning.

Detroit believes that it is destined to become one of the world's great cities. It believes that one of the ways to make this possible is to lay plans now while so much of the area of the future city is undeveloped and consequently in a plastic state so as to insure the automatic creation of wide rights-of-way at properly spaced intervals to serve all sections equally. This has resulted in the creation and adoption of what we call the "Master Plan." The principle underlying the master plan is that it is better to select a limited number of routes properly spaced with respect to each other, and to make these adequate to carry the individual and mass transportation of the district traversed with speed and safety, than to make every street of equal capacity.

The master plan provides a checkerboard of north and south and east and west arteries at approximately mile intervals and includes three existing and several projected radials, also laid out so as to give equal service to the entire territory. The area between these main thoroughfares is considered as devoted to local and secondary traffic only.

The master plan uses four standards of width.

1. One hundred and twenty feet for interior main thoroughfares and exterior mile section line roads.

2. Two hundred and four feet for super-highways 3 miles apart connecting with 120-ft. interior thoroughfares and extending from approximately the 6-mile circle outward.

3. Eighty-six feet for secondary traffic streets within the city and for ½-mile roads out in the surburban area.

4. Sixty feet for residential streets.

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It is our belief that, with the automobile as an established and permanent factor to be considered in all future street and highway planning, no village or town should be laid out without its main street being 120 ft. in width and with provision for a checkerboard system of the same width at mile intervals. A wide main street in a rural community invites business because it makes it easy to park and still leaves plenty of room for through travel. According to our present view, 120 ft. of right-of-way should be the basic unit underlying all planning for future transportation.

The super-highway is made up of the elements of the 120-ft. street, only assembled in a different manner. The four tracks are laid upon the surface in a central reservation of 84 ft., while the 120-ft. street surface is split down the middle and 60 ft. placed on each side of the rapid transit tracks. This gives a total of 204 ft. If we regard the 120-ft street with its tracks underground as a two-level thoroughfare, then we can consider the super-highway with its tracks in the center as a single-level street of the same capacity. The 60 ft. of space at each side is divided into 15 ft. for sidewalk and tree planting, 20 ft. for local roadway, 5 ft. for island strips separating the local from through traffic and 20 ft. for express roadway.

To operate rapid transit upon the surface in the outlying areas would, of course, require grade separations at every half mile and mile intersection. Advantage has been taken of this to place the station at the top of these separations so that passengers alighting from the trains will pass down through the station platforms and emerge by way of the grade separation into the underpass street.

Vehicular traffic on one side of the super-highway desiring to get to the other side would use the grade separations, while subway passages for pedestrians to cross would be provided at as frequent intervals as the requirements of the territory demand. Grade separations made necessary for rapid transit purposes at half-mile intervals also make it possible, and very much less expensive than if done solely for motor vehicles only, to carry the through vehicular traffic over the intersecting streets at the same level as the rapid transit facility. No vehicle or pedestrian would ever have occasion to cross the express roadway. With through traffic carried over all grade separations at rapid transit stations along a 10 or 15 mile route, then it would be possible to give a rubber-tired transportation facility not now available anywhere in the world. Vehicles using this would travel continuously at whatever maximum speed was allowed by law. They would swing into the express roadway between intersecting streets and they would swing out just before reaching their destination or point of departure from the route.

Arrangements for Crossings

Wherever two super-highways fully developed in accordance with the rapid transit plan cross each other, the tracks and express roadways of one would be carried above and clear of the former street level. The local roadways of both super-highways would meet at the intersection at normal grade. The rapid transit stations would be in the center of the intersection.

While designed primarily as a combination rapid transit and surface vehicle route, Woodward Avenue, when completed as at presented planned, will consist of two 45-ft. concrete roadways 13.2 miles long with two interurban tracks in the central park strip. This is just one of a number of super-highways planned for Detroit and vicinity.

The actual improvement of these rights-of-way, while important enough, is not so vital to Detroit and the metropolitan area at this moment as is the acquisition of the land itself. What can be obtained now at relatively moderate cost would require untold millions ten, fifteen or twenty years hence. No one quarrels about how the right-of-way is going to be developed. There are, of course, differences of opinion, but these are swept aside in the universal agreement that the width is necessary and should be nailed down now.

Of the various methods of acquiring rights-of-way, the most effective and least expensive is the dedication that owners automatically make when their plats are accepted by the boards of auditors of the counties involved. Special consideration of the older sections of the city, designed long before these two new requirements of the motor vehicle and rapid transit were dreamed of, is called for. Either the older sections must be opened up by widened main arteries at regular intervals or they will suffer by reason of the bottle necks that will throttle their growth.

The master plan provides that certain routes, selected because of their alignment, continuity, relative location and connection with the outside grid, shall be widened as the needs require and funds become available, to the main standard of 120 ft. with intermediates of 86 ft. Two methods will be used;

1. Establishment of set-back lines varying from 7 to 10 ft. on a side on both sections of routes selected which are at present 100, 105 and 106 ft. in width. All told, there are 31½ miles of such route upon which it is planned to complete the condemnation of the land vacated by these set-back lines at the expiration of 15 to 25 years. In rapidly growing cities, the average life of buildings is about 33 years, which means that during the period specified for the set-back line, a very large proportion of the old structures now existing will have been replaced on the new line, and only a relatively few modern structures will have to be cut back at the city's expense.

2. By out and out condemnation to the full width desired. Development follows lines of transportation. The highest value land and the most expensive buildings front upon the transit street. To widen the street by condemnation usually requires the community to pay for the highest value land frontage and largely to destroy the most expensive buildings. When the operation is completed, the cheaper land which was formerly in the rear and which now fronts upon the widened thoroughfare steps into the same position of value as the former street frontage and acquires new value by reason of the widening. The widened street attracts a better building development, but the reduced depth of the lots is less favorable to large structures. In every way, the result is diametrically opposed to the city's and the property owner's best interests.

A charter amendment adopted by the people of Detroit will permit the Common Council to condemn property other than that actually required for the widening, to readjust lot and alley lines, to exchange one piece of property for another and, in general, to exercise the rights of a proprietor in the transaction. In a nutshell, the amendment gives the city the right to condemn cheap property in the rear of business frontage and to exchange such property for the frontage required so that buildings may be moved back upon this new property, alley and lot lines readjusted and the original owners left with the same size properties on the widened street that they originally had on the narrower one.

The financing of these city condemnation proceedings

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will be taken care of on the basis of approximately two-thirds against the benefited property in an assessment district, running back on each side of the thoroughfare widened, and one-third in an assessment upon the city at large.

Much more could be said about planning for future transportation, its advantages, methods and Detroit's accomplishments to date. Sufficient has been said, however, to show why every village, town and city should adopt its own master plan, together with adequate standards of width for the various elements and then concentrate upon the earliest acquisition of the desired rights-of-way. Planning ahead of immediate needs benefits most the territory that adopts such plans.

In older cities, we have seen areas that were once the heart of business, city government and the social life of the community finally reach the limit of possible development upon the narrow street system of the past. We have seen these areas forsaken and become blighted in favor of new areas offering better facilities of all kinds required by the increased population and altered conditions of living. The time finally arrived when it was cheaper to move than to rebuild.

History has proved over and over again that we pay for adequate facilities whether we have them or not. We pay through delays and reduced efficiency. We pay through nervous wear and tear, through loss of property, life and limb. We pay in stunted development, in blighted areas and lessened values. And as a last resort, we pay enormously for a few defensive measures that too often fail because inadequate. It is better to grasp opportunity while it exists and consistently plan ahead of immediate needs than let things drift until it is too late.

Competition, Co-ordination or Monopoly*

Advantages of Individual Enterprise and Effort Can Be Retained Without the Evils of Wasteful Duplication of Service

By the **Right Hon. Lord Ashfield**
Chairman Underground Railways of London,
London, England

URBAN transport is a complex subject. The underlying principles which may govern the operation of such undertakings are three, contrasted and opposed, namely, competition, co-ordination and monopoly.

For the interpretation of these principles it is necessary to turn to the inexact science of economics. The main ideas of economics took shape about 1776, for in that year Adam Smith published his "Wealth of Nations," which gave form and definition to a hitherto unorganized mass of knowledge. Adam Smith was an individualist. He saw that all achievement and all success were attributable to personal effort, and so it was quite natural that he should think that competition was inevitably concerned with vital impulse. When, in 1859, Charles Darwin published "The Origin of Species" and established another landmark in the history of thought, he seemed only to confirm the rightness of Adam Smith. Achievement and success in evolution were based upon a struggle for existence, which was competition naked and unrestrained.

By a curious coincidence, Karl Marx published in the same year his "Critique on Political Economy," which eight years later was to be recast into his famous treatise on "Capital," in which the doctrine of the other extreme, of socialism as the negation of competition, finds its dominant utterance. The facts of life were beginning to shatter the hardness of the teachings of the orthodox economists. From that year onward criticism and discussion have attempted to fashion a new economics, but with too little success, because the old had become consecrated and was accepted unreasoningly.

Out of evolution, however, the idea of co-ordination starts. The struggle for existence was found not to be so universal or so acute. There were associations of creatures for their mutual protection and benefit; and what the creatures did man learned to do. Slowly there sprang into existence trade unions which limited labor competition, buyers' and sellers' organizations which limited trade competition, and trusts and cartels which limited competition in the markets for raw and partly manufactured materials. Nevertheless, while the practice was changing year by year until the economic life of nations has become radically altered, there is still the same lip service by large sections of the community, to the notion that competition alone is essential, beneficial and advantageous.

It is against such a background that the idea of co-ordination, as opposed to competition on the one hand and to monopoly on the other hand, should be viewed, and urban transport is a favorable subject for the purpose of illustration.

Transport consists in public service. The service may be measured statistically in seat-miles. The use of the service may be measured in passenger-miles. If the seat-miles are not used by passengers and so converted into passenger-miles, they are lost. In this the provision of service must be distinguished from the provision of commodities. If commodities are not sold one day, unless they are perishable they may be sold the next, but service, once provided, is wasted unless it is used. Waste is costly. The whole service must be paid for out of the proceeds of the part which is used. If, therefore, the proportion wasted is, by reason of com-

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petition in services, increased, the amount charged by way of fares to the passengers must be raised. A substantial proportion of the total service provided by urban transport undertakings is wasted in any event by the operating conditions occasioned by the variable flow of the traffic—the unbalanced inward and outward movements morning and evening, the irregular movements at mid-day, the seasonable and climatic variations which can hardly be forecast with exactitude. Whether railways or tramways or motor omnibuses are taken, in Greater London the average use which is made of the facilities provided barely exceeds 33 per cent. In the cities of America it will not be greater; it may easily be worse. Only by unified management of all the means of transport and their co-ordination into a general system can such unavoidable waste be reduced to a minimum.

Transport in its commonest forms occupies the public streets. The traffic capacity of the public streets is limited. A single line of traffic will accommodate some 500 vehicles per hour in a congested street. If a wasteful use is to be made of the public street, if the vehicles using the street are to be only partly loaded, or if the general speed of movement in a street is to be slowed down by congestion due to too many vehicles trying to squeeze through, then vast and needless expenditures are forced upon the community to supply more and wider streets. In the centers of modern cities this has already become a grievous and almost insuperable problem. It is certainly not to be aggravated by countenancing the needless competition of omnibus with omnibus, or of omnibus with tramway upon the public streets.

But if competition fails, is the only alternative monopoly in one or other of its forms? There is the monopoly which is characterized by private exploitation. This can be ruled out at once. There is the thinly disguised monopoly of nationalization or municipalization in which the exploitation of the consumer is obviated, but at the price of retaining all the other defects and vices of monopoly, such as its lag on progress, its conservative methods, its stereotyped management, its infallible tendency to live upon itself in an atmosphere of red tape. It is idle to shirk the consequence of these disguised monopolies, for they are too patent. In co-ordination a golden mean is available which allows of the retention of what is good in individual enterprise and of the casting out of the ills of competition.

Changes have been wrought in trade and industry since 1860. Large undertakings, such as those providing urban transport, have become impersonal. They are in these days joint stock companies. Those who manage and control them are salaried officials, trained and expert in their work. They form a class whose duty it is to hold the balance between the shareholders and the passengers. They have built up a technique of management which they must observe conscientiously. There is no longer a mystery about it, but it has become something in the nature of a science. A change has taken place similar to that which converted alchemy, with its uncalculated magic, into chemistry, with its calculated wonders.

Finally, and maybe most important of all, publicity has entered into management. What is done in the office is shouted in the press. Management is being conducted in a glass case, so that any attempt to surcharge the public, or impair the service, or to squeeze an excess profit, fails immediately under criticism from the public.

Traffic has grown more full of variability as cities have grown in size and strength. This variability never allows of rest in urban transport. The incentive to improvement, to expansion is always there. For instance, competition remains in the design of vehicles and equipment because the vehicles and equipment must be tuned up to yield the last passenger in effectiveness. Every second of waste must be eliminated, every inch of space must be exploited. The basis of prosperity in urban transport is not a few passengers at high fares, but many passengers at low fares. These are some of the considerations which point to the truth that in urban transport, at any rate, the atmosphere, the circumstances in which it is carried on, are instinct with a spirit of competition which makes its pressure felt in subtle and impressive ways, which insures an accommodating and progressive attitude, which renders harmful and dangerous the rude competition of vehicle with vehicle and system with system. Urban transport has outgrown the stage at which tribal warfare represents the solution of the difficulties of existence.

What is meant by co-ordination? There is no one answer to such a question. Each city must work out its own. It does not necessarily involve all transport agencies being in one ownership. It does not necessarily involve all transport agencies being under one management for the routine discharge of their operations. But somewhere there must be the power and authority to insure that the operations of all the transport agencies are knit together into a systematic whole. Somewhere there must be the power to readjust the financial position of conflicting agencies to insure that whatever their ability to earn may be, all receive according to their needs, if their service is required.

In all cities there is the right, on the part of the people, to exercise control, subject to the observance of certain principles. First, that those who control shall not be interested in one transport agency more than in another. They cannot own one agency and seek to control others. They must have a single eye. Second, that the transport agencies as a whole shall be self-supporting, or if that is not to be the case because cheap transport is held in such esteem as to warrant a tax or impost on the community in some other shape, such as a charge on landed estates, a rate on property, or a levy on industry at large, then a definite policy of subsidy out of such other resources shall be defined. Third, that those who invest their money in urban transport shall be entitled to a reasonable and proper return upon their capital, for, without this, expansion is prohibited. Indeed, as a price of control there is a fair claim to a guarantee. Such an investment, under such conditions, should be almost like a government or a state security; that is, a fixed interest bearing security; in brief, a bond.

Finally, co-ordination, it will be observed, does not absolutely forbid competition. It requires that so long as adequate service at fair prices is provided, there shall be no disturbance to provoke rate wars, or to stir up overrunning, or to attract gambling investments and so to cause waste. If, however, at any moment, those who are engaged in the provision of urban transport are neglectful or dilatory or unreasonable, then the door can be opened and fresh agencies invited to take a share. Co-ordination is a closing of the door to direct and internecine competition in the interest of the transport undertakings so long as they are of good conduct and act in the interest of the public.

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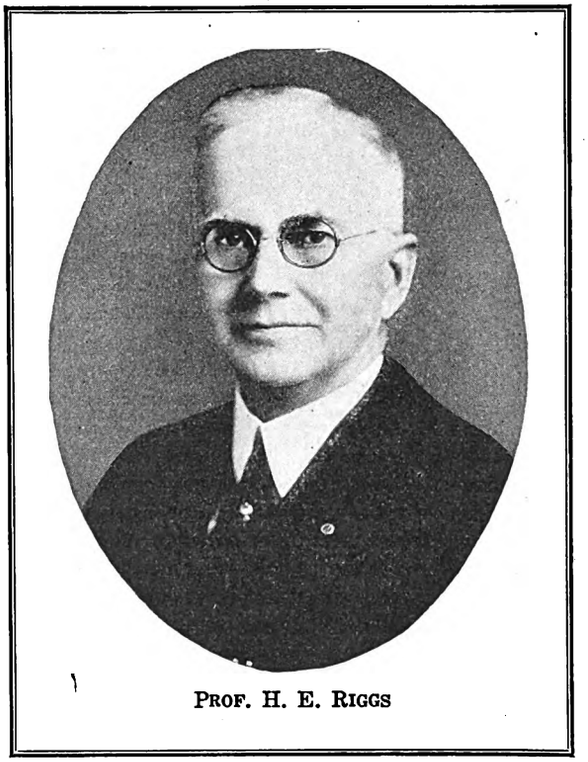
Need for Revision of Our Concepts of Depreciation*

Modern Ideas of the Permanency of an Essential Utility Require a New Method of the Treatment of Depreciation in Considering Property Value

By **Prof. Henry E. Riggs**
University of Michigan, Ann Arbor, Mich.

MAJOR concepts described by the word "depreciation" are radically different. They may be described as the "valuation concept" and the "accounting concept."

The general use of the term "depreciation" in valuation commenced with the Michigan Railroad appraisal of 1900, although I find one very clear statement of the same conception in connection with a bridge controversy as early as 1840. The Michigan appraisal was begun in September, 1900, and finished the following February. The total cost to the state in round figures was $70,600, and the theory of making an engineering estimate, or cost of reproduction, was there first used.



PROF. H. E. RIGGS

This work was done in connection with a study of taxation. The railroads all contended for low values, and the estimated cost of reproducing the property at that time very closely approximated actual investment. It gave the answer in terms of a new railroad. Many of the more than 150 operating railroad properties in Michigan were in sadly run-down condition. They had actually depreciated and were not earning any adequate return. To assign a value equal to the cost of building new in 1900 would have worked an injustice to such properties. Hence the attempt was made to set up a cost of "reproduction less depreciation."

The concepts adopted at this time, cost of reproduction, cost of reproduction less depreciation, the method of arriving at the so-called depreciation, the general methods of making the inventory, the forms for the inventory and the general form of the presentation of final details and summaries were adopted in subsequent valuation work and followed with relatively slight modification.

It must not be forgotten that this work was done seven years before the adoption of uniform accounting and nine years before the Supreme Court rendered its decision in the Knoxville Waterworks case. Those two events ought to have brought about a complete revision of the methods of computing "depreciation," but they did not.

The Knoxville case makes clear that where there is depreciation it shall be found and deducted. It does not, however, define depreciation beyond making it clear that it must be impairment of the investment. The fundamental thing about that decision is the declaration that it is the duty of the owner to "maintain his investment intact, as it was in the beginning." In other words he must keep a 100 per cent property. If he fails to do so the fault is his own and must be taken account of when a valuation is made. The Michigan plan of determining depreciation is inconsistent with this decision because under it no property can ever be in 100 per cent condition.

The uniform accounting classification draws a very clear and sound distinction between the capital accounts and operating expense accounts. It gives a clear recognition of the principle that the using up of consumable units of property is part of the cost of operation.

MICHIGAN PLAN IS FAULTY

The Michigan plan of determining depreciation is inconsistent with this classification because it considers progress toward the time of replacement, or operating costs not yet accrued, as being a deduction from capital.

It seems to me that the Michigan plan, which has been adopted practically in its entirety by the Bureau of Valuation of the Interstate Commerce Commission, is faulty in several respects. There are several question to which we must find new answers.

1. *What is the unit of property to be valued?* The

*Abstract of a paper presented at a joint meeting of the American Electric Railway Engineering Association and American Electric Railway Accountants' Association, Cleveland, Ohio, Oct. 4-8, 1926.

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problem is to value the railroad. A railroad is very distinctly one property, built for a special, particular service. Most of the materials composing the property have no value at all except as part of the railroad. For example, the rails, the signals, a depot building, a fuel station have little "value" when detached from the railroad. They are all consumable parts. They were made to wear out. The better the railroad and the more its business the faster they wear out. Their wearing out is an operating expense. They are distinctly not units of property to be valued alone, any more than the windshield, fenders or tires of an automobile. The study must be, therefore, of the utility as a whole, not of its minor parts.

2. *What constitutes a 100 per cent property?* There never was such a property. Newness is of no value, and if we sought mere "newness," how much money would be invested in our utilities. The efficient property, built to render a particular service, and doing its work in a safe, efficient and economical manner, is the thing which attracts investment. Such a property, with all replacements being made just as soon as replacement is due, is the 100 per cent property. Where maintenance is not kept up, and where replacements are long deferred, there is depreciation in the sense it is referred to by the courts. It seems to me that depreciation, in the sense of failure to maintain the integrity of the investment, is measurable in dollars and cents, by the amount of money that a wise and prudent manager would be justified by sound economics in spending to bring the property up to a proper and safe standard for transacting its actual business.

3. *What is depreciation?* The Interstate Commerce Commission defines it as "loss of capacity to serve." The Supreme Court makes very clear that it means "failure to maintain the investment intact." In view of the fact that we are not now discussing value but property, this might be stated as follows: "Failure to maintain the plant or property intact, which was secured by the investment." The basic definition is "loss of value."

I do not think that we can avoid the fact that value itself, particularly as it relates to utility properties, is dependent on earnings. We may very naturally expect to find that the poorly conceived, poorly located property, which has never come up to expectations, which is not doing the business that it should, and is consequently not paying an adequate return, will be the poorly maintained property. Any formula which deducts a greater percentage of depreciation from an old, well-established, prosperous and growing utility which is fully maintained to the highest degree of efficiency than it will from the ill-conceived failure which is not fully maintained but which was built at a more recent date is an incorrect formula.

The speaker would define depreciation as that loss of value or impairment of the investment in plant which is due to the failure of the owner fully and properly to maintain to a suitable standard for the service which is to be rendered.

4. *What is the life of the property?* This conception of the total life of the unit, applied to minor consumable parts, has led to the most ridiculous inconsistencies. For example, steam railroad ties are assigned a definite life. Assuming full maintenance, the replacement each year of every tie that ought to be replaced, the maximum normal condition of the ties is 50 per cent. Grading, on the other hand, never depreciates. That is because the engineer doing the work of valuation would have to put a "life" on cuts and fills, and he cannot do so.

The real answer is that both ties and grading have a life as long as that of the railroad. If the railroad is abandoned, what is more worthless than an abandoned grade? We all know that cuts and fills wash and slide and that as constant maintenance must be expended on the grade as on the track. Certainly the life of a service structure as a whole is the true measure, not the estimated lives of parts of it. Who knows the life of a railroad, or an electric power property, or glass, or grading, or a great dam?

We must establish a new set of concepts in valuation. We must abolish guess and substitute fact. The application of the formula of the Bureau of Valuation means a deduction, based on an arbitrary set of rules, of from 20 per cent to 25 per cent of invested values in the railroads. Say four to five billions of dollars. Doubtless in some cases of small properties of low earnings there is considerable true depreciation, but in the case of the great majority of the railroads of the country the formula results in confiscation.

Thus far I have discussed the valuation or engineering concept of depreciation.

THE ACCOUNTING CONCEPT

The accounting concept is no less important. It seems to me that the use of the word "depreciation" in connection with reserve accounting is a misnomer and ought to be abolished.

There can be no disagreement as to the desirability of establishing accounting reserves to spread the costs of retirement or replacement over a reasonable period of years, in the case of some properties and some parts of other properties. There is, however, great disagreement when it comes to a universal requirement of reserve accounting.

The great railroad, with thousands of miles of road and thousands of cars and locomotives, may find its maintenance of way and structures or maintenance of equipment total expenditures so uniform year after year as not only not to require the establishment of reserves, but as to make it highly undesirable, because of the introduction of estimates.

What is true for the great railroad may not apply at all in the case of the small road. It appears to the speaker that whether or not reserve accounting shall be used, and if so the extent of property that shall be covered is largely if not wholly a question of policy to be decided by the management subject to the approval of the regulating body, and not a matter to be disposed of by the formulas of some bureau of control.

The question may be asked, are such reserves, if they are established, to be based on a percentage of property cost, or on costs per unit of service? But is not this wholly a matter of convenience in accounting and of securing enough money for the purpose?

When these reserves were first established it is easy to see that a good supporting argument for them was that there was a depreciation in the property over and beyond maintenance and renewals. Indeed, that is very true as to many kinds of property today, but does it apply in the case of the utility of continuing life?

Take the case of the New York Central Railroad, for example. Is it not getting better and larger and

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stronger each year of its history? Is it possible to go back and find this fantasm of depreciation and add up in dollars what it now amounts to? I think not. The life of the New York Central and the other great railroads is, so far as we can now see, indefinite if not infinite.

Transportation, public transportation in cities, electric power, public water supply, communication by telephone or telegraph are public services that must continue in some form.

We know that great changes have taken place and will take place. New inventions involve constant changes of equipment, but we have well established the principle that the wearing out of the old is part of the cost of service and the cost of the old must be charged to operating expense. In the case of the continuing, going concern property any reserves raised to cover this cost are not depreciation reserves, although they may properly be such in the case of the obsolescent and dying property. My plea to you men in accounting is to find another name which will cause less of confusion and be more truly descriptive.

Deduction of Reserves to Determine Value

Finally, I would raise this question, Should the amount of accumulated operating expense reserves be deducted from the capital account to find true value?

The Supreme Court, in the Knoxville case, says that it is the duty of the owner to keep his investment intact.

This can be done in two ways on different properties. One may so fully keep up current repairs, replacements and renewals that at any given time little or no depreciation ought to be found. Another, unable to do this by direct charges to operating expense, may elect to create reserves, and through a series of years just as fully maintain the integrity of the investment. Should he be penalized by deducting these reserves from capital?

Would it not be more proper, in this second case, to say that failure to establish proper reserves is failure to keep the investment intact, and that such failure should be penalized?

This whole subject of reserve accounting is, like engineering valuation, a new development. The subject is far from being a fixed and settled science, and the accounting question needs just as much study as that of the proper deduction to be made in valuation.

The definite use, and the clear meaning of the word depreciation, loss of value, in valuation, and the clear-cut order of the courts to find it when it exists and deduct it, seems to make it very essential that the accountants get down to exact terminology and find a name that shall be truly descriptive.

Rail Corrugation Studies to Continue

PLANS for the continuation during the coming year of the work of the committee on rail corrugation were made at a meeting held Oct. 6 in the Engineering Room of the Auditorium. Methods of using the corrugraph were discussed and arrangements made for metallurgical analyses of sections of corrugated rail.

This subject has been one that has baffled engineers for many years and it is to be expected that with the approach to this problem along scientific lines that the cause or causes resulting in corrugation will be discovered.

Purchasing Agents Meet

Many Details of the Best Way to Handle Their Work Were Discussed by Both Railway Men and Manufacturers

FOR the third consecutive year, the purchasing agents and stores committee of the Engineering Association held a separate session at Cleveland on Oct. 5 to consider its report to the Engineering Association and, at the same time, to hear addresses from prominent men on the subject pertinent to the committee's work. After the address of welcome by Charles R. Harte, president of the American Engineering Association, Frank R. Coates, president of the American Electric Railway Association, gave a talk on the value of the purchasing agent to the entire railway organization.

P. F. McCall, chairman of the committee, read the formal report which was presented Thursday morning to the Engineering Association. Other committee reports were read and approved.

The principal paper scheduled on the program was "Co-ordination of Operating Budget with Purchases of Material." It was presented by Dr. Charles Reitell, head of the department of accounting and industry, University of Pittsburgh. According to him, the budget of requirements should be worked out by forecast, plus experience and adjustments. Estimates should be made for the month, and the various items tabulated on a budget sheet which can be laid out to accommodate as many divisions of the work as are required. The big underlying principle of budgeting is the psychological effect it has on the purchasing department. Abnormal expenditures which are not included in the budget should be passed upon by a group of officers of the company which may be authorized to draw upon a contingent fund to meet the emergency requirements.

What Constitutes a Valuable Employee

Four factors characterized a valuable electric railway employee, according to W. E. Wood, vice-president and general manager of the Virginia Electric & Power Company. These are general knowledge of the company's business, specific knowledge of the detail work of his department, a desire to carry out the policies of the company and co-operation on his part with other departments.

Time can be saved in filling orders if the proper description is given the manufacturer so that his order department may successfully interpret the company's order. Henry S. Day, manager transportation division, Westinghouse Electric & Manufacturing Company, in his paper enlarged upon this statement and, in addition, said that his company had had considerable success in filling orders from catalog descriptions. According to Mr. Day, some railway purchasing departments permit an order to go through in rather incomplete form.

This is not good practice. Attention must be paid to details, in order that the material shipped on the order will be correct. It is up to the manufacturer to keep the purchaser supplied with new catalogs. However, it is also necessary for the manufacturer to maintain a file of back catalogs because orders may come in which an old catalog description is given. Ordering by unit quantity packages speeds the shipments. This practice is economical and facilitates the work of the purchasing department.

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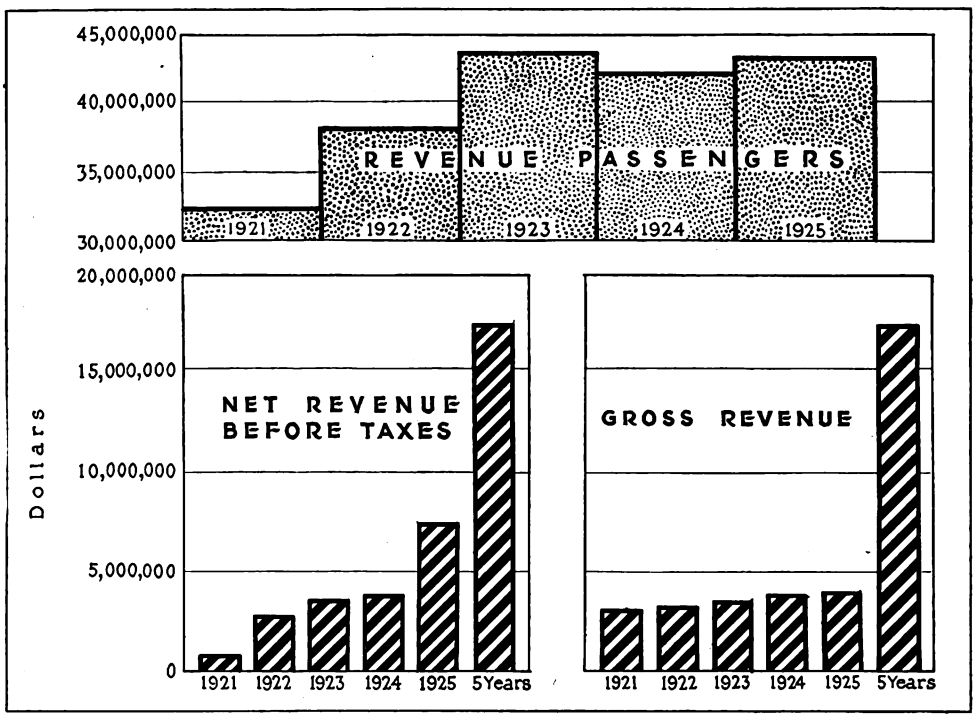
Penn-Ohio Electric Company Wins Coffin Award

An Aggressive Campaign of Physical Improvement and Co-ordination of Rail Lines and Buses, Combined with Intensive Merchandising Effort, Earn National Recognition for Moderate Size Combination Property

REHABILITATION of its railway property with a view to building up a character of service which could successfully compete for traffic under modern conditions was a large factor in winning for the Pennsylvania-Ohio Electric Company, the 1926 Charles A. Coffin medal. The award was made on the basis of the value of the accomplishments by this property to the public and to the electric railway industry as a whole. Concrete evidence of this company's intention to provide a complete modern service and of a constant effort to improve facilities, which in turn won the co-operation of the public and a resultant considerate attitude in franchise matters, assessments, etc., was cited as among the important accomplishments.



The committee in making its report also cited the action of this company in pioneering the operation of de luxe buses in an industrial territory while at the same time avoiding the temptation to hold bus fares below the cost of giving service. In addition, mention was made of the effort by the company to give a different character of service with de luxe buses than on the railway. Establishment of the precedent that the bus fare under such conditions should be higher than the rail rate was recognized as an important accomplishment.

In the judgment of the committee, the winning company has shown by experience that there is no permanent "rubber urge," but that the public is ready to buy what it considers the greatest value for its money in transportation regardless of the motive power. While building its bus service this company brought its rail lines up to a state of performance which permitted the proper field for each to be determined. Having gone through a complete cycle of shifting traffic between cars and buses, it established the fact that the latter may be used to attract new business to a transportation system as a whole, while improved cars and service simultaneously build up the riding on the rail lines alone. It demonstrated that when the bus is operated under conditions for which the car is better fitted, improvements can be made in the rail service which draw traffic away from buses of even the most luxurious type. It found that when both bus and car service are intensively developed in comfort, speed and convenience, and are operated at rates of fare proportionate to the cost of giving service, neither vehicle threatens to supplant the other; that the field of each is fixed by the nature of the territory, location of lines and other similar factors.

The Pennsylvania-Ohio Electric Company operates both city and interurban service by cars and buses. The one management operates the Youngstown Municipal Railway and the lines serving Newcastle and Sharon, Pa., Niles and Warren, Ohio. Five years ago buses and private motor car competition had the company with its back against the wall. It had to choose between admitting defeat or putting more money into its property and adopting more aggressive sales methods. Choosing the latter, it has emerged triumphant after five years of vigorous fighting. This property is controlled by the Republic Railway & Light Company of Jersey City. C. C. MacCalla is general manager and R. N. Graham is manager of railways and directly in charge of rail and bus operation.

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American Committee Reports Record of Year's Progress

The Subjects Considered This Year Included National Relations, Management and Operation, Insurance, Education, Rapid Transit and Publicity—Useful Research Work Accomplished

BEGINNING with the convention last year the presentation of committee reports from the platform was discontinued by the American Association. The same plan was followed this year. Instead of reading the reports from the platform as in previous years, each chairman gave a brief oral résumé of the subjects presented. These topics were printed in pamphlet form by the association and distributed to the members before the meeting, allowing them to become conversant with the subject matter and enabling them to bring up questions for discussion after hearing the preliminary remarks by the chairman. Abstracts of the various reports follow.

National Relations

THE current year has furnished many things for consideration by the committee. At the hearings on the railway labor bill before the Senate

HARRY REID
Chairman

and House committees, Mr. Henry and other representatives of the association argued for the exemption of street and interurban electric railways, and this exemption was secured by the Richberg amendment. A statement setting forth the views of the association with reference to the railroad consolidation bill, introduced by Senator Cummins of Iowa, was filed with the committee. This bill was still in the Senate at the time of adjournment. Mr. Henry and other representatives of the association have also closely followed or have spoken at hearings on the so-called "venue bill," a bill relating to railway mail cars, the use of steel cars in trains, excise taxes on automobile buses and parts, and the regulation of interstate buses and trucks. The association has also been represented at various hearings held by the Interstate Commerce Commission in different cities this summer on the question of the regulation of such interstate buses and trucks. Mr. Henry also spoke at a hearing of the House committee on interstate and foreign commerce on a number of bills proposing to amend the interstate commerce act.

The committee on national relations has also filed with the Interstate Commerce Commission a petition, so far as its members were concerned, in regard to an order relating to the inspection and testing of railroad locomotives other than steam. It was also represented at the National Conference on Street and Highway Safety in Washington, and Mr. Henry is a member of the conference committee to draw up a suggested uniform vehicle code. It is the intention to have this code adopted in the various states.

During the year a large number of Congressional bills, resolutions and amendments were mailed to Messrs. Storrs, Henry and Welsh, as well as to others on request, as were also many copies of Interstate Commerce Commission orders, notices of hearings, etc., and six decisions of the United States Supreme Court and district courts. Many requests sent to the Washington office for information, etc., were filled, and the committee points out that this is a service which its Washington office is able to give association members. It also points out that all electric railway companies doing an interstate business and therefore required to appoint statutory agents in Washington, upon whom the commission may serve notices and other papers for such companies, can appoint as such an agent Mr. Henry, who has supervision of the Washington office. He will see that these notices are sent to the various companies and they need appoint no other statutory agent.

The report contains resolutions on the death of W. H. Maltbie, who had been retained as counsel in the preparation of the association's case on the subject of depreciation as well as of its presentation before the Interstate Commerce Commission. Mr. Nash has taken over the work which Mr. Maltbie was doing for the sub-committee on depreciation, and all the data which have been assembled have been turned over to him for analysis.

The report was signed by E. J. Bechtel, R. R. Bradley, A. W. Brady, C. D. Cass, S. F. Curwen, J. H. Hanna, G. H. Harries, C. L. Henry, Frank Karr, T. O. Kennedy, H. A. Mitchell, L. R. Nash, Frank Silliman, Jr., D. W. Snyder, Jr., F. H. Wilson and Harry Reid, chairman.

Rapid Transit

COMPILATION of opinions and statements from authoritative sources as to methods of financing rapid transit, distribution of benefits, and advantages to be obtained from rapid tran-

G. A. RICHARDSON
Chairman

sit in its various forms to suit different conditions constituted the work of this year's rapid transit committee. Data were compiled to indicate the amount of the toll charges to the passengers using existing structures and the possibilities of improvements in service or reduction in fare if the fixed charges were distributed according to benefits received. Other data show the relative costs of providing transportation capacity by subways or streets in the different cities.

Specific conclusions as to methods of financing or types of construction were not made, since local circumstances and requirements of law or precedent determine the detail of the plans that would be applicable or desirable.

Development of plans and proposals for rapid transit has received much attention in recent years, due to the great need for additional street space and for more freedom of communication. Projects for immediate construction are

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being discussed in six cities, although actual work is in progress in but two.

Such questions as the desirability of concentration of the business district, the effect of rapid transit on a city plan or vice versa, the ultimate condition to be attained in transportation and in the city plan are vital when considering such very large, present and future expenditures involved.

The body of the report consists entirely of excerpts from and comments on rapid transit reports submitted in a number of cities. The report is divided in sections as follows: (1) Opinions and practices regarding financing; (2) effect of fixed charges on fare and service; (3) comparative costs and capacities of streets and rapid transit lines; (4) arguments for rapid transit and for special designs.

The report was signed by J. H. Alexander, H. L. Andrews, W. B. Bennett, Edward Dana, S. E. Emmons, B. J. Fallon, R. F. Kelker, Jr., E. J. McIlraith, W. S. Menden, F. R. Phillips, F. H. Shepard, C. E. Smith, J. B. Stewart, Jr., D. L. Turner, James Walker and G. A. Richardson, chairman.

Publicity

THE outstanding accomplishment of this section has been the compilation and issuance of a loose-leaf advertising book containing samples of more than 2,500 ads and posters dealing with the following subjects: Courtesy; Safety; Weekly Pass; Taxes—Paving; Parking; Motorists; Franchises; Intercity; Buses; Merchandising Transportation.

This is the largest book of its kind ever issued by any industry, and represents effort extending over practically the entire year. It is believed that this book will be of invaluable assistance to advertising men by way of offering suggestions for copy.

An entire section of the book is devoted to a reproduction of advertising material prepared by the association, and still available through the advertising section, for the use of companies. This material, which can be had in poster or newspaper mat form, or both, covers a wide range of subjects, including safety, traffic congestion, and paving tax relief, three of the outstanding problems now before the industry. The size of the material, prices charged and all other details for ordering it are plainly set forth in the book.

The industry is particularly urged not only to make use of the material now on hand, but to send suggestions for other material to the advertising director. The committee will gladly consider any suggestions.

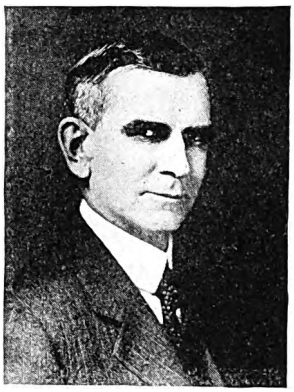
Two of the latest series shown in the association material section deal with advertising supplemental coach service and obtaining paving relief.

The coach advertising material comes in mat form for two-column newspaper ads. The text suggests using the company's coaches when it is impossible to use its street cars. Sales arguments for using the coaches for sightseeing, special parties, etc., are included.

The new paving poster series deals with instances in nine states where companies have been relieved of paving charges. They not only give the facts about the relief, but also carry illustrations designed to impress the reader with the unfairness of imposing a paving charge now that the horse no longer is used in street car service. These posters come in two colors, red and black, in the regular window poster size, supplemented with suggested newspaper ads, also shown in the association section, and should be very helpful to any companies launching a paving tax relief campaign.

The book also contains an introduction by the advertising director embracing a general discussion of the best advertising methods. It deals extensively with the use of type and the utilization of newspaper space.

A survey, which was noted in a full-page story in the *Editor and Publisher*,



PAUL SHOUP
Chairman

the outstanding newspaper man's magazine of the United States, showed that between $4,500,000 and $5,000,000 was spent this year for electric railway advertising.

The section also was active in aiding in the inauguration of the speakers service. The director prepared, printed and distributed seven standard addresses throughout the industry. These addresses dealt with the following subjects: Tax Situation; The A.B.C.'s of Operation; Municipal Ownership; State vs. Municipal Ownership; Coordinated Transportation; Transportation History; Future Transportation.

The addresses were prepared under the direction of Britton I. Budd, chairman of the speakers committee, and were compiled in such handy form that they might be delivered by the most inexperienced public speaker without difficulty. This new feature of the section's work will be continued through the coming year in co-operation with the speakers committee.

The managing director's office has furnished much material which has been helpful in obtaining publicity. Speeches and statements delivered by the managing director have been broadcast through the regular publicity channels. A standard size booklet has been adopted for the managing director's statements and it is available through the association at all times. Addresses by the president have been handled similarly.

The committee recommends that the advertising section, and the industry, during the next year do its utmost to familiarize the public with and encourage the putting into effect of the fundamentals as set forth in the Advisory Council's report.

Subjects which should be stressed most are traffic congestion relief, tax adjustments and safety. Of these three, traffic congestion relief should be given particular attention in posters and advertising material.

The work of the speakers committee of the association is most important and should be given generous support by the advertising section. Additional addresses, along the lines of the seven prepared this year, should be prepared during the coming year and given the widest possible distribution among executives.

The industry as a whole should spend more money for advertising, and put more concrete sales talk, and not so much good will material, into its copy.

More attention should be paid to good art work by local companies. Good illustrations help sell rides. Poor ones do not. Be at least as careful in the selection of a man to do your advertising art work as you would in the selection of a man to decorate your cars.

The report was signed by F. L. Blanchard, J. S. Bleecker, V. H. Cartmell, H. O. Crews, Robert Dougan, P. H. Gadsden, L. E. Gould, J. P. Griffin, W. V. Hill, W. H. Hodge, H. M. Lytle, J. C. McQuiston, M. P. Rice, W. P. Strandborg, P. L. Thomson, R. G. Tucker, A. C. Watt, E. F. Wickwire, Barron Collier, vice-chairman, and Paul Shoup, chairman.

Management and Operation

NOTEWORTHY work was done by the committee on management and operation during the past year. Its report, abstracted below at considerable length, indicates the character of its activities. In addition to the main report, each of the regional directors submitted a report giving in greater detail the accomplishments of the year in his territory. These reports indicate that interstate bus competition is a major problem, although the bus in general has been accepted as one of the common parts of the service of many railways. The majority of these regional reports contain a great deal of information gathered from personal visits to the various properties.

When the 1925 committee on management and operation presented its report, it was recommended that the work be discontinued during the present year. The association, discussing the report at the 1925 convention, decided that it would be desirable for the committee to continue its work as originally assigned, but devoting more time to the dissemination of information collected in previous years. That information was classified by last year's committee and was edited and published early in this year in the form of a "Handbook of Modern Methods and Practices."

The handbook is a bound volume of 319 pages, divided into twelve general subjects covering important phases of management and operation of transportation companies. It contains the best of the information collected during the past two years and its purpose, as

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stated in the foreword, is to spread the gospel of modernization, efficiency and public accommodation to the electric railway industry. More than 900 copies of this book have been purchased by the industry.

In addition to the dissemination of information already collected by previous committees, the members made a special effort to acquaint not only executives but department heads regarding activities at association headquarters. A pamphlet was prepared, and distributed by committee members, describing these activities and showing how the association renders valuable assistance to member companies.

The committee co-operated with the committee on education and distributed in pamphlet form some very interesting information prepared by the latter committee. Executives of the properties visited were urged to inaugurate some form of employee educational work.

Members emphasized the value of the state public utility information bureaus, and urged executives of the properties visited to make greater use of those facilities. Information prepared by Mr. St. Clair, outlining the activities of these bureaus, was distributed.

The returns from the regional directors indicated that approximately 125 companies were visited during the year. Reports have been received from the committee members outlining various interesting practices in use on the properties visited and indicating that progress in modernization is being made. This detailed information has been forwarded to association headquarters, where it is being reviewed and classified. There does not appear to be a sufficient volume of data to justify at this time the publication of a supplement to the "Handbook of Modern Methods and Practices." The committee therefore has decided to hold the material at association headquarters, where valuable use can be made of it by the association's bureau of information and service. Should the work of this committee be continued at some future time, the information will be available for publication if found desirable.

Improved Conditions Found on Properties Visited

Although the competition from the private automobile continues to be a major problem of the industry, this year's survey indicates that electric railway companies have a keener appreciation of the methods which must be employed to regain the traffic which has been diverted from the public transportation systems. The motor bus, though still a competitor in some places, does not present the serious problem that it did in the past. This is due largely to the fact that electric railway companies are steadily making increased use of motor buses to supplement and round out their own service. A lack of proper regulation of interstate motor bus carriers has caused serious competition in some districts. This condition has been recognized by the Interstate Commerce Commission, with the result that a series of hearings have been held for the purpose of determining what legislation should be recommended for enactment by Congress to provide reasonable and adequate regulations.

R. F. CARBUTT
Chairman

Reports from the various districts indicate that those companies that have purchased new equipment recently are beginning to reap the benefits in increased patronage revenues and improved public relations. Many of the properties visited are contemplating the purchase of new rolling stock and are carefully studying the latest developments in car design with a view to making their equipment more attractive and comfortable. On some properties where capital has not been available for the purchase of new equipment, extensive rehabilitation of old equipment has been undertaken, with the result that there is general improvement in the appearance of rolling stock throughout the industry.

Reports indicate that there is a keen realization on the part of managements that transportation can and must be sold, which is evidenced by the inauguration of commercial departments and the adoption of merchandising practices. Individual reports indicate the development of many merchandising methods which have been found effective in attracting riders and increasing revenues. Good service with modern, attractive equipment forms the basis for effective publicity and advertising to bring about better public relations. The reports made by members indicate that those companies which have modernized their methods and improved the service had not only reaped the benefits in better public relations, but had laid the foundation for increased business and adequate returns on the investment.

Operating Economies Not Neglected

On practically every property visited there was evidence of improved operating and maintenance methods designed to reduce operating costs. The use of modern labor-saving machinery is becoming more extensive in all departments and more attention is being paid to the development of efficient means for handling material and routing work through shops. Naturally, new equipment has fewer failures in service, so that the volume of maintenance work required on it is less than on the older equipment it replaced. The more modern cars also are better designed for accessibility of parts requiring inspection and maintenance. Power saving through the use of light-weight equipment, and labor-saving by the use of cars designed for operation by either one or two men is increasing throughout the industry.

All companies visited have been giving especial attention to accident prevention work, with the result that during the year there has been a substantial reduction in the number of electric railway accidents of all classes, even though vehicular traffic has greatly increased. This effective work is being accomplished through greater co-operation on the part of civic authorities.

J. K. PUNDERFORD
First District

W. H. BOYCE
Second District

SAMUEL RIDDLE
Third District

L. M. BROWN
Fourth District

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D. W. SNYDER, JR.
Fifth District

W. H. BURKE
Sixth District

D. W. PONTIUS
Seventh District

A. LE ROY HODGES
New York State

Surveys in a number of cities which have been reported by members of the committee show that a great deal of traffic congestion is due to the unnecessary parking of automobiles on business streets. These reports indicate that more effort should be concentrated on the elimination of parking on main streets where street cars operate. In those cities where parking has been controlled, the cars have been speeded up materially, thus aiding the large mass of people using public transportation facilities to travel more quickly.

FREIGHT BUSINESS INCREASING

Reports from the central territory record substantial progress in building up freight business through improved schedules, better equipment and intensive solicitation. In some instances pick-up and delivery systems are being experimented with, but it is yet too early to report definite results from this form of service. Plans looking toward further development of freight business are under consideration by practically all interurban companies in the central territory and it is believed that this business will be the means of materially improving their earnings.

The foregoing outlines briefly the activities of the committee and the observations of the regional directors, which are given in greater detail following the report. The spirit of optimism which was noted last year is even stronger this year. Many companies find revenues increasing and although the percentage increase is small in most cases, it is, nevertheless, gratifying. The committee believes that the original purposes for which it was organized have largely been accomplished and that, therefore, no useful purpose will be served by continuing the committee activities during the coming year. It may be, however, that after a suspension of this work for a year or two it will be found advisable to resume it.

The committee, therefore, recommend that for the coming year, at least, its activities be suspended. It stated that it believes that much good comes from the interchange of views on managerial and operating problems and, therefore, recommends and urges the practice of sending certain employees, especially the department heads, on frequent trips to various railways, that they may observe the methods used on other properties and

D. E. BLAIR
Canada

discuss their problems with others engaged in the same branch of the business.

The report was signed by Regional Directors J. K. Punderford, W. H. Boyce, Samuel Riddle, L. M. Brown, D. W. Snyder, Jr., W. H. Burke, D. W. Pontius, A. L. Hodges, D. E. Blair, and Members A. J. Boardman, J. B. Crawford, E. J. Dickson, F. D. Gordon, H. H. Norris, L. D. Pellissier, Alfred Sweeney, H. R. Whitney, C. F. Crane, S. E. Emmons, D. J. Locke, A. C. Spurr, J. E. Wayne, R. J. Lockwood, G. I. Plummer, G. B. Treat, V. W. Berry, F. L. Butler, Stuart Cooper, E. W. Ford, J. P. Ingle, G. H. Harris, W. V. Hill, W. H. Lines, E. H. Maggard, S. E. Mason, E. A. West, L. J. DeLamarter, J. F. Johnson, W. S. Rodger, R. R. Smith, H. E. Gough, R. R. Hadsell, J. N. Jones, R. E. McDougall, H. C. Stanton, Judson Zimmer, J. S. Hyatt, R. H. Pinkley, C. J. Griffith, W. W. Holden, S. B. Irelan, F. D. Burke, D. W. Harvey, W. G. Murrin, J. E. Watkins, Claude L. Van Auken, Morris Buck, G. C. Hecker, secretary; R. B. Stearns, vice-chairman, and R. F. Carbutt, chairman.

Education

ACCOMPLISHMENTS of the committee on education differ somewhat from other committee reports in that the principal work done by the committee has been presented to the industry from time to time during the year. This committee is not only the central clearing house for all educational activities, but it has promulgated definite plans, many of which have been put into practice by many companies during the course of the year.

The report of this committee, therefore, is more a review or summary of accomplishments than the development of any specific problems and the presentation of the conclusions reached.

In its report the committee states that the outstanding feature of the work has been the working co-operation with the committee on management and operation in promulgating educational programs. Specifically, the work of the committee has been built around the foremen's conference, this feature of utility education having been extensively developed on the Boston Elevated.

Two demonstrations have been given during the year. These were actual conferences conducted by foremen, under the guidance and leadership of H. H. Norris, educational adviser of the Boston Elevated. The first conference was given last fall in Boston before the New England Railroad Club, meeting coincidentally with the committee on education. The second demonstration was given in Indianapolis at the meeting of the committee on management and operation in January of this year. It is also planned to have a demonstration at the Cleveland convention. The idea back of these demonstrations is to carry specifically the idea of how to conduct such a conference and at the same time to indicate the value that can be derived from such meetings.

During the year the committee has prepared and issued four booklets on "Industrial Education on Electric Railways," "Starting an Educational Program," "How to Conduct Foreman Conferences," "How to Conduct Group Conferences." The text of each of these booklets is given in the appendices Nos. 1 to 4 inclusive of the committee report.

The report further states that the committee has concentrated this year on general plans for a series of conferences but not on the details of one type of conference.

Among the courses on the subject of economics has been one prepared by the Pennsylvania State College which was extensively used by properties in Pennsylvania. While the committee is not prepared to recommend the adoption of this or any other course on economics, it considers this fact of sufficient importance to include it in its report as a matter of information to

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the industry. The Pennsylvania State College has also in preparation a course for trainmen, the text of which is to be edited by Daniel Durie. It is expected that copies will soon be in readiness.

The report concludes by stating that the best results will be secured on any property by careful selection of the type or types of educational work to be done and by attempting only as much at a time as promises to be useful. The report further recommends that the committee be continued next year as there is a growing interest in foreman conferences, interest in which can be maintained, to the end that the results may be capitalized for the benefit of the industry.

EDWARD DANA
Chairman

The report was signed by H. O. Allison, G. B. Anderson, V. W. Berry, H. Bigelow, J. A. Dewhurst, B. W. Duncan, W. J. Edmunds, J. A. Greenland, C. J. Griffith, J. S. Hyatt, M. B. Lambert, R. J. Lockwood, M. McCants, H. H. Norris, A. B. Paterson, Samuel Riddle, A. J. Rowland, J. V. Sullivan, S. L. Vaughan, E. M. Walker and Edward Dana, chairman.

Insurance

THE work this year was confined to the collection of the experience of the industry and a study of it. Both members and non-members were reached, and replies were received from companies representing two-thirds of the capitalization invested in electric railways in the country. In the table on fire insurance experience in 1925 and 1924, included in the report, the companies are divided into two classes. Class I includes those companies which allocate their insurance according to the type of property covered; Class II, those companies reporting only total insurance carried. Only 17 of the companies reporting carried insurance in Mutuals during 1925 and 1924. In 1925 the amount of insurance so carried by these seventeen companies was $31,535,366, the premium $32,132; the rate per $100, $0.102; the amount recovered $4,856; and the ratio of amount recovered to premium 15.11 per cent.

MOTOR BUS INSURANCE

Of the 304 companies replying to the questionnaire, 114 operated motor buses in 1925, and of these 74 gave information about the bus insurance carried by them. All but three carried fire insurance and 53 carried liability insurance in addition. Property damage was carried by 28 and collision insurance by five.

The amount of the fire insurance carried by the 61 companies reporting both amount and premium was $6,435,871 and their average rate was 60.5 cents per $100. In 1924 the average rate for the 33 companies reporting both amount and premium was 66.4 cents per $100. As the rate paid on the other classes of insurance was on all sorts of bases, such as a flat rate per unit of equipment, rate per mile and percentage of gross earnings, the average rate could not fairly be computed.

Sixty-four companies reported carrying group insurance to cover accidents, deaths, etc., of their employees, and the report gives details of each case. Under the head "Unusual Insurance," the following were reported as in force by individual companies: (1) Use and occupancy insurance on carhouses and shops; (2) riot, strike and civil commotion insurance; (3) insurance on merchandise, freight and baggage when on cars, platforms or company's right-of-way; (4) catastrophe accident insurance. Brief descriptions of unusual fire prevention methods are also given in the report.

P. E. WILSON
Chairman

In conclusion, the committee points out that the newness of the bus has prevented standardization of its insurance treatment, but the opinion is expressed that the rates for fire insurance for buses, on the average, are excessive.

The report was signed by O. H. Bernd, G. H. Bourne, C. E. Brown, N. H. Daniels, F. M. Hamilton, A. D. Knox, J. H. Moran, F. J. Petura, B. L. Tomes and P. E. Wilson, chairman.

THE officials of the A.E.R.A. and the editors of the journals devoted to the upbuilding of the industry are in an infinitely better position to analyze and demonstrate facts regarding our problems than any small group of men whose activities are localized in a comparatively insignificant part of the whole industry. It seems to be incontrovertible that the answer to the fundamentals underlying our local problems must come from men whose vision embraces the whole field. We as local men should supply them freely with whatever pertinent information we may have for the purpose of bringing out in a scientific way all of the available facts regarding cause and effect.

—THOMAS FITZGERALD.

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Engineering Committees Make Progress

Through Numerous Vital Reports, Knowledge Is Advanced in the Departments of Way and Structures Equipment and Power

AS IN the past, the work of the Engineering Association during this last year is represented largely by the work of its committees. The reports this year are of great interest, and the discussions at the convention centered around them. Not all the technical problems being studied by the various committees have yet been solved, but conclusive evidence of progress may be seen. Good reason exists for hoping that continued work along the lines now being followed will result in important accomplishments. The reports abstracted below are not only statements of what the committees have done, but in many cases they are permanent contributions to the fund of literature on these subjects.

C. R. HARTE
President Engineering Association

Way and Structures

FUNCTIONING this year for the first time under a new plan, the way and structures committee held no meetings, but discussed by correspondence all matters referred to it and made its decisions by letter ballot. It was not thought necessary to include in the general report of this committee the recommendations embodied in the reports of the special committees. Exceptions were made in the case of those matters not handled directly under the auspices of the A.E.R.A.

The way and structures committee approved the reports of the Division of Simplified Practice, Department of Commerce, on the conference of shovel manufacturers limiting the number of grades to three instead of four. In the case of the report under the same auspices on steel spiral rods, the conclusion was reached that three of the seven sizes now used as cores for reinforced cement columns could be eliminated.

H. H. GEORGE
Chairman

Specifications for railroad cross and switch ties were approved as recommended at a joint conference with the American Engineering Standards Committee and the American Railway Engineering Association. Three designs for 7-in. plain girder rail were tentatively adopted as American standard as the result of the work of the A.E.S.C. sectional committeee.

Progress reports only were submitted to the way and structures committee by special committee No. 2 on standardization of switch tongues and hard centers for special trackwork, special committee No. 3 on welded rail joints and special committee No. 6 on arc welding processes and repairs to rails and manganese steel. Special committee No. 7 on substitute ties was discontinued by action of the executive committee on Jan. 27, 1926, and therefore made no report.

The report was signed by C. A. Alden, E. B. Entwisle, W. G. Hulbert, E. J. McIlraith, J. R. McKay, H. F. Merker, C. A. Smith, A. T. Spencer, H. M. Steward, W. W. Wysor, E. M. T. Ryder and H. H. George, chairman.

Steam and Electric Railway Crossings

A DESIGN for manganese steel insert crossings for angles below 45 deg. to 30 deg. inclusive was recommended for adoption by way and structures special committee No. 5 on design of steam and electric railway crossings. With the addition of this design to those previously adopted, the series of designs will comprise the following:

Solid manganese steel crossings, angles 90 deg. to 60 deg. inclusive.

Solid manganese steel crossings, angles below 60 deg. to 40 deg. inclusive.

Bolted rail crossings, angles 90 deg. to 50 deg. inclusive.

Bolted rail crossings, angles below 50 deg. to 30 deg. inclusive.

Manganese steel insert crossings, angles below 45 deg. to 30 deg. inclusive.

The committee concurs in the recommendation of the A.R.E.A. track committee that crossings of steam railroad over electric railway below 30 deg. of angle, particularly for narrow treads and shallow flanges of the electric railway car equipment, should be avoided. It further shares in the general opinion that the insert type of crossings does not lend itself well for angles above 45 deg. and would not present any practical or economic advantages over the solid type in the higher angles.

In the opinion of the committee, after the adoption of the design herewith submitted, the series of recommended designs for crossings of steam railroad over electric railway will adequately cover the requirements under various conditions of traffic where electric railways cross steam railroad tracks laid with standard tee-rail. Recommendation is made that no further designs for other types be considered at this time and that the committee be discharged.

The report was signed by J. U. Bragg, James Budd, E. B. Entwisle, M. W. Johnston, E. P. Roundey, and V. Angerer, *chairman.

Buildings for Maintenance, Storage and Operation of Buses

WHILE way and structures special committee No. 9 was assigned two subjects—(1) design of buildings for maintenance, storage and operation of buses, and (2) design of joint railway and bus terminals—attention was concentrated largely on the first of these.

In garage design the salient points which the committee felt should be emphasized are:

1. Washing facilities.
2. Overhaul and repair pit facilities.
3. Lighting, heating and ventilating systems.
4. Fire insurance and protection requirements.

*Deceased May 5, 1926.

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It is desirable that there be a decentralization of washing facilities. It should be possible to wash and clean a bus at whatever point in the garage the same may be stored. Practically all recently constructed garages embody this feature, retaining at the same time the central washing plant.

Pits are used almost universally except where prohibited by city or state laws. In such places, racks or hoists serve in their place. Overhaul and repair pits should be heated, lighted, ventilated and drained so as to assure comfort and safety to workmen. It is desirable that pits be communicating when arranged in batteries. This is possible through connecting tunnels or by open end pits. An excellent illustration of an open end pit is to be found in the February, 1926, issue of *Bus Transportation*, page 102, the report states.

Any design should afford a maximum amount of light. Artificial illumination is costly. Side windows should extend to the floor as far as possible to light the under side of buses. Lights in pits should be equipped with vapor-proof globes.

J. R. McKAY
Chairman

Next to light in importance of design is ventilation. Gas and carbon monoxide vapors affect efficiency of workers. However, their removal because of fire hazard is equally important. While large side windows with ventilators assist in their removal, there should be forced draft and roof exhaust sufficiently large to care for ventilation aside from any windows inasmuch as in inclement weather such means are rendered useless. It is also very essential to provide pit ventilation.

There are many types of heating and ventilating systems. The type most in use for heating is the low pressure vacuum system with direct radiation. Unit type heaters are also being more and more widely used. Hot air systems in which heat is distributed through underground and overhead ducts by a blower fan are also in use. There may be some objection to these systems due to the fact that air, which is recirculated, may be gas charged and thus dangerous from the standpoint of health as well as fire risk.

The tendency in design has been to increase floor areas until there are now in existence garages of almost gigantic proportions. While it is true that lack of floor space is costly, it is equally true that insurance rates covering large areas are bound to rise to uneconomical limits due to increased fire hazards. The committee therefore feels that it should at least sound a note of warning to the industry to the end that floor areas shall be kept as small as possible and still permit efficient operation. In any event large areas should be subdivided with walls separating various operations, such as forge, inspection, battery, tire vulcanizing, etc. Gas pockets should be well drained and, as far as possible, fire hazard reduced to a minimum.

Buses, because of the fine interior finish, draperies and uphostering, gasoline, oils and greases, create serious fire risks. It is very probable, the report states, that the National Fire Protective Association will formulate rules and regulations governing points in the design of bus storage, bus terminals or bus operating houses and in this event there will be surcharges on insurance rates for buildings designed contrary to such requirements.

Sprinkler systems are not designed for large areas and have in certain instances actually failed to work at a point of immediate need. Ten sprinkler heads delivering twenty or more gallons per minute should handle an ordinary fire. When more than ten heads have been called into play, it has been a serious fire, in practically every instance with a high loss. Records of the National Fire Protective Association substantiate this fact. Sprinkler systems will not materially lessen insurance rates for very large areas.

Storage of gasoline as required by code — 30 ft. from any structure and underground—offers no serious fire hazard and from an insurance standpoint is not of such grave importance. In many instances city and state ordinances control the quantity which may be stored, also the manner of control, whether remote or otherwise.

As an addenda to the report of the committee is given a report made by W. W. Wise of a detailed inspection, from the standpoint of fire risks and prevention, of the bus garage of the Fifth Avenue Coach Company, New York.

Comprehensive descriptions are given of the Fifteenth and Cumberland Streets garage of the Philadelphia Rural Transit Company, the 41st and Haverford Avenue garage of the same company, the Union Square garage of the Boston Elevated Railway, and the Waukegan garage of the Chicago, North Shore & Milwaukee Railroad.

Concerning the design of joint railway and bus terminals, the committee does not find any new developments save that by the Philadelphia Rapid Transit Company of parking areas for motorists. At the 69th Street and Bridge Street terminals and also at 31st and Market Street this company has provided parking space where motorists may park their cars and use the suburban and elevated systems as a rapid means of transit. The fee charged for parking includes a round trip fare to the city.

Recommendations made by the committee are:

(1) That the study of the design of buildings for maintenance, storage and operation of buses be continued; (2) that a study be made of the effect of design upon fire insurance rates in co-operation with other interested organizations, and (3) that the study of design of joint railway and bus terminals be assigned to a separate committee.

The report was signed by A. J. Blackburn, G. H. Halderman, L. F. Parlette, W. W. Wise, Judson Zimmer, J. R. McKay, chairman.

Surface Hardening of Rails

PROGRESS of this committee in 1926 was confined to the tracing of wear tests and the mileage and production of treated rail. The committee's information is that in American equipment for treating rails by the Sandberg sorbitic process has been installed at only one mill. Because of the time taken to apply the treatment to each rail, it is difficult to arrange rollings so as to fill large contracts. Shipments of sorbitic rail from this plant in 1923 were 4,279 tons, in 1924, 4,968 tons, and in 1925, 2,772 tons.

A. T. SPENCER
Chairman

The committee believes that the decrease in tonnage shipped in 1925 has been due to the difficulty in arranging rollings rather than to a loss of confidence on the part of the industry in the wearing qualities of the treated rail.

No additional mileage of track has been treated on this continent with the *In-situ* process since the applications on the system of the Toronto Transportation Commission in Toronto in 1922 and 1923. During the past year it has been found that the scalings referred to in previous reports have damaged the rail in certain sections to such an extent that it has been replaced after some three years of service. These defects have in practically all cases occurred where high-pressure blowpipes were used in heating the rail and where the rail itself was well worn after eight to ten years service. As noted in 1924 and 1925 reports the lower-pressure blowpipes were used chiefly on rail which had less than one year of service, and it is on these sections that comparative wear data will eventually be most reliable.

Information received from foreign systems shows the mileage treated or untreated up to February, 1926, to include original orders of 74.48 miles single track and repeat orders of 220.36

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miles, single track, a total of 294.84 miles. The committee was also informed that the Ministry of Transport in England has looked favorably upon the *In-situ* treatment to the extent that it is granting authority to tramways to raise loans for this purpose.

The following table has been prepared from information submitted, showing comparative wear of treated and untreated rail in England:

System	Period of Treatment Yr.	Mo.	Cars Carried	Wear of Rails, In. Untreated	Treated
West Bromwick.	2	3	Unknown	0.118	0.038
Birkenhead.....	4	8	379,800	0.081	0.042
Blackpool.....	2	4	220,700	0.042	0.019
South Shields...	2	11	382,500	0.050	0.022
Wallasy.....	3	3	828,600	0.044	0.025
Wallasy.....	2	9	242,550	0.042	0.021
Swansea.....		11	162,000	0.031	0.015
Met. Electric...	3	1	145,660	0.034	0.020
Met. Electric...	3	1	289,615	0.049	0.024
Paris.....	3	6	1,050,000	0.105	0.504

Rail profiles taken in Toronto by the committee were inconclusive but indicate that the hardened rail has shown considerably less wear than the unhardened rail under similar conditions of traffic. The committee is convinced that the Toronto experiment should run over a longer period before a definite pronouncement should be made regarding the merits of the *In-situ* process under American conditions.

The recommendations of the committee were that this subject be discontinued for one year pending development of further data.

The report was signed by C. L. Hawkins, B. P. Legare and A. T. Spencer, chairman.

Wood Preservation

ECONOMIES attained by the use of treated timber were discussed at considerable length in the report of the committee on wood preservation. It is said that in view of the overwhelming evidence from the steam railroads and larger communication companies it is nothing short of gross negligence on the part of electric railways not to fall in line to effect economies which they badly need, and to do their share in connection with national conservation of timber.

Illustrated descriptions with tables of characteristic applications of wood preservation are grouped under the captions of Ties, Poles, Bridges and Culverts, Piling, Building Material, Floors and Paving, Posts, Cars, and Miscellaneous Uses.

Information showing the extent of the use of treated timber on electric railway properties is given in a number of tables compiled from replies to a short questionnaire sent to about 140 properties. About 60 per cent of the properties replied, the greater number of which showed treated timber used in various quantities. Their figures show unquestionably that greater life is being received as the result of treating, but the period of use is too short to make definite comparisons. From a small number of replies of a selected list of properties, the committee feels that the criticism is sustained that the electric railways as a whole are not doing their part in effecting economies along the line of wood preservation.

A few outstanding examples of timber treatment are mentioned. In 1923 the steam railroads used 210 treated ties per mile, whereas the electric railways used only 13. The life of poles can be increased from two to three times by treating. During the unusual sleet storm of December, 1924, covering a strip about 100 miles wide from

A. P. WAY
Chairman

southern Michigan to Texas about 60,000 untreated poles went down, whereas less than 100 creosoted yellow pine poles were lost. When treated, posts will last two to four times as long as untreated, and less durable timber can be used. Parts of cars that decay in two to eight years can have their life tripled when treated.

Cost per tie per year, including pavement replacement, on electric railways was found by a questionnaire to be as follows:

	Untreated	Treated
Bituminous macadam paving...	$0.59	$0.57
Asphalt paving.....	1.08	0.90
Granite block paving.....	1.64	1.38
Open track.....	0.37	0.28

Savings on bridge timber were found to be $0.49 per year per thousand board-feet. On 30-ft. poles the saving per pole per year is $0.06, and on cross-arms $0.02 per year.

Material in the 1923 edition of the Engineering Manual under the subject of Wood Preservation, although revised and added to by annual supplements, was compiled a number of years ago, and in a number of instances does not apply today. It has been thought for some time that the specifications should be regrouped in a more logical order for easy reference and revised in a number of cases. The committee submitted recommendations for changes which it is felt will meet such need.

The report discusses at considerable length the development of methods of treating poles in place. Ways to increase the life of timber by means other than the application of preservatives were studied and various suggestions to this end made in the report.

Study of forms for keeping continuous records of treated timber has not been brought to the status which the committee set out to accomplish, principally on account of being unable to collect sufficient forms in use by operating companies upon which worthwhile recommendations could be made. Two forms of record cards are submitted for information, one for ties and structural timber and the other for poles. On one side, information of kind and method is to be filled out by the persons doing the treating and then returned to the purchaser. On the other side space is provided to show date and location of installation and periodical service record. A plan for marking poles is also submitted.

Wood preservatives other than creosote and allied products and zinc chloride were considered thoroughly last year and are reported on very briefly this year, because no new preservatives have been put on the market. Mention is made of the fact that some companies use water soluble salts with sodium fluoride base for structural timber, where creosote would be objectionable. At least one company is using poles so treated in city districts where poles are to be painted. Such preservatives have not, however, been used in this country long enough to determine definite results.

Four appendices are submitted with the report. Of these, three give results of various installations of treated timber, while the fourth is a glossary of principal terms pertaining to the subject of wood preservation.

The report was signed by E. H. Berry, M. J. Curtin, T. H. David, J. L. Fritsch, W. H. Fulweiler, E. F. Hartman, W. L. Harwood, L. P. Scanlan, C. A. Smith, W. F. Graves, and A. P. Way, chairman.

Rail Corrugation

ORGANIZATION of its work so that a volume of important data covering an extended period of time might be accumulated has been the principal accomplishment of the committee during the past year. At present, nineteen electric railways are gathering data on forms which were recommended by the committee last year. Each of these companies has purchased an instrument which for want of a better name is called the "Corrugraph." With these instruments they are now securing graphs of corrugation on selected sections of track.

Dimensions of some of the corrugation inspected by the committee on its trip during the summer of 1925 are presented in an appendix to the report. The wave lengths listed are irregular, ranging from 1½ to 10 in., lengths between 3 and 4 in. being the most common.

In the belief that the nature and magnitude of the forces or loads to which the rail is subjected have much to do with corrugation, a sub-committee on vibration was appointed. Preliminary tests made on track at Pittsburgh indicate a promising field for future work. More extended vibration tests and studies will be made during the coming year. Wave lengths for several different car speeds and frequencies of vibration have been computed and are shown in another appendix.

Obviously there is a close relation between track structure, vibrations and noise. Some tests of track noises made at Toledo by H. S. Williams of the committee on reduction of noise in car operation were witnessed by representatives of the corrugation committee.

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These tests showed that the noise and therefore the magnitude and duration of track vibration may be radically different with different types of track structure. More specific data relative to these tests are presented in the report of the committee on noise reduction.

Figures of a number of hardness tests are presented in an appendix. Economic data relative to corrugation have been included in the same place.

Some consideration has been given by the committee to corrugation in other forms of engineering structures, particularly streets and highways. In these structures corrugation phenomena have come prominently to the attention of engineers only since the use of the automobile has become widespread. As with the electric railway, a radical change in the type of rolling stock brought with it troubles that were previously unknown. Because highway structures are ordinarily not so complex as railway track structures, and because the corrugations are larger and

W. W. WYSOR
Chairman

develop very rapidly, the difficulties in the way of studying them are not so great as in the case of steel rails.

Corrugation in highway structures seems to be limited largely to gravel roads and asphalt pavements, although it is sometimes found on tar-bound stone roads. In asphalt paving the displacement of the surface is ordinarily assumed to be due to shoving. This phenomenon was familiar to engineers before the advent of the automobile. To minimize shoving in modern pavements the tendency seems to be to use the harder grades of asphalt and a relatively lower percentage of asphalt than was used some years ago.

The bureau of public roads of the United States Department of Agriculture has made an extensive study over hundreds of miles of highways in many states. From its report it appears that corrugations do not form if the traffic is only 200 to 300 automobiles per day. With traffic above 400 automobiles per day, corrugations may give serious trouble, and where the rate of increase of traffic is well known, officials can predict almost to a day when corrugation will begin to develop.

Two methods of formation are described; first by the kick back of surface materials arising from the spin of one or both of the rear wheels of an automobile as they descend after a bounce over some obstacle or depression, and second, whenever the clay bond in a gravel road is sufficient in quantity and has sufficient moisture to give the aggregate plasticity, series of corrugation develop from the squeezing of the plastic mass. While rail steel and gravel mixed with clay binder are not similar, it is noted that the principle involved in the second cause given for gravel road corrugation has some bearing in the case of rail corrugation.

In conclusion, the report says that the whole problem of rail corrugation causes and elimination is a complex and difficult one and the committee believes that it will be necessary to spend some years in accumulating data and in study of different types of track and rolling stock construction before it will be possible to draw a definite conclusion as to the best manner of minimizing this trouble. In addition to the work of collecting data which is now under way, the committee believes that the work on rail, track and equipment vibration tests and studies should be carried on in an earnest and systematic manner, and that laboratory studies, including chemical, physical and photo-micrographic tests should be made on selected specimens of corrugated and non-corrugated sections of rail.

The report is signed by E. B. Entwisle, E. L. Lockman, R. B. Fehr, T. J. Lavan, C. R. Kinnear, H. Jackson Tippet, C. H. Clark, A. M. Hardini, C. L. Van Auken, H. Fort Flowers, J. Ormondroyd, H. S. Williams, D. D. Ewing and W. W. Wysor, chairman.

Equipment

EXISTING standards and specifications referring to equipment which are included in the Manual and in the 1924 and 1925 Supplements were reviewed and revisions and additions were recommended in the following items:

E1-25 — Design of Brake Shoes, Brake Shoe Heads, Brake Shoe Keys and Gages.

E2-25—Standard Journal Boxes and Contained Parts.

E12-25—Standard Gages for Journal Bearings and Wedges.

E3-25—Design of Axles for Electric Railway Motors. L

E211-24—Rules for Inspection of Car Axles.

E103-25 — Specifications for Case-Hardened Forged Steel Gears.

E104-25—Specifications for Quenched and Tempered Forged Carbon Steel Gears.

E105-23—Specifications for Case-Hardened Forged Steel Pinions.

E106-23—Specifications for Quenched and Tempered Forged Carbon Steel Pinions.

E208-24—Miscellaneous Method and Practice on Lubrication of Car Equipment.

A progress report was presented on foundation and hand-brake rigging which included air-brake installation. Portions of the miscellaneous methods and practice designated as E212-25 were arranged as a recommended standard.

A progress report was included on car painting which included a study of cars painted by various methods. A large number of cars were inspected by the committee during the year, particularly at Detroit and Pittsburgh, and notes were made of the condition of cars after they had been in service for a period of years. The report gives conclusions reached by the committee from these studies, which were that all undercoating should be of the same general color as the finished coat in order that scratches or scrapes will not appear unsightly. This also makes the finishing coat cover more easily. All metal on cars when cleaned off for the application of new paint should have all rust removed so that new material will take a firm hold. Sand blasting was recommended as the best method of cleaning of material for the application of paint.

The color and varnish system was recommended for application to wooden interior finish of cars using spar varnish for window sash, window sills, arm rests and seats. Enamel and cellulose lacquer were recommended for application to the steel interior finish of cars such as seat framing, stanchions and

P. V. C. SEE
Chairman

wainscoting. The enamel system was recommended particularly for application to ceilings and head linings.

The color and varnish system and enamel system were recommended for application to the body of wooden or wood and steel cars. The use of acid cleaners was considered inadvisable.

The three principal systems which include color and varnish, enamel and cellulose lacquer were recommended for application to the body of steel cars and a mixture of lead and oil or a long oil enamel was recommended for application to canvas roofs.

In connection with the study of motor coach design and maintenance methods, this year's committee was unable to hold any joint meetings with the Society of Automotive Engineers as that society had no meeting of its standing committee. A study was made of various maintenance inspection methods and a sample inspection system was included in the report. The committee recommended that the subject of developing a standard bus design be discontinued for the present, but that a committee work in conjunction with the standards committee of the Society of Automotive Engineers to take up for standardization of design, location or operation such items as operation of gear shift levers, location of hand brake, question as to whether hand

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brake should be pushed or pulled to operation, distance of foot pedals from driver's seat, location of starter buttons, relative position of spark and gas levers and the location of horn buttons.

The subject of gearing was again studied this year, but the work was limited to consideration of tooth forms and to providing limit of wear gages. These were given in the appendix of the report and the committee recommended that the gages for determining the scrapping point of gears and pinions be adopted as a recommended standard.

The committee took up with the boiler code committee of the American Society of Mechanical Engineers certain points in the boiler code which were felt to conflict with best electric railway practice. The secretary of the boiler code committee advised that certain matters would be considered for revision. These include a lifting device for safety valves and the requirement of daily testing of safety valves.

A study of the standardization of car equipment and car construction with special reference to appearance, comfort and convenience of passengers, together with a study of car lighting, formed a large part of the report. The principal item was that of easy-riding cars. To produce this requires smooth track, properly designed springs, freedom of nosing and body jars. The importance of freedom from vibration may be appreciated when attention is called to tests conducted by the Bureau of Standards, which proved that vibration of an amplitude of 1,000th in. might be very uncomfortable to a passenger.

There is a tendency on the part of equipment engineers to specify a seat height of 17 in. and 17½ in., instead of the old standard of 19 in. This lower seat may have been influenced by the low automobile seats, but it is generally admitted that the lower seat is the more comfortable.

Seat spacing is also an item that requires attention, it being assumed that every one agrees that the maximum spacing possible will produce the greatest comfort. This spacing usually must conform to the body post centers, which on the standard car is 29¾ in. If thick seat backs and backs with greater incline than customary are used this will require greater allowance for seat spacing to produce equal comfort. It is possible that in this case as great a seat spacing as 31 in. will be necessary.

Under the classification of providing convenience for passengers perhaps the most important feature is car speed. The committee felt that no other single feature offers such great possibilities for popularization of service as this one.

Much has been accomplished to speed up the handling of passengers by the use of the door-operating treadle, particularly in one-man cars. This has permitted the use of a rear door which tends to keep the riders from crowding about the forward door. Also where conditions are favorable this door may be opened by a street fare-taker and passengers loaded through it.

Much confusion exists due to the use of front, center and rear-entrance cars. A standardization would correct this, though it is difficult of accomplishment.

Car signs should be given much study. Clearly, the signs should be of high visibility both day and night, and they should be sufficiently explicit to serve as a good guide. The route number is a very valuable adjunct to the sign system if properly worked out and is recommended for city service.

The committee suggests that the car painting scheme should be changed sufficiently to be noticeable to the public at least once every three years. The exterior of steel cars which are painted in light colors can be improved by the use of countersunk rivet heads.

Car interiors may be bettered as to appearance by the removal of unsightly bell cords where used on older cars and the substitution of electric signals.

The committee made a careful study of car lighting and conducted some tests, results of which were given in the appendix of the report.

The report was signed by W. S. Adams, W. C. Bolt, A. L. Broe, W. W. Brown, R. S. Bull, A. T. Clark, R. W. Cost, M. R. Hanna, J. M. Hipple, J. H. Lucas, W. H. McAloney, Joseph C. McCune, J. S. McWhirter, A. D. McWhorter, E. S. Sawtelle, R. B. Smyth, C. W. Squier, J. P. Staples, H. S. Williams, J. M. Yount, Daniel Durie, sponsor, and P. V. C. See, chairman.

American Engineering Standards

AT PRESENT, 32 projects, several of great importance, have been undertaken, according to the report of representatives on the main committee of the American Engineering Standards Committee. Revision of the National Electrical Safety Code is now under way by letter ballot. If accepted this should end the series of arguments and experience hearings on various often conflicting state rules on overhead construction. An electrical advisory committee has been organized. This has great promise, the report states, as a board of arbitration to adjust differences of opinion in the electrical field. The American Electric Railway Association has recognized the value of the work by taking out a second voting membership, R. H. Dalgleish filling this position. The association has been honored by having the main committee vice-chairmanship.

The report was signed by C. R. Harte and R. H. Dalgleish, representatives.

Heavy Electric Traction

OUTSTANDING in the work of this year's committee on heavy electric traction was the study of track and third rail bonds for heavy traction work. This is a new subject so far as this association is concerned. Four subjects were selected by the sub-committee for consideration, namely, a tabulation of present practice, the effect of heat of welded bonds on track rails, development of a standard basis for measurement of bond resistance and preparation of data covering results of tests of current-carrying capacity of bonds.

Information regarding current practice with track rail bonds was obtained from 25 roads, of which nineteen were electrified steam railroads and six were heavy electric lines. Of the 29 installations included nineteen were mechanically applied and the remaining ten heat applied. On third rail bonds thirteen companies, seven of which were electrified steam roads and six heavy electric lines, showed fifteen installations. Eight were mechanically applied and seven heat applied.

The mechanically applied bond is stated to be the oldest type in general use and hence the most widely adopted. It is used in sizes ranging from No. 0 A.W.G. to 500,000 circ.mil, and varying in length from 9 in. to 53.25 in. The pin-expanded terminal predominates, probably because this type can be installed and maintained very easily

H. F. BROWN
Chairman

under traffic and without requiring the use of cumbersome or expensive tool equipment. The advantages claimed for the mechanically applied bond are summed up as follows: Easy to install; wide range in choice of length of bond and flexibility of design to suit rail joint; low labor cost of application and replacement; only small and inexpensive tool equipment required for installation. Its disadvantages are: High first cost; necessity of being designed to fit the rail joints, length being fixed by splice bar and bolt hole spacing; larger capacity than otherwise necessary when long lengths are required; uncertainty of securing and maintaining uniform and low contact resistance.

Heat applied bonds, particularly the welded type, have reached a successful stage of their development only within the past few years, with the consequence that this type is not as yet in sufficiently wide use under heavy traffic conditions to permit drawing definite conclusions as to its comparative merits. The sizes range from No. 0 A.W.G. to 250,000 circ.mil, while their length varies from 7 in. to 15.5 in. Gas weld bonds are being used in 70 per cent of the installations. Advantages claimed for the welded type of bonds are: Low resistance due to its short length and character of contact; use of small capacity bonds, all being 250,000 circ.mil or less; easily inspected; uniformity of design; permanence of contact and consequently permanence of contact resistance providing the weld holds. Its disadvantages are: Skilled operators are required for its installation; special and more or less cumbersome tool equip-

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ment is necessary; bond is exposed to mechanical injury and theft; limited to rail head application.

Comparatively little opportunity exists for standardization of third rail bonding because of the widely differing types of third rail construction.

Effects of heat in welding in changing the structure of rail were considered and references are given to earlier reports. It is hoped to continue the study during the next year.

The development of a standard basis for measurement of rail bond resistance was given attention. A comprehensive set of tables and charts giving resistances of rails with and without bonds is included. Field testing methods, by means of which the actual bond resistance may be obtained as a check on the calculations, or for purposes of ascertaining the excellence of bonds in service, are detailed.

Other subjects considered by the committee were the bibliography of heavy electric traction, branch line electrification and self-propelled cars, articulated train operation and revision of data on electric locomotives, multiple-unit cars and trains. Diagrams of recent articulated trains are given, and a comprehensive tabulation of electric locomotive and multiple-unit train data are included.

The report was signed by A. H. Armstrong, H. W. Cope, A. H. Daus, J. C. Davidson, J. H. Davis, J. V. B. Duer, J. T. Hamilton, E. C. Johnson, Norman Litchfield, J. O. Madison, M. W. Manz, L. S. Wells, A. H. Woollen, C. R. Harte, sponsor; Morris Buck, secretary; J. M. Bosenbury, vice-chairman, and H. F. Brown, chairman.

Noise Reduction

WORK of the committee on reduction of noise in car operation during this year was devoted largely to scientific study and analysis of some of the principal noise producing elements. The report states that it is necessary in order properly to study noises, to set up accurate comparative sound values, and to have a calibrated ear capable of placing a definite value upon sound, one which will register the same value on successive tests, and in which the personal or human equation is entirely eliminated. Acting upon the recommendations of the previous committee, the executive committee made an appropriation of $500 for the purpose of securing such an apparatus.

The practical use of the apparatus is to be able to demonstrate convincingly the relative value of changes made in elements of equipment to reduce the amount of sound generated. For example, it is desired to reduce the inherent noise in a car gear and the suggestion is made to bolt to the gear, pads of various materials to produce this result. In such a case an instrument of this character will tell the value of the proposed change in practice and will allow experimenters to arrive at the best material, shape and method of attachment. Such procedure is vastly better than trying to accomplish the same thing by the sense of hearing, because it has been shown that a man cannot always be depended upon to place the same value on noise; that fatigue, mental and physical condition, etc., influence his judgment and make it untrustworthy.

After considerable study, a device was decided upon which uses a type of transmitter similar to the familiar loud-speaker of radio reception connected through radio amplication equipment to a microammeter. Thus the noise gives a deflection of the needle

H. S. WILLIAMS
Chairman

which is almost directly proportional to the intensity of the sound. A device of this character was not available in the market as a unit, so it was necessary to have the apparatus constructed especially to meet the requirements encountered.

The sound measuring mechanism employed by the committee represents only the first step in the contemplated noise study and attention is directed to the fact that the measurements give the proportionate amplitude of vibration of the noises analyzed. Items of pitch and effect upon the human ear are reserved for future consideration.

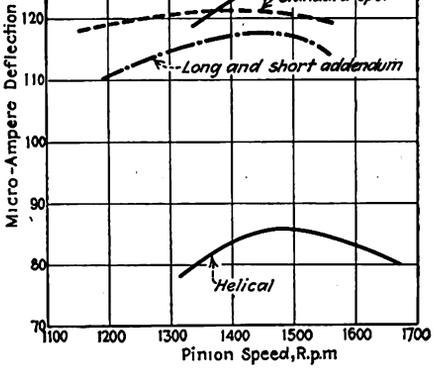
One of the chief sources of noise in car operation is that produced by the gearing. Attention was called in last year's report to the possibilities of noise reduction through higher standards of maintenance by keeping bearings well fitted, and renewing gearing before the teeth are worn to the breaking point and thus decreasing noise due to back-lash. It was one of the aims of the present investigation to prove this point by test, to place a definite comparative noise value upon the standard spur, long and short addendum spur, helical, and standard spur gear with the so-called wisdom tooth pinion and also to determine the value of silencing pads bolted to the gear. Gear noise in cars is combined with a multitude of other noises, one masking the other, so that it is difficult to measure the sound from the gearing on a car under operating conditions. However, it is entirely feasible to set up car gearing in such a way as to eliminate all sound except that produced by the gears and in this manner gearing may be subjected to experimentation and not only its condition as to noise determined but the value of proposed sound improvement evaluated. This committee with the co-operation of the Department of Street Railways of Detroit had the necessary mechanism set up to conduct tests on gears along the lines mentioned.

The first set of tests was run with the object of determining the comparative quietness of standard spur, long and short addendum spur, helical and wisdom tooth gears. Heretofore, this has been a vigorously debated question, but opinions have always been based upon personal opinion, which is never convincing. The committee felt that it would render a real service to the industry if it could settle this question. The necessary equipment is at the committee's command and it only remains to conduct check tests to dispose of this question finally. However, the care exercised in selection of gearing and running of tests was sufficiently painstaking and the results of the tests seem so conclusive that the committee feels warranted in reporting the results of their first experiment.

Briefly summarized, the helical gear shows up best in respect to quietness, followed in order by the long and short addendum spur, the standard spur tooth and the wisdom or drop tooth gearing. Accompanying curves show the results of several tests of gears of the various types taken under as nearly identical conditions as possible.

In order to arrive at as nearly accurate results as possible, gearing of the same manufacture and treatment were measured. These were furnished through the courtesy of the Cincinnati Tool Steel Gear & Pinion Company. Care was exercised to secure gears with accurately cut teeth and with minimum warpage and eccentricity.

In the first set of curves shown the micro-ampere readings are proportional to the volume of sound; that is, the higher the micro-ampere reading, the greater the sound. As the gearing was of the same number of teeth in each case, the pitch of the sound at each



Results of Tests on Gears of Various Types to Determine Relative Quietness—Gears Not Lubricated—Gears Operated on Pitch Line — 14.5 Hp. Transmitted

speed was approximately the same. Consequently the micro-ampere deflection is a true comparison.

Attention is called to the character of the curves shown in that instead of increasing uniformly as the speed throughout the range of the tests they drop off at the higher speeds. This inconsistency may be due to the higher

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frequency vibrations being out of the efficient range of the amplification apparatus. At the time of submission of this report, calibration of the apparatus had not been made, so a definite reason could not be assigned.

Gears Tested with Silencing Pads

Tests were run to determine the value of resilient pads bolted to the gears. The results of these experiments proved beyond doubt the value of a silencing pad. To complete this phase of the work it will be necessary to try out various sizes, shapes and compositions of the cushioning pads.

To show the possibilities of reduction of noise by applying a cushioning medium to the rail in track construction, a series of tests were made by the use of the apparatus previously mentioned. Through the courtesy of P. J. O'Neill, railway engineer Community Traction Company, Toledo, Ohio, means were made available to conduct the test. Two sections of adjoining track were selected in which the structure is nearly identical except that a cushion about the rail is used in one case and not in the other. The tests were conducted between the hours of 1 and 2 a.m. to insure freedom from interfering street noise and to permit the special car which was used to move as desired. In making the tests the car was run at a uniform speed and coasted past the sound pick-up device so as to eliminate as far as possible the noise from the gearing. The results of several tests on each section of track show that the cushioned track is approximately 25 per cent quieter than the same track without the cushion.

Economic Side of Noise Reduction

The necessity for noise reduction extends further than a question of an unpleasant sensation which it is desirable to eliminate in order to make street car rides more salable and to reduce the complaints of residents, although that is the chief consideration which actuates the present movement. There is the economic side which is very important, for noise is occasioned by vibration of the physical structure and that vibration means a destructive force which ultimately will cause a breakdown.

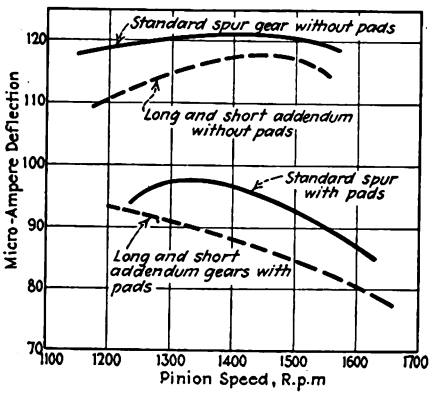
The committee found that the sources of noise in the order of their importance are:

1. Wheel and track vibration caused by wheel impact.
2. Gearing and motor noise due to gear tooth impact.
3. Noise of loose parts which are secondary vibrations due principally to the transmission of wheel impact vibration.

The remedies recommended in principle are:

1. Higher standards of maintenance.
2. Improved design, including cushioning and reduction of unsprung weight.

Much has been written relative to higher maintenance standards and the committee emphasizes this and the importance of discarding gearing with badly worn teeth. The equipment committee this year has recommended a gear discard gage which will do much



Noise Comparison of Standard Spur and Long and Short Addendum Gears with and without Cushion Pads

to help this condition. Bearings should be tightly fitted and renewed before the wear becomes great. Individual fitting of axle bearings is strongly recommended.

In design, attention is called to the principle that any loose part or any part not rigidly supported will vibrate so it becomes necessary to cushion these parts, or brace them rigidly or to isolate the elemental parts by cushions. In some cases vibration may be reduced by so changing parts that their natural vibration periods will be materially different from the frequencies set up by wheel impact or gear vibration. It is possible also in the case of elliptic springs to break up synchronous vibration by throwing the spring seat off the center of the spring, thus making unequal ends.

Brake shoes are prolific sources of noise and there is great need for improvement of this item.

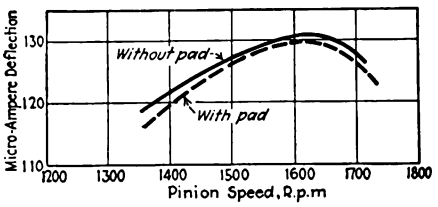
Where possible, gear ratios may be so designed as to give pleasing vibrations rather than the reverse. For example the following gear and pinion ratios combine to form harmonious musical pitches:

Ratio 5:6 produces a minor third.
Ratio 4:5 produces a major third.
Ratio 2:3 produces a perfect fifth.
Ratio 2:1 produces an octave.

Gear cases may become sounding boards due to their large flat surfaces unless means are used to overcome this tendency.

In conclusion the report states that to conquer the noise condition in car operation or at least to bring it to the irreducible minimum, further study, research and analysis will be necessary.

It may be argued that if a noise cannot be reduced sufficiently to detect it or to determine its value by ear its elimination should not be attempted and that scientific study such as is being attempted by this committee is impractical.



Noise Comparison of Wisdom-Tooth Pinion and Standard Spur Gear with and without Pads

Such a contention cannot be well supported, because the ear is too unreliable as a sound measurer, and the ear method is susceptible to too much personal element and is inconclusive. Then, too, this noise problem is composed of so many small elements whose summation makes a disagreeable condition. Neglecting bad maintenance noises which are apparent and need no expert diagnosis, the problem is to cut the sound of all the possible noise-producing elements—a little here, and a little there—and the aggregate will amount to a real accomplishment. The problem is comparable to that of reduction of weight in car design. If it is desired to reduce the weight of a car, say, 5,000 lb. it is patent that this weight cannot be taken out of any one item, but if a little is taken from the wheels and axles, a little from the motors, etc., the sum total will mean a substantial weight reduction. Therefore the committee feels that it is on the right track and that measurement, analysis and experimentation will bring success.

The report is signed by W. S. Adams, H. E. Bean, E. H. Berry, C. Bethel, W. W. Brown, L. J. Davis, M. Guynes, F. L. Hinman, G. H. McKelway and H. S. Williams, chairman.

Wheel-Flange Gages

THE duty of providing necessary wheel gages had previously been assigned to the equipment committee with instructions to co-operate with the way committee. At present the association has standards for a wheel mounting gage and limit of wear gages for the steel wheel contours designated as A, B, C and D. There is no wheel checking gage for these flange contours, however, and no gages have been provided for the two American Railway Association's contours, which were adopted as standards of the American Electric Railway Engineering Association in 1923 and which are shown at present on page 499 of the Manual.

Designating Letters on Drawings Desirable

In making up the drawings of various gages for wheel flange contours the committee found it of particular convenience to have designating letters for each of the wheel contours. At present the letters A, B, C and D, together with various numerical suffixes, are used to designate the association's standard tread and flange contours for steel and chilled iron wheels. The two A.R.A. wheel contours which were adopted as standards of the American Electric Railway Engineering Association in 1923 and which appear on page 499 of the Manual have no designating letters.

To provide designating letters for these two latter contours the committee recommended that the letters E and F be assigned to them; that contour E be used for the contour of chilled iron wheels as standardized by the American Railway Association in 1909 and as adopted by the American Electric Railway Engineering Association in 1923, and that letter F be used to designate the contour for steel and steel-tired wheels as standardized by

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the American Railway Association in 1920 and as adopted by the American Electric Railway Engineering Association in 1923.

NEW GAGE FOR WHEEL MOUNTING

At present the association has a standard wheel mounting gage for steel and chilled iron wheels which appears on page 122 of the 1925 supplement to the Engineering Manual. This design of gage is for mounting wheels with contours A-3, A-3½, B-2½, B-3, C-2½, C-3, D-2½ and D-3 only. There is no wheel mounting gage for the two A.R.A. contours which the committee designated as contours E and F. To provide a wheel mounting gage for these contours the committee recommended the adoption of a new gage. This gage is the same as the standard A.R.A. mounting and check gage as shown in section B, page 42 of the A.R.A. Manual (Mechanical Section) except that the gage is provided with a center point similar to that used in the A.E.R.E.A. standard wheel mounting gage.

This gage is also to be used as a check gage for wheel contours E and F.

The 1925 equipment committee attempted to develop a wheel checking gage that would apply to all wheel contours, but it was found necessary to refer the proposed design back for further revision. The committee this year, therefore, considered this subject and decided to resubmit the gage proposed by the 1925 equipment committee and which appears on page 291 of the 1925 Engineering Proceedings, with all references to contours E and F omitted and with the thickness of the material specified as ⅜-in. spring steel.

The committee considered the subject of limit of wear gages and recommended that the present standard limit of wear gages for the American Electric Railway Engineering Association as adopted in 1916 and revised in 1923 and 1925, and which appear in the 1925 supplement to the Engineering Manual on pages 118 and 119 have the following additions to the captions for Figs. 1 and 2 which appear on page 118:

"Gages as shown are for use with rolled steel wheels only. The same general dimensions apply to gages for use with cast-iron wheels except that the part which projects down the back of the wheel should be cut off in line with the tread face."

The committee also considered it desirable to provide limit of wear gages for determining high and low flanges and such a gage was presented.

The committee considered it desirable to provide standard tapes for measuring the circumference of wheels. The American Railway Association has such a tape which was adopted in 1893 and modified in 1919. This tape was recommended to be used for the two A.R.A. wheel contours which were adopted as standards of the American Electric Railway Engineering Association in 1923 and which appear on page 499 of the Manual.

The committee also considered it desirable to provide a new standard circumference measuring tape for steel and chilled iron wheels with contours A, B, C and D. Investigation showed that such a tape has been in use for a number of years by the various steel companies who manufacture rolled steel wheels to these contours.

The committee recommended that the wheel circumference measuring tape for standard tread and flange contours A, B, C and D of steel and chilled iron wheels, as shown in Fig. 2, be adopted as a recommended standard.

The report was signed by W. S. Adams, C. A. Alden, W. C. Bolt, J. H. Haylow, Hugh Savage and C. W. Squier, chairman.

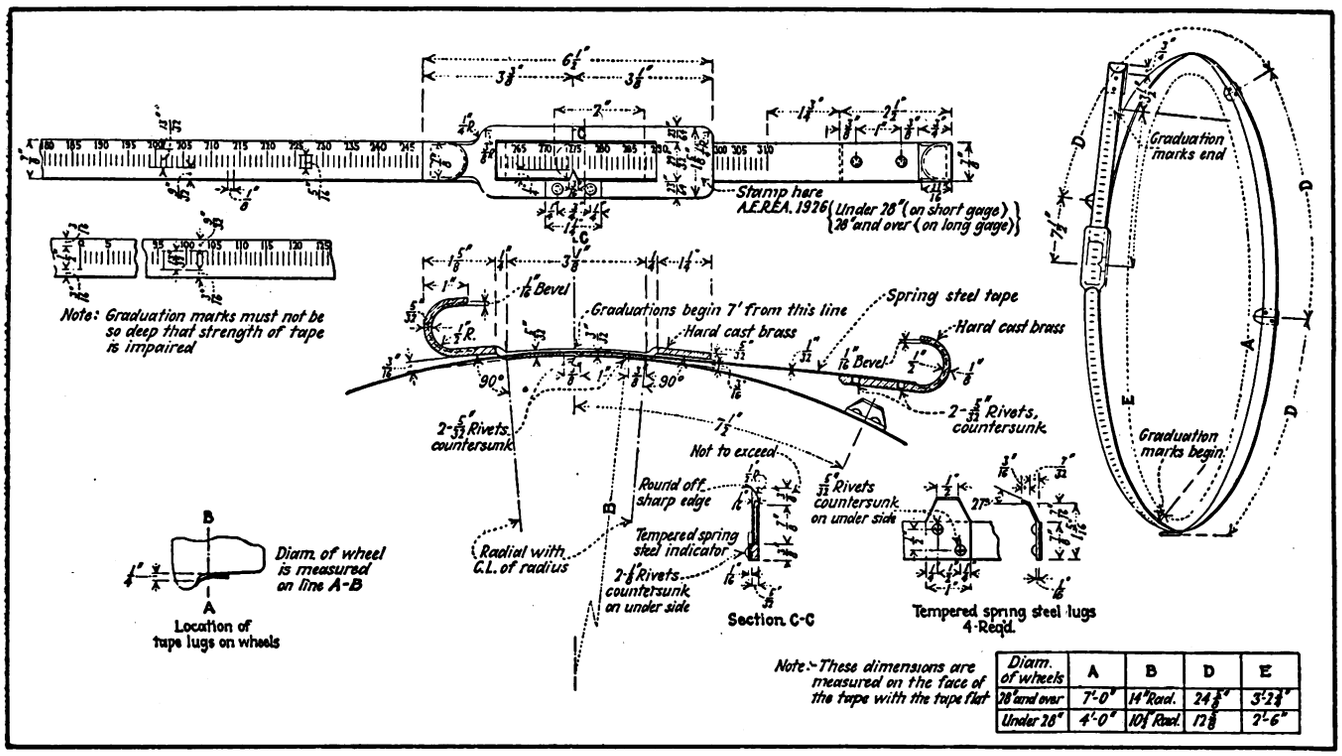
Co-operation with Department of Commerce

STANDARDIZATION of sizes and simplification of specifications for many articles used by electric railways were considered by the committee appointed to co-operate with the United States Department of Commerce. Approval was given to the recommendation for simplification of grinding wheels. A change was approved in the sizes of tacks so that their lengths should vary by ⅛ in. instead of by 1/16 in. The subject of simplification of glass sidewalks and roof lights was carefully considered and it developed that the present practice of manufacturing this material is in accordance with the recommendation of the Department of Commerce.

Specifications covering iron and steel scrap for use by blast furnaces, steel plants, foundries, etc., were approved. At the same time, the contract for the purchase of scrap was submitted. The committee felt that this was a contract prepared by the purchasers of the material and did not indorse it.

Other subjects considered by the committee included: simplification of self-opening die heads, new billet steel bars for reinforcing concrete, simplification of sizes of steel reinforcing bars, advisability of showing weights of castings on blue prints, simplification of carbon brushes, simplification of wrought iron and wrought steel, pipe, valves and fittings and simplification of shovels, spades and scoops.

Attention is called to the work now being done by the Department of Commerce in the Simplified Practice Division. The association is represented at the conferences and is endeavoring to take care of the interest of its members. In all cases, the recommendations are approved for one year, and at the end of the year changes may be made



Diam. of wheels	A	B	D	E
28" and over	7'-0"	14" Rad.	24⅜"	3'-2⅞"
Under 28"	4'-0"	10" Rad.	12⅜"	2'-6"

Wheel Circumference Measuring Tape for Contours A, B, C and D

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in the recommendation if there is sufficient demand. If members of the association find difficulty in securing the proper material due to the recommendations of the Department of Commerce, notification should be sent to the executive secretary of the association in order that the committee may be able to correct any difficulties. It is possible that in the case of simplification the practice might be carried too far for satisfactory results, and in such cases, the committee would be glad to take up the matter and have the objectionable features eliminated.

The report is signed by R. H. Dalgleish, chairman.

Engineering Symbols

ALL of the material which had been prepared and partially completed by the committee of the preceding year was reviewed by this year's committee. To keep the cost of the report within reasonable limits, as well as to concentrate the efforts of the committee on types of symbols most generally used by electric railways the work was limited to the following classifications: Topographical, electrical equipment of buildings, miscellaneous electrical, railroad, and railroad signal symbols. Drawings were made and cuts prepared of all the symbols which the committee felt should be included in the report.

H. W. CODDING
Chairman

During the year the subject of symbols for engineering and mathematical work has received active attention from a number of different organizations. With this in mind, the committee felt that it should confine its activities to those subjects most intimately connected with electric railways in order to complete a report that would include symbols most essential for electric railways to have considered in any general standardization work. Symbols concerning architecture, heating and ventilating, mathematics and mechanics were considered but were omitted, as other organizations are better equipped to formulate them. Some additional power distribution symbols were considered, but as there was no general agreement in the symbols studied they have been omitted.

The chairman of the committee, as a representative of the American Electric Railway Engineering Association, attended a conference called by the American Engineering Standards Committee on drawings and drafting room practices and also attended the organization meeting of the sub-committee on electrotechnical symbols and abbreviations, including radio, of the A.E.S.C. sectional committee on scientific and engineering symbols and abbreviations. This sectional committee has now undertaken the standardization of symbols, but as the work of the sectional committee will, by virtue of its organization, move slowly, the committee decided to complete its report.

The symbols submitted are classified as follows: Topographical, Figs. 1, 2 and 3; electrical equipment of buildings, Figs. 4 and 5; miscellaneous electrical, Figs. 6, 7 and 8; railroad, Figs. 9 to 18 inclusive; railroad signals, Figs. 19 to 31 inclusive.

Where possible, topographical symbols should be printed in the colors given with the symbols.

The symbols for batteries and instruments included with railroad signals (Figs. 19 to 28 inclusive and Fig. 31) are of the same general form as shown under miscellaneous electrical symbols, but vary in minor details in order to keep them the same as those adopted by the signal section of the American Railway Association. The symbols for transformers, reactors and resistors (Figs. 29 and 30), however, are identical in both groups submitted. These differ from the corresponding symbols of the signal section of the American Railway Association, which conflict with those generally used in most branches of the electrical industry.

Since a sectional committee of the American Engineering Standards Committee has now undertaken general standardization of symbols and as their work will be connected closely with the attempt of the International Electrotechnical Commission to prepare international standards, the symbols submitted in this report will be of assistance in having symbols acceptable to the electric railway industry considered by the sectional committee. In the period intervening before the A.E.S.C. can adopt standards, these symbols should be of particular value to electric railways. The committee recommended (1) that the symbols submitted in this report be adopted as a recommended standard; (2) that the committee be continued to co-operate with the sectional committee of the American Engineering Standards Committee.

The report was signed by M. M. Johnston, J. D. Kent, G. H. McKelway, W. F. Graves, sponsor; C. W. Squier, vice-chairman, and H. W. Codding, chairman.

Review of Engineering Manual

WORK of way and structures special committee No. 1 on review of buildings and structures and way sections of the Engineering Manual consisted largely of carrying forward the recommendations of last year's committee and studying various suggestions submitted. A few minor changes in the Engineering Manual were recommended. The report was signed by T. H. David, D. J. Graham, J. S. Mahan, D. H. Walker and W. R. Dunham, Jr., chairman.

Unification of Car Design

THE question of car design was considered in a joint session with the committee on essential features of modern cars, appointed by the president of the American Electric Railway Association. Designs were prepared covering proposed city type, double-end and single-end cars; also, double-end and single-end interurban cars. After detailed consideration, the committee found that the designs of the city type of car corresponded with the recommendations made in previous reports. Consequently, it approved the proposed designs. The question of limiting stresses to be used in the design of cars of these types was considered and the following is recommended:

1. The car body should be designed to carry under service conditions the maximum live load for which it is intended in addition to its own dead weight.

2. The direct stress in the body bolsters, platform arms, and side frame girder, due to maximum static load, must not exceed 12,000 lb. per square inch of either tension or compression.

H. H. ADAMS
Chairman

3. The combined stress in the body bolster, due to carried load plus the stress due to the tractive pull of the truck and application of the brakes, must not exceed 16,000 lb.

4. All connections should be designed for the maximum load to which the member connected may be subject. The secondary stresses in any members caused by eccentric loads should be combined with the direct stresses in such members. The fiber stresses (except in body bolster, referred to in paragraph 3) may be taken at 20 per cent greater than those given in paragraph 2, but the direct stresses, considered alone, must not exceed the 12,000 lb. above stated.

5. The report of the committee on unification of car design of 1922, Fig. 2, gives the typical stress analysis of a car body. Proper provision must be made in the side girder to prevent buckling over the bolster.

6. The permissible stresses above given are predicted on steel having the characteristics called for in A.S.T.M. specification No. A-11-24, Structural Steel for Cars. Where other materials are used, they should bear the same proportion to the ultimate strength of material used.

It was recommended that the commit-

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tee be continued to act in the same capacity for another year.

The report was signed by C. A. Alden, J. A. Brooks, L. J. Davis, H. F. Flowers, C. Gordon, J. A. Greig, J. W. Hulme, A. P. Jenks, G. L. Kippenberger, J. Lindall, Victor Willoughby, W. F. Graves, sponsor, and H. H. Adams, chairman.

Stores Accounting

ENLARGEMENT of the present classification of materials and supplies to include a classification of bus material was recommended in the joint report of the committee on purchases and stores of the Engineering Association and the committee on stores and accounting of the Accountants' Association.

It was pointed out that whereas certain companies operating buses were carrying stocks of considerable size, while other companies were able to operate without any stock, being able to

P. F. McCALL
Chairman

make satisfactory arrangements with local dealers for immediate deliveries of required parts, the proposed classification was not only well constructed but, in the opinion of the committee, covered present and future needs.

Methods for handling freight and express bills were recommended following a detailed study of this subject made by means of questionnaires sent to 25 representative electric railways. The subject of co-ordination of materials and supplies with the operating budget was also considered by the committee.

Regarding the disposal of unused inactive material, the committee had prepared a questionnaire dealing with the desirability of establishing a clearing house for such material and containing a number of alternative propositions for carrying out this plan. These questionnaires had been submitted to company members and it was hoped to have the replies tabulated and analyzed in time for presentation at the October meeting.

The following subjects were recommended for consideration by the committee on purchases and stores for 1927:

1. Study and make recommendations regarding the disposal of unused inactive material.

2. Make a further study of routine methods to be followed in the purchasing and stores departments, recommending that report be made on uniform method of distributing materials by supply trains or trucks.

3. Recommend that a uniform practice of testing or inspecting material by testing or inspecting materials on receipt or at factory be adopted.

The report was signed by the following:

For the Engineering Association—J. Y. Bayliss, A. S. Duncan, J. Fleming, B. W. Forkner, C. A. Harris, A. E. Hatton, F. A. Jordan, A. A. Ordway, C. W. Stocks, C. Thorburn, W. J. Walker, R. H. Dalgleish, sponsor; F. L. Wheaton, secretary, and P. F. McCall, co-chairman.

For the Accountants' Association—G. H. Caskey, W. S. Stackpole, F. E. Wilkin and R. A. Weston, co-chairman.

Power Generation and Conversion

EXISTING Manual sections were gone over to determine revisions desirable. In the section containing specifications and contract for the purchase of fuel the committee recommended further study. Since the prime movers committee of the National Electric Light Association has not been active on this subject during the past year the committee was unable to make desired progress.

In regard to specification for high-tensile strength bolts for use on superheated steam pipe lines, which was submitted at the 1925 convention, the committee found that a proposed specification on this subject, as drawn by the American Society for Testing Materials, was accepted as a recommended standard by the American Electric Railway Association. This specification has since undergone a slight revision and has been accepted by the American Society for Testing Materials as a recommended standard, subject to the outcome of a letter ballot. The committee recommended that no further action be taken regarding the acceptance of this specification at this time.

The application of various types of equipment to automatic substations and the subject of remote supervisory control have been rather thoroughly covered in past reports of the association. Efforts of this year's committee were concentrated upon the compilation of data pertaining to operating phases of this type of station, including consideration of the cost of operation and maintenance. For the purpose of collecting information questionnaires were sent out. Replies were received from 44 companies which have a total capacity of 745,955 kw. of conversion equipment, practically all of which is in the form of synchronous converters. The information received was analyzed and tabulated to show the distribution of equipment as divided between manually operated, full automatic and semi-automatic apparatus, also a classification of converters according to service. A number of questions were included relative to the frequency of inspection, type of men used, methods devoted to inspection and maintenance cost. Further tables were compiled to show inspection practice used and comparative cost of inspection and maintenance labor.

The committee attempted to determine the extent to which supervisory control or some form of distant indication is being used. Companies operating approximately one-third of all automatic equipment employ supervisory control either for all or part of their equipment. Seven companies rely on lamp signals near the tracks and four companies on lamp signals in adjacent manual stations. Nineteen companies provide no special indication of any sort in case of a lockout, depending presumably upon reports of low voltage.

Regardless of the method used, it appears from the report that it is advisable to provide some means for prompt notification in case of station trouble. A station may lock out during a time of light load and if voltage indications alone are depended upon the trouble will not be remedied and

LAWRENCE D. BALE
Chairman

service may be seriously affected when the heavy load comes on. If supervisory control is not warranted some simple and inexpensive means can usually be found for providing definite indications at the time of the trouble.

A study was made of the application, characteristics and present status of the mercury arc power rectifier for electric railway service. The report included a discussion of the characteristics and application of the mercury arc power rectifier compared with the synchronous converter. The matters of efficiency, power factor, regulation, operation, maintenance, building requirements and cost were included. Due to the limited experience with the rectifier in this country most of the data obtained were from foreign sources.

Difficulty was experienced by the committee in comparing the application of the rectifier with the synchronous converter on account of the inherently different characteristics of the two types of equipment, with particular reference to sustained overload capacities. This was partially overcome by limiting the considerations as to applications to two general classes of systems, as referred to in the report, having widely different characteristics regarding momentary and average load demands.

The availability of American standards of rating for the rectifier com-

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pared with those of the present A.I.E.E. standards for the synchronous converter is, without question, of great importance, particularly at this time in view of the advent of the rectifier in the American field. The committee considers that steps should be taken to bring the necessity of American standards for the mercury arc power rectifier to the attention of the proper engineering standards body, and to that end it recommended that the study be continued.

A large part of the report related to information obtained through a study of ventilation and reduction of noise in the operation of automatic substations. The information tabulated brings to a conclusion a series of studies which has extended over a period of four years; these studies were reported on in 1924 and 1925. The activities of the committee for the past two years have been centered on obtaining data in regard to the subject of ventilation. This was collected from tests made by the committee on representative automatic substations in actual operation.

The conclusions of the committee were that heat dissipation by means other than ventilation is of sufficient magnitude to affect the dissipation required of the ventilating air. For an ordinary substation building having 13 in. exposed brick walls, 6 in. concrete floor and 4 in. cinder concrete roof with weatherproofing it averages ⅓ watt per square foot per degree Centigrade difference in indoor and outdoor temperatures, but considerably less for thicker walls and for soundproof building construction. Wind and rain will temporarily raise dissipation by means other than ventilation in isolated buildings.

Rotating machines have well-defined suction and discharge areas. Air is drawn into the revolving element along its shaft, overbearings, commutators, collector rings, etc., and is discharged from the largest cylindrical surface, through or over the edge of the stationary element or both, the performance being similar to that of a fan with concentric housing and sides removed. The intensity and extent of these suction and discharge areas are such that the machine will circulate a sufficient amount of air to dissipate the losses at full-rated load with from 4 deg. C. to 7 deg. C. rise, 7.2 deg. F. to 12.6 deg. F., corresponding to from 475 to 270 c.f.m. It follows that if recirculation of the heated air is prevented no overheating will result either of the machines themselves or of the room air.

Recirculation can be almost entirely eliminated and natural or self-ventilation relied upon to dissipate the losses in installations of greater concentration in kilowatts of rated capacity per square foot of floor area or cubic foot of building space that now appears to be general practice for automatic substations in railway service.

The following arrangement of inlets and outlets appears to be quite effective in supplying proper ventilation for automatic substations where it is permissible to locate openings of sufficient areas in the walls of the structure at will. This arrangement is also suggested as a means of preventing recirculation of ventilating air to the greatest extent:

(a) Locating inlets just above the floor level, but within the effective range of the machine suction, not more than 5 ft. from the ends of the machine. All inlets should be on same elevation.

(b) Connecting inlets to floor openings at the pedestal ends of the machines. These openings can in most cases be extended a short distance inside the base casting.

(c) Providing hoods over the floor openings at the ends of the machines to guide the air directly into the suction areas.

For outgoing heated air:

(m) Confining the downward heated air discharge to an inner pit, extended on that side of the machine toward which the lower part of the armature revolves, to a floor opening or outdoors.

(n) Locating outlets in the pressure zone of the station so as to take advantage of the pressure created by the machine in ejecting the air.

(o) Providing a volute housing over the discharge area to collect the heated air and ducts to conduct it outdoors.

(p) Aggregate air inlet areas should at least equal the aggregate outlet areas and preferably should be 1½ to two times as large.

Means of forced ventilation need only be resorted to in cases where additional resistance against the natural flow of air is introduced, such as air filters or washers, soundproof building construction, or as insurance against shutdowns from overheated apparatus other than rotating machines.

Where insurance against overheating arising from unfavorable size and location of building or the restriction of free air flow by adjacent buildings, as well as liability to prolong overload during extremely hot weather, forced ventilation has been employed with effective results.

So far as effective cooling of the machines is concerned exhausters or blowers appear to serve the purpose equally well, but the room temperature becomes more comfortable if the heated air is exhausted than if the cool air is forced in, presumably because in the latter case more cool air bypasses the machine directly to the outlet and a greater quantity of cooler air is discharged to the atmosphere, leaving the room warm. With the exhauster an equal quantity of warmer air can be discharged, leaving the room at a more comfortable temperature.

As in the case of natural ventilation, it is essential for effective cooling that recirculation be avoided and the same means can be employed to avoid it.

The report was signed by C. E. Bennett, C. A. Butcher, H. W. Codding, H. A. Kidder, N. R. Love, F. W. Peters, G. W. Saathoff, L. J. Turley, G. I. Wright, E. H. Scofield, sponsor; W. E. Bryan, vice-chairman, and L. D. Bale, chairman.

Power Transmission and Distribution

EXISTING Manual sections were reviewed and recommendations for revision were made in certain ones. Others cover specifications which are now being actively studied by sectional committees of the American Engineering Standards Committee, and while there is some need for revision of existing Manual sections, it was recommended that these be withheld until the A.E.S.C. has taken final action.

The committee prepared specifications for a number of items of material used in catenary construction and recommended that these be included in Manual Section "D." These included pole bracket arm assembly, messenger insulator pin, messenger insulator, catenary hangers, cross-span steady, pole-bracket steady, catenary messenger anchor clamp, trolley splicer, flexible pullover, feeder connector, catenary trolley sectional insulators and trolley frog and crossovers. It was recommended that the specifications covering material for catenary construction as presented be adopted as a supplement to the specifications for overhead line material for 750-volt direct-current suspension, serial designation D102-21.

The committee carried on studies of trolley wire breaks and submitted an analysis of results obtained by companies which have co-operated in these tests. The recommendation of the committee was that these studies be carried on by next year's committee.

Arrangements have been made with a number of railway companies to install test sections of trolley wire in order to determine the relation of life of trolley wire to the number of twists it will stand under test. These tests will require several years to complete and next year's committee should keep in touch with them.

A number of minor modifications were made in the specification for hard-drawn copper trolley wire. This specification was originally prepared in conjunction with the American Society for Testing Materials. The committee recommended that the work in conjunction with the American Society for Testing Materials be continued in an endeavor to bring the high-strength, low-conductivity trolley wire specifications of the two associations into complete conformity.

No work was done by this year's committee in regard to inductive coordination, except to keep in touch with the American committee on this subject. The recommendations of the committee were that this subject be continued next year and that the American Electric Railway Engineering Association be ready to furnish information that the American committee may desire.

The committee continued its study of interference to radio reception caused by the presence of electric railway facilities. Tests and experiments were made further to determine the nature of the interference to radio reception and the various sources from which such interference may emanate. The report included a series of tests conducted at Lafayette, Ind., and another made in New York City. From the tests and study made by the committee regarding this subject, it appeared that trolley car operation may be responsible for interference to radio reception for a distance up to 200 ft. or even more from the trolley cars,

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wires and feeders. The distance at which interference may become a detriment to radio reception depends to quite an extent upon the receiving set used and the location of the set with respect to broadcasting stations. Thus, sets which are being operated in cities where there are a number of good-sized broadcasting stations and where the sets are being operated at a rather low degree of amplification may not be bothered by trolley car interference where such sets are located 50 ft. or more from trolley lines.

On the other hand, sets which are being operated at a considerable distance from broadcasting stations and where the degree of amplification is large in order to get loud speaker reception from a distant station may experience serious interference where such sets are located 200 ft. or possibly more from a trolley line.

Interference originating on a trolley line may be transferred to parallel lines, such as light and power lines, telephone or telegraph lines, and be distributed by them, thereby causing interference to receivers located at remote points from the trolley line. Trolley lines may also pick up interference originating at sources foreign to the trolley line and distribute it, thereby causing interference for which the trolley lines may be blamed, but for which they cannot, in any way, be held responsible.

Considerable unnecessary interference may be eliminated on trolley lines by the simple expedient of locating the sources and correcting the trouble. Much of the interference is of such a nature that it probably cannot be eliminated, although it may, to some extent, be lessened by methods as suggested in the report.

A review was made of specifications for 600-volt direct-current overhead trolley suspension and it was found that certain changes were desirable. These were included in the committee's report with the recommendation that actual revision of the existing Manual section be deferred until the American Engineering Standards Committee has completed its work on the national safety code in connection with line material specifications. After this has been accomplished it was the opinion of the committee that the specifications might require further revision.

A code of principles to be followed in drawing up joint pole use agreement was submitted. This includes sections on advantages of joint use of poles, disadvantages of joint ownership of poles, principles of joint use, and practices of joint use. The report also included an appendix with suggestions for desirable changes in the specifications for direct suspension trolley construction, the idea being to incorporate these for use of future committees.

The report was signed by J. W. Allen, S. H. Anderson, W. H. Bassett, M. W. Cooke, J. H. Drew, D. D. Ewing, C. L. Hancock, C. J. Hixson, A. J. Klatte, H. S. Murphy, J. F. Neild, W. J. Quinn, W. Schaake, A. Schlessinger, George F. Wennagel, M. B. Rosevear, sponsor; F. McVittie, vice-chairman, and Charles H. Jones, chairman.

Economics of Automatic Substations

THERE were two points developed in connection with automatic substation application during the past two years which influenced the nature of this report so that it might be of practical value to the railway engineer.

First, the economies and other advantages of the automatic substation have been proved in practice in a sufficiently large number of cases to make the desirability of this type station a fact accepted by nearly all railway engineers. During the past two years almost all new substations (approximately 80 per cent) installed for railway companies have been automatic. When manual substation equipment was installed there was usually some peculiar condition that made its use seem desirable.

Second, it is advisable to make the study immediately on the somewhat laborious but more accurate "cut and try" method. The principal difference between the "cut and try" and the "analytical" methods is that in the former the layout of the changes in the distribution system must be prepared before estimating the costs. But it has been found the feeder layout has a larger influence on the economics of the problem than had been expected. Also the study of the proposed feeder layout is very helpful in arriving at the final conclusion.

It seems now to be the general consensus of opinion that the automatic railway substation should be used for new installations in practically all cases and in many cases manual stations should be replaced by this type. Its advantages are as follows: Economic savings will result. The service will be as reliable or more reliable. Service will be restored quicker after high-tension interruptions and with less chance of error.

The committee concludes that any engineer or management contemplating additional substation equipment should decide at once that the new station would probably be automatic, unless some unusual condition was involved. In many cases, it should even pay to remove converters from existing manual stations and install them in new locations as automatic substations, provided the converters are of a sufficiently modern type.

The electrical engineer can choose the size of automatic substation which from his experience he feels might best suit the portion of the system under consideration for use in determining its economics compared with a manual station layout. Judging from past practice, there will be very few cases where larger than 2,000-kw. synchronous converters will be used for automatic substations for surface operation. The engineer will then know that the estimated costs obtained will be slightly less for a larger size converter or slightly more for a smaller size converter.

The report then reviews the "cut and try" method, referring to the detailed instructions contained in the 1922 report of the special committee on automatic substations. A review of the past committee reports is also given fully, with comments and data from installations recently made.

E. H. Scofield developed an analytical method of determining substation layout based on general assumptions that would give the comparative annual cost for any desired number of automatic substations planned. This analytical method for estimating the economical number of automatic substations was contained in the 1923 Proceedings. Ralph H. Rice of the Board of Supervising Engineers of Chicago suggested at that time that it should be possible to present the analytical method in the form of a formula and in the following two years proceeded to work out such a formula. The committee considers that this is an interesting and valuable contribution to the subject and submits this formula, with its complete mathematical derivation, in the report for 1926.

The committee further states: "In view of the fact that this formula has not been applied to a specific problem, little can be said one way or the other commenting on its practicability for solving automatic substation studies." In general, the same comment would apply to the "analytical" method, as noted in the 1923 Proceedings. This formula, like the analytical method, is intended merely as a preliminary study, but is probably superior to the analytical method. It should give an approximation of the most economical number of stations for any area and can be solved for an approximate cost.

There are seven appendices to this report, five of which develop mathematically five of the variables in the working formula referred to above. Appendix F is a mathematical determination of the average feeding distance for any number of substations and Appendix G gives definitions of the terms "load factor" and "line loss factor" as used in the calculations.

In conclusion, the report states that the automatic substation has been proved and accepted as the most economical and advantageous way of converting and distributing energy for street railway systems, both urban and interurban. With the summary contained in this report and the information of the preceding report of the special committees on automatic substations the method of determining the most economical substation plan and estimating its cost has been described in sufficient detail so that any railway engineer can apply the solutions to his own particular problems.

Future developments in this field can be properly and logically followed for the two standing committees on power generation and conversion and on power transmission and distribution.

For this reason this committee recommends that the special committee on automatic substations be discontinued and the problem of determining the proper design of the distribution and layout for automatic substations be referred to the two committees above mentioned.

The report was signed by L. D. Bale, W. E. Bryan, C. A. Butcher, C. H. Jones, F. W. Peters, R. H. Rice, L. R. Wagner, E. H. Scofield sponsor, and Adrian Hughes, Jr., chairman.

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T. & T. Committees Have Been Active

Investigations This Year Directed Along Lines of Merchandising Transportation, Traffic Congestion, Accident Prevention and Bus Operation Have Resulted in Reports that Are Replete with Valuable Suggestions

BESIDES one joint committee with the Claims Association this year, there were but three technical committees of the Transportation & Traffic Association. Each, however, was on a vital topic and covered its subject in a very broad way. Thus, bus operation was treated under fifteen different heads and merchandising transportation under six. All reports of the association are conspicuous in the absence of statistics. This year the committees chose to record a consensus of opinion on policy methods and proper procedure. The reports taken as a whole are a veritable textbook of best practices; they form valuable reading and should produce worth-while results if put into action. Abstracts of all Transportation & Traffic reports follow.

G. H. CLIFFORD
President T. & T. Association

Merchandising Transportation

GENERAL policies or principles governing operation of street railways are not laid down by the committee nor has it cataloged individual operating practices that might result in increase of riders or revenues, except where these are of so general application as to afford a guide for the entire industry.

The report is under six general headings that relate directly to the subject assigned and reported on by selected sub-committees.

COURTESY, SALESMANSHIP AND APPEARANCE OF TRANSPORTATION EMPLOYEES

The street car operators, motormen or conductors, and all bus drivers are the salesmen of the industry. They must compare more favorably in selling ability with salesmen in other lines of business. Greater attention must be given to the training of these employees in a specific and detailed manner with a view to bringing about a standard of courtesy, personal appearance and sales practice notably high.

Courtesy, appearance and salesmanship standards attained will be in proportion to the effort used by the management in promoting these matters. This effort will not be successful until the transportation employee realizes that he is in a competitive business; that the success of this business depends upon his individual effort; that it is in his power to attract customers or to alienate them; that this competition is not temporary but permanent, and that in all cases his own prosperity, and often his job, is contingent upon his own thoughtfulness in presenting the best personal appearance, using attractive methods and co-operating in the teamwork that will produce a service satisfactory to the public.

It is not sufficient simply that the trainman listen to talks dealing with these subjects or read pamphlets on them. He must be made to understand, indorse and then demonstrate what has been taught with respect to appearance, courtesy and salesmanship. If he is too stupid to understand or is reluctant to co-operate in these practices, his service should be dispensed with. In most cases the principal part of the work is to inculcate a complete understanding of the necessity for these practices, and the part the individual must play in them.

A great many companies might well give more particular attention to the character of uniform worn by trainmen. This consists not only of insisting upon clean and well-pressed uniforms (to secure which cleaning and pressing stations have been provided on many properties), but also a complete change in uniform. Practically ever since the beginning the standard uniform has been a blue serge with more or less shapeless cut. For the purpose of offering a better front door to the

R. N. GRAHAM
Chairman

business, the selection of gray whipcord uniform with military cut is suggested. It is felt that the gray whipcord uniform is more practical than blue serge and that there is a psychological value to the change.

Whenever a new uniform is adopted, the opportunity exists for a complete standardization of every detail of the uniform, so that the employee becomes identified with the company to such an extent that his appearance forms an advertisement of its service.

Since courteous treatment bulks so large in the attitude of the public toward our industry, there is a tendency to raise the age limit of men employed. Some companies now insist that the new employee must be at least 25 years of age. This higher age requirement will tend to stabilize the transportation organization, reduce turnover and add to the prestige of men and company. In this connection, the pamphlet written by George Baker Anderson, manager of transportation Los Angeles Railway, entitled "Salesmanship," covers the general field of instruction of new men so completely that this booklet is recommended to the attention of the industry.

Trainmen should be kept informed as to their accomplishments, such as accident prevention, curtailment of delays, power saving, unusual acts of courtesy, personal appearance, and, in general, the manner of acting as the company's direct representative. Bulletin boards, company publications or trainmen's meetings may be used in doing this. Trainmen should receive, when possible, information of new company plans, policies or problems. Advertising plans, policies or problems of sufficient importance could be explained, if necessary, by competent instructors.

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This will enable trainmen to discuss these matters intelligently with their patrons and friends.

Some companies use selected trainmen to adjust complaints. The written or phoned complaint is given to the trainman just as it is received from the patron. This may be a real or fancied offense. The proper method of approaching the complainant, the adjustment of complaint and the closing up of the interview are explained. The trainman then interviews the complainant. In this way the trainman gets the patron's view of his fellow-workman's lack of duty or tact in handling the public. In other words, the trainman is liable to see himself as others see him.

Special Classes of Service and Rates of Fare

Special rates of fare and special classes of service are designed to augment the revenue received from the ordinary and routine transportation of passengers. But it should be borne in mind that specialties cannot make up losses from regular operation if the fundamental rate of fare is too low. There is some danger of using special rates and special classes of service to make up deficient revenues. Main consideration should be given to the development of such a standard of regular transportation service in the community as to form the basis in public favor of securing a rate of fare adequate to bring a fair return. With this condition established, then special types of service, with special rates of fare, may be expected to promote interest in and add to the number of users of the regular service, as well as to return a profit in themselves.

A number of transportation companies, both city and interurban, are experimenting with special rates of fare and special types of service designed to attract:

1. The rider who desires a superior service and is willing to pay the relatively high fare required to furnish it. Such service compares with that offered on the extra fare trains operated by the steam railroads.

2. The rider who will not pay a higher fare for superior service, but will become a customer and pay regular rates for an improved service.

3. The rider who will use the service at times of light traffic because the transportation company can then afford to sell its surplus capacity at a relatively low rate of fare.

In the first class are included parlor car service, dining and buffet cars, sleeping cars, special theater service, etc., operated by a number of interurban companies. Under this head may also be included the de luxe motor coach service which a few companies are operating to high-class residential districts.

An example of service of the second class is the "Ceramic Flyer" of the tween Steubenville, Ohio, and Beaver, Valley Traction Company operating between Steubenville, Ohio, and Beaver, Pa. This is a parlor-car limited service making only five stops in the 40-mile run, with a running time 30 minutes less than the regular service and with no extra charge.

The third class includes the use of the weekly pass, the monthly ticket, the Sunday and holiday pass, and other similar methods of attracting business during periods of light riding.

The experience of member companies along these new selling lines is as yet more or less limited, but would seem to indicate that these methods offer good possibilities of popularizing transportation service and, at the same time, attracting additional business.

During the last twelve months the Northern Texas Traction Company performed a notable piece of merchandising work in conjunction with the meeting of the American Legion in Fort Worth, Tex. The railway company, through its manager and staff, sold the idea to the American Legion that it should, as a courtesy to delegates, provide the necessary transportation as a part of the entertainment costs. The American Legion did this and also provided free tickets to other events planned for the convention. The railway company printed up small books with the necessary entrance tickets to the various events and also ten tickets of special form, each of which was good for a ride on the local cars of the Northern Texas Traction Company during any one of the four convention days. When the books were used up they could be renewed upon presentation of the old cover. The books were originally issued, as well as the renewals, at the registration desk of the American Legion.

At the end of the convention, the railway company presented the coupons to the Legion treasurer and received nearly $1,500 in payment for the transportation rendered.

Another example is the instance of the Beaver Valley Traction Company selling tickets at the regular rate of fare, but giving with them coupons which were redeemed by the merchants of the community as part payment on cash purchases of $5 or more. The company put up the tickets in books of 40, and sold the books for $2.25 each, giving with each book eight of the coupons, which had a cash value of $2 when applied to the cash purchase of merchandise. The management felt, however, that even better results would have been obtained had the tickets been sold in $1 quantities, without the 25 cents extra charge and with a reduced merchandise purchase requirement.

Several companies have profited by special party service, outings and tours. Some of the larger properties have provided comfortable waiting and lounging rooms, with quarters for the departments handling this special business.

Schools, public and private, all over the country are more and more transporting their pupils by bus. In some instances, groups of parents underwrite the cost. This type of service can usually be handled in off-peak hours and is attractive. For a moderate rate per month, buses can be assigned to school routes, making door-to-door pick up and delivery. With good chauffeurs and well-maintained buses, the service will prove to be an excellent good-will builder.

In some of the large cities, or in places where there are a large number of transients, sightseeing buses can be operated in the off-peak hours at a profit. Special week-end, all-expense tours of one or two days duration have proved popular and profitable in several instances. These tours should be organized by the company and should be well advertised.

Maximum Use of Existing Facilities

Careful attention should be given to car assignment, to the end that maximum possible use be made of good equipment. It is suggested that in many cases, by a careful selection of cars, it will be found possible to make such adjustments as will permit operation of a greater proportion of the service with the higher grade equipment, thus building up public good will, increasing receipts, and at the same time reducing operating expenses.

Sunday and holiday car assignments and, on some properties, Saturday car assignments, should be carefully studied, with the idea in mind that on these days it may be possible to operate a very much greater proportion of the service with the better classes of equipment. Such studies may show also the possibility of utilizing a greater number of one-man cars on Sundays and holidays to the improvement of the service and the decrease of its cost.

The committee urges that special consideration be given to reduction of the number of stops. This can be considered under two divisions:

1. The elimination of stops consistent with the locality will decrease the running time for the service as a whole in many cases.

2. The elimination of stops for the purpose of operating express service. This may be considered with or without co-ordination with coach operation. Interesting and successful experiments along this line have been conducted in both Providence and Baltimore.

The maximum use of existing cars and tracks cannot be had if the average speed is unreasonably low. Slow movement of street cars is also one of the chief causes of their unpopularity in this age of swift-moving automobiles.

There is a possibility of operating on a skip-stop or stagger-stop plan in rush hours and on the ordinary plan at other times. This should be given careful consideration.

In order to equalize the loading between the through cars and the short-routed cars, the through cars could be operated as "limited stop" cars, making no stops to discharge passengers between certain limits in the local territory. These limits could be judiciously selected so that the average loading of all cars would be approximately the same.

General Company Interest in Civic Problems

Every company, in addition to being a good citizen in the communities it serves, should strive to attain the higher plane of being a good neighbor. In being a good neighbor, it will be active in boards of trade, chambers of commerce and the so-called service clubs such as the Rotary, Kiwanis, Lion, American Business, Civic, etc. Such clubs, however, do not contain as large a percentage of the companies'

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customers as the community improvement associations, Veterans of Foreign Wars, American Legion Posts, etc.

It is important that companies take out individual memberships in such organizations as are identified with the local community interests, such as improvement associations, district and ward clubs, etc., and pay the dues of such memberships.

Every company should be active in the work of the Safety Council, whether this be a part of the national body or a local organization. Where such an organization is not in existence, and there seems to be a need for concerted action in bettering the safety conditions of the community, the company should lend every assistance in the formation of such an organization.

Advertising

As an aid to getting best results from the advertising done by member companies, it is strongly urged that each company send to the director of advertising of the American Electric Railway Association copies of all advertising used in order that he may be a clearing house for such information.

There is no need to expand on the use of the newspaper as an advertising medium unless it be to point out that it should be continuous. It is better to have a brief message in the papers every day or several times a week than to have a full page infrequently.

Newspaper advertising in general should be specific and have a definite sales plan. The most successful newspaper advertising campaigns in the electric railway field have been attempts to increase traffic by suggestions that people ride to the zoo, the museum, the park, or in pushing the sale of a certain type of ticket or freight service. Merely filling your advertising space with generalities about your good service is not enough. Sell something definite.

In addition to the use of paid advertisements in the newspapers, much valuable advertising may be secured by friendly contacts with the reporters in keeping them informed fully as to the company's plans and operations.

Very few companies are using their own advertising mediums to the greatest advantage. One of the best forms of advertising in the world is the street car display.

Care should be taken, however, to obtain brevity in copy for street car posters or signs. Dash posters which are to be read from the outside of the cars should never contain more than sixteen words and it should be possible to read them from a distance of 50 ft., at least. Cards used in the inside of the car should never have more than thirty words.

Company publications distributed through the "Take One" boxes, or sent out to a selected mailing list, can be printed easily and cheaply. If kept short, snappy and interesting, they will get over to the public many of the facts about the street railway. There are many successful house organs of this character.

At the present time the total advertising appropriation of 260 electric railways in the country is between $4,000,000 and $5,000,000, which amounts to about one-half of 1 per cent of their gross income. It is felt that the industry should be spending approximately 1 per cent of its gross income annually for its advertising and merchandising efforts.

Design and Care of Equipment

Future design of both buses and rail cars must be as much the concern of the transportation engineer as the master mechanic. Not that the master mechanic's job is done, but rather that the transportation features demand far more attention than they have received in the past. Both the car and the bus must approach the comfort, appointments and convenience of the private automobile, as this is the largest competitor to common carrier service today.

Economies, important as they are, must not forbid conveniences. The electric car of an antiquated design, poorly maintained, does today suffer from an invidious comparison with the rubber-tired vehicle. Perhaps the best way to establish greater confidence in the electric car is to alter the design, as much to create a different appearance as to improve its operating characteristics.

Opportunity exists, particularly in the design of new equipment, to avoid some of the noise which seems inseparable from the business. Attention in this regard should be given to brake rigging. Improved motor suspension is being studied and results may be forthcoming that will reduce some of the present noise from gears.

Steel against steel is a difficult combination to combat from the noise standpoint. Perhaps the best opportunity lies in better spring construction, and elimination of as much unsprung weight as possible. The springs of a bus receive far more attention and lubrication than the springs of an electric car. Consequently during service they are more resilient and responsive in action than the more rugged, but equally important, springs of an electric car. After all is done some noise will remain. However, by using double floors, insulated side sheathing and headlining on roofs, this inherent noise can be suppressed and lessened for the passengers riding in the car.

The old style car was cluttered up with bell cords, register rods, hand straps, baggage racks, pipes and stanchions. There is no reason why the conductor's bell should not be as inconspicuous as the passenger signal; likewise a less visible arrangement for operating overhead registers is available. An attempt should also be made to make the register less noisy in its operation, and interurban whistles less offensive, and thus relieve the conscious or unconscious strain on the nerves of the passengers.

Old cars can be improved and made more popular by the addition of comfortable seats. Certainly the luxurious, deep, well-formed cushion seats on the better grades of buses are one of the drawing cards to this type of vehicle. Recently the Cleveland Railway fitted out three trains with comfortable upholstered and leather-covered seats of the semi-individual bucket type. This company's telephone lines were busy with calls as to when and where these particular trains were operating. People wanted to ride in these rather than in the older types. It may be difficult to trace a direct return from an expenditure of this kind, but if it pleases the public, the returns must follow.

The question of seat spacing is important. It is of little avail to spend money for high-grade seats if they are crowded so close together that the passengers' knees are wedged against the seat ahead. That is only spending the dollar and destroying the purchase. Even with thin backs the seating spacing should be approximately 30 in., and with thick cushioned backs the spacing should be 32 to 35 in.

Higher schedule speeds is one of the economies that contribute directly to better service. Waste time should, of course, be eliminated, and cars should be built to accelerate as rapidly as is comfortable. To avoid congestion and delays, the rate of acceleration should be equal to or exceed that of automobiles. If the autos accelerate faster than cars after traffic stops, they cut in ahead of the car and usually block the car at the next crossing, often requiring a double stop, which adds to the delay and increases the congestion. To obtain this higher acceleration in city streets, cars must be adequately motored. Gearing may be low, as rapid acceleration is far more important in increasing schedule speeds in service having frequent stops than higher free running speeds.

Keep Up the Appearance

As an industry it should devote more care to keeping up the appearance of equipment. There is too general a tendency to consider the acquisition of new equipment an opportunity to reduce maintenance costs for a year or two, and to neglect mere appearance.

The same considerations that would dictate an unholstered seat compel the resolve to keep this seat clean and the upholstery intact. The benefit of plate glass is not fully realized unless the windows are cleaned and polished. A beautifully lacquered job does not show its real quality unless frequently washed. In industrial communities, the complete washing of cars in regular service twice a week is considered almost a minimum. The desirable point to reach would be a complete washing of the transportation vehicle on a daily basis.

Passenger and service equipment also should be kept up to high standard of appearance.

Bus and car stop signs and standards preferably should be enameled instead of painted, in order that they, in turn, may be kept up to a high standard of appearance.

This committee insists that in order to get the best results in merchandising transportation, the master mechanic and maintenance organization must recognize as keenly the necessity of good appearance as they have always recognized the necessity of efficient mechanical operation.

The report was signed by O. A.

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Broten, H. L. Brown, W. H. Burke, J. A. Dewhurst, J. B. Donley, R. W. Emerson, S. E. Emmons, W. W. Holden, J. F. Johnson, E. A. Palmer, C. D. Smith, A. C. Spurr, J. C. Thirlwall, W. E. Wood, R. N. Graham, chairman; W. H. Boyce, sponsor, and E. M. Walker, sponsor.

Accident Prevention

REPORTING jointly, the committees of the Transportation & Traffic and of the Claims Association presented statistics for 1925 and 1924 of companies reporting, the number of companies varying from 87 to 175. The statistics showed improvement during 1925 in accident records, as there was a decrease in the total number of reported accidents and in every classification of those accidents with but few minor exceptions. Even the number of collisions with motor vehicles was less, although the number of vehicles increased. A few of the figures given are contained in the table below.

M. W. BRIDGES
Chairman

The following definite recommendations were made:

1. Co-operation with state, municipal and civic bodies in the work of prevention of traffic accidents on the streets and at railway crossings. Local conditions require local remedies and it is only through the active co-operation of electric railway companies with local bodies that these conditions can be met and accidents reduced.

2. That member companies send their representatives into the schools in their communities in accident prevention work that the younger generation may be educated to the danger of thoughtlessness and carelessness on our streets and around our cars and tracks. Speakers going before civic bodies, women's clubs and parent-teachers' associations with this message will do a great work in spreading the safety education which will result in reduction of the loss of life, limb and property.

3. The work of educating the employees in accident prevention work should be continuous and so arranged as to keep this subject uppermost in their minds and made a part of their every day work. In some of the companies, award and merit systems have been carried on, safety entertainments, dinners and even medals and uniforms awarded to stimulate the work of continuity of effort in the prevention of accidents.

The committee also indorses the value of moving pictures to help reduce accidents, co-operation with the National Safety Council, the adoption of a standard code for vehicles, as considered at the meeting of the National Conference on Street and Highway Safety in Washington, and close relationship between the operating, claims and safety departments of electric railways. The report was signed by the following:

Representing the Claims Associations—Seth Baldwin, B. F. Boynton, N. W. Funk, G. H. Ingles, A. G. Jack, W. H. Moore, T. C. Neilson, V. T. Noonan, E. J. Paige, R. A. Sears, J. J. Sharkey, L. F. Wynn, and H. K. Bennett, co-chairman.

Representing the Transportation & Traffic Association—E. J. Dickson, Arthur Gaboury, Roy R. Hadsell, A. W. Koehler, T. E. Lawrence, M. McCants, G. B. Powell, C. F. Schmidt, Samuel Riddle, sponsor; Edward Dana, sponsor, and M. W. Bridges, co-chairman.

Traffic Congestion

NO OUTSTANDING or single method of relieving traffic congestion was developed during the year, but the so-called Hoover conference reports indicate the method by which lasting relief may be had. If this conference had accomplished nothing more than to center national attention on this problem it would have been a great success.

Believing that the Hoover conference was the event of the year from a traffic standpoint the committee submitted a full analysis. This analysis is confined to that part of the Hoover traffic studies which directly touches the business of transportation. [This report was abstracted in ELECTRIC RAILWAY JOURNAL for April 3, 1926, page 602.]

In addition to this the committee has considered any specific methods of relief of traffic congestion of which it learned, such as prohibition of parking, signals, subways for pedestrians and staggered hours of business.

One of the fundamental factors in determining the best method to pursue in handling the problem of traffic congestion in the downtown area in any large community is to determine first the relative importance of the different modes of transportation.

Promiscuous parking is the greatest contributing cause of congestion and the slowing up of all moving vehicles. This is a very real danger menacing downtown merchants, a danger which many of them fail to see, namely, the danger of decentralization or the driving of business to the outlying and therefore less congested business centers. It follows that street car riding shoppers will be more and more reluctant to shop downtown if their progress is impeded to such extent that their patience and allowable time are exhausted.

A. R. MYERS
Chairman

It also follows that the shopper who drives her own auto dreads the trip downtown more and more as congestion increases and her chances of parking where she wishes to shop become less and less.

If this be true, then the future of our downtown merchants in the larger cities is solely dependent upon the rapidity and convenience with which their patrons can reach them.

In an effort to throw some light on the various phases of this subject the Cleveland Railway proposed an extensive traffic survey. It enlisted and received the co-operation of the Retail Merchants Board of the Chamber of Commerce. The object of the survey was to determine how and in what proportion patrons reached the various stores in downtown Cleveland. Through the Retail Merchants Board consent of 22 stores for the survey was secured. These stores were not only the largest in Cleveland, but represented the greatest diversity in goods which they sold. [This important study and its result were covered by Ralph W. Emerson of this committee in an article in ELECTRIC RAILWAY JOURNAL of July 10, 1926.]

The survey continued three days with the addition on the third day of a large 5 and 10-cent store, which made 23

ELECTRIC RAILWAY ACCIDENT STATISTICS

Accident Statistics	Number of Companies Reporting	1925	1924
Total number of accidents	172	341,423	352,901
Accidents at grade crossings	116	2,162	2,254
Number of persons injured	161	57,836	60,820
Number of fatalities	177	887	874
Total cost of claims	147	*$12,565	*$13,285
Miles of single track	171	19,350	19,370
Car-miles operated	173	*850,576	*866,063
Ratio cost of accidents to gross earnings, per cent	145	3.00	3.12
Ratio amount paid in settlement of claims to total cost of claims, per cent	133	63.72	65.88
Ratio cost of claims department to total cost of claims, per cent	125	23.04	22.23
Total cost of accidents per car-mile, cents	146	1.46	1.54
Number of accidents per 10,000,000 car-miles	168	3,679	3,772
Persons injured per 10,000,000 car-miles	157	690	720

* Last 000's omitted.

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stores for that day plus a large typical office building.

The employees in the stores conducting the survey voted on the first day only. The distribution of the survey follows:

Shoppers voting			85,657
Employees voting			7,698
Total vote			93,355
	SHOPPERS		
Motor Coach	Street Car	Automobile	Walk
8,910 (10.4 per cent)	53,738 (62.74 per cent)	19,551 (22.82 per cent)	3,458 (4.04 per cent)
	EMPLOYEES		
563 (7.31 per cent)	6,208 (80.64 per cent)	762 (9.9 per cent)	165 (2.15 per cent)
	TOTAL GOING TO STORES		
9,473 (10.15 per cent)	59,946 (64.21 per cent)	20,313 (21.76 per cent)	3,623 (3.88 per cent)

The above figures indicate that only about one shopper in five used a private automobile.

The committee is informed that the city of Detroit has considered and purposes to experiment on a large scale with construction of pedestrian subways from sidewalk to street centers, where loading platforms will be located, the car tracks having been spread at the selected points so as to permit of loading and unloading of cars on the so-called "devil strip" side.

Inasmuch as the plan has been fully described in the daily and technical press it is mentioned here only for the purpose of directing the future committees that they may study and report on the results of this experiment.

Automatic signal light control of vehicular traffic in congested areas is a fairly recent development and little or no engineering study had been made prior to 1925 with respect to the speed at which vehicles moved through the controlled area.

At the request of the Chicago Association of Commerce, E. J. McIlraith, staff engineer of the Chicago Surface Lines, assisted by H. B. Cammack of the same company, began a study in August, 1924, of all existing methods of handling traffic by signal light control, with the object of determining if any improvements could be made. The result of this study was the development and installation of an entirely new system in Chicago which is known there as the "co-ordinated" system. It has speeded up street car movement in the Loop area of Chicago from 25 per cent to 50 per cent on various streets. An installation embodying some of the principles of the Chicago system, but termed the "reciprocal" system (because it was believed that this name was more descriptive of the actual operation of the lights) has been worked out by engineers of the Community Traction Company in Toledo for installation in that city about Aug. 1, 1926. [The Chicago system was described in ELECTRIC RAILWAY JOURNAL March 27, 1926, page 537.]

The committee recommends that careful study be made of each installation of traffic control equipment either operating or to be installed. Continuous movement instead of the less desirable synchronous system is desirable.

This association should continue to study and keep closely in touch with the detail and minutiæ of traffic congestion, but respectfully suggests that if a way could be found to add one or more men from the Engineering Association, and a more direct contact with, and guidance of, the American Association, the work could be better done and the results attained more quickly.

The report was signed by A. W. Brohman, C. H. Evenson, R. W. Emerson, D. L. Fennell, A. J. Fink, Arthur Gaboury, J. A. Gemg, J. E. Heberle, A. L. Hodges, George Kuemmerlein, Jr., F. R. Latta, R. J. Lockwood, J. A. Miller, Jr., J. P. Pope, E. S. Rider, C. D. Smith, W. E. Thompson, J. P. Tretton, E. A. West, P. E. Wilson, sponsor; George B. Anderson, sponsor, and A. R. Myers, chairman.

Bus Operation

DIFFERING somewhat from other years, the committee on bus operation for 1926 decided that this year it would define the policies of member companies on the many features of bus operation rather than concentrate on the obtainment of statistics from member companies.

J. B. STEWART, JR.
Chairman

The committee report is, therefore, divided into sixteen sections covering the following subjects. Fares, both city and interurban; underlying reasons for higher rates of bus fare; taxation during development period; proper agency to operate bus lines in competitive territories; chartered coach and bus operations; terms of franchise, package express delivery, including handling of United States mail; utilizing the motor bus in developing better public relations and more favorable sentiment of financial interest toward electric railways; the problem of supporting non-paying route extensions; tire mileage contracts; liability insurance; double-deck bus operation—when and where it is justified; development cost; and bus accounting.

It is the committee's belief that the question asked during the earlier years of bus experience as to whether electric railway companies should undertake bus operation has been answered by the Code of Principles adopted by the American Association in 1925. The committee has included this code with reference to bus operation in its report. In brief, this section of the code stated that no medium had been developed that could replace the electric railway as a means of conveying masses. The electric railway companies supplying the local transportation should provide and control and operate all of the buses that are needed, as an auxiliary service in the communities they purport to serve. The code further states that buses should be regulated by law as common carriers and that both buses and electric railways should bear proportionate taxes and other public obligations that are fairly chargeable to them as public carriers.

UNDERLYING REASONS FOR HIGHER RATES OF BUS FARE

From a theoretical economic point of view the fare per passenger should be based on the cost of service per passenger. Consequently buses designed for mass transportation which carry large numbers of standing passengers may produce a service where the cost per passenger will be considerably less than the cost per passenger for a service rendered by a de luxe bus, where standing is either not permitted at all or reduced to a comparative minimum. Such a difference in cost should be reflected in the rates charged for the difference in the kind of service rendered. In one case the passenger receives mass transportation at a lower fare and in the other case he obtains greater comfort, probably greater speed and should pay extra for it.

Practically, where buses are coordinated with cars and expected to give a service identical with cars the fare should be approximately the same. If, however, the bus furnishes any element of service which the car does not furnish this added element should provide a logical reason for a higher rate.

The report closes by saying the bus service is still in a state of evolution, and opinions may not be rigidly fixed until the place of this new agency becomes crystallized with respect to existing transportation facilities. As more concrete information is developed, it is believed that succeeding committees will be in a position to set forth more definite data and conclusions on all important phases of bus use.

The report was signed by B. W. Arnold, C. H. Chapman, C. B. Cooke, Jr., E. D. Dreyfus, D. L. Fennell, R. N. Graham, S. W. Greenland, M. L. Harry, R. B. Hill, Adrian Hughes, Jr., D. A. Scanlon, Alexander Shapiro, R. H. Smith, A. T. Warner, J. V. Sullivan, sponsor; V. W. Berry and J. B. Stewart, Jr., chairman.

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The News of the Industry

Seattle Mayor Has Report on Transportation Ills

In recommending operating changes for the Seattle Municipal Street Railway, Seattle, Wash., to stem the tide of decreasing revenues and patronage, all of which he says could be put into effect in 30 days, Clark R. Jackson, superintendent of public utilities, in a report filed recently with Mayor Bertha K. Landes, estimates these changes would effect a saving of approximately $800,000 a year. The most sweeping proposal is to eliminate "duplication of service" in the downtown district by turning back all cars around loops, with Pike Street as the dividing line. Under the present system, nearly all car lines traverse virtually the entire length of the retail business district. This change in operation is estimated to result in an annual saving of $612,500. Turning back cars around loops from Pike Street would not abolish the transfer system, as transfers would be issued to south-bound loop cars at Pike Street.

The report was made at the request of the Mayor and represents a month's intensive work. Recommendations for downtown operation call for one-way traffic for street cars and automobiles on First and Third Avenues and dividing the car lines into six groups to go in and out of the business districts over as many loops.

Mr. Jackson cited many advantages of the Loop system. Other features of his report show that the total number of pay passengers on weekdays for the year ended Sept. 1, compared with the calendar year 1921, fell off 4.6 per cent and the number on Sundays 25.3 per cent.

Upon receipt of Mr. Jackson's report, Mayor Landes appointed a committee of citizens prominent in civic life to consult with her on the municipal railway problem.

Seven-Cent Cash Fare in Cleveland

Fares on the lines of the Cleveland Railway, Cleveland, Ohio, will be 7 cents cash, eight tickets for 50 cents, after midnight Oct. 15. The directors of the railway so decided on Oct. 1 to curb the decline of the interest fund, which now shows a deficit of more $75,000, with losses of close to $100,000 monthly at 6-cent fare.

The advance is expected to net about $125,000 a month increase in revenues. If Cleveland Heights, East Cleveland and Lakewood pay a rate a cent higher than Cleveland's at all times, there will be $25,000 a month additional.

The interest fund will not reach "normal" until it touches $300,000 and fares cannot be reduced until it reaches $1,100,000. For many months it has been below $500,000, the point at which fares might have been increased automatically.

Efforts are under way to get the three suburbs to accept franchises with the 1-cent increases. Cleveland Heights City Council has virtually agreed to accept such a franchise in return for extensions on Mayfield, Cedar and Fairmount boulevard.

East Cleveland City Commission is holding off acceptance because it wants the company to supplant the service on the Euclid-Superior extension with through service to Public Square by way of Superior Avenue.

In Lakewood, where a sliding scale franchise on the "same-as-Cleveland" basis was adopted a year ago, fares will go to 7 cents Oct. 15 along with Cleveland's. In Cleveland Heights and East Cleveland 6-cent fares will continue till new franchises are worked out unless increases are accepted voluntarily. Lakewood is expected to make a bitter fight against the 1-cent differential.

Philadelphia Council Favors "L" Extension

A 30-year extension of the present lease of the city-owned Frankford elevated lines to the Philadelphia Rapid Transit Company, Philadelphia, Pa., was approved on Oct. 1 by the City Council by a vote of eighteen to two. The agreement with the Philadelphia Rapid Transit was sought by administration leaders with a view to relieving the borrowing capacity of the city for the amount of the Frankford "L" bonds. With this it is believed it will be possible to borrow the $5,000,000 needed to finance the Sesqui-Centennial.

The bill provides that the Philadelphia Rapid Transit Company in consideration of the extension of the lease of the Frankford "L" for 30 years shall pay $903,000 annually, which is the full interest and sinking fund charges on the $13,421,000 bonds. The amount represented by the bonds would be added to the city's borrowing margin if the Public Service Commission and the Court of Common Pleas give their approval. W. W. Roper, member from Germantown, and Clarence K. Crossan, counselor representing the northeast, voted against adoption of the ordinance. Criticism of the compact came from various sources, dealing chiefly with the "untimeliness" of extending the lease with negotiations for the new Broad Street tube still pending. C. Oscar Beasley, counsel for the United Business Men's Association, announced that a taxpayers' suit was contemplated to upset the granting of the lease. An amendment to the agreement providing for a recapture clause which would allow the city to recover the line upon six months' notice was offered in Council by Mr. Beasley through W. W. Roper, but it was rejected.

The Mayor said he felt the provisions of the agreement were fair and equitable to the city and, unless otherwise convinced, he would go ahead and sign the measure.

Kansas City Ordinance Passed a Second Time

At the meeting of the Kansas City, Mo., City Council on Oct. 4 the ordinance passed the previous week and providing for a twelve-year extension to the existing street railway franchise was again hailed into the Council for another vote. Mayor Beach, who has strenuously opposed the passage of the bill, filed a notice with the city clerk on the preceding Saturday, causing the bill to be sent back to the Council, although that body had unexpectedly passed the measure by a majority vote at the preceding meeting. Despite the Mayor's charges that the bill's passage had been by "arrangement" between the five Democratic Councilmen and William G. Woolfolk, president of the Kansas City Public Service Company, the bill was repassed with the same party vote as in the earlier passage, after a heated discussion.

Following the passage of the bill for the second time, the Council approved the appointment of a committee of five Councilmen, including A. N. Gossett, chairman; Henry L. McCune, C. Jasper Bell and C. A. Burton. This committee was instructed to meet with Mr. Woolfolk at an early date to enter negotiations for a complete new city franchise to replace the extended one now in existence. Mr. McCune expressed the opinion that a new franchise could be worked out within 30 days that would be satisfactory to all concerned.

The appointment of this committee was in accordance with a suggestion of Mr. Woolfolk, from whom the Councilmen and the city manager received letters on Sept. 29, stating that he was ready at any time to negotiate with the Council or other officials for a new franchise. All Councilmen are said to be in favor of such negotiations at as early a date as possible.

The principal objection to the extension is apparently in connection with the valuation set upon the local railways property by the new operating company. The Kansas City Public Service Company purchased the properties from the federal court for a nominal bid of $8,000,000, while the franchise measure passed this week was constructed on a basis of a $34,000.000 valuation. Mayor Beach contends that the valuation should now be cut to a fair value of the bonds used in the purchase of the properties, since the railways had suffered for many years as a result of overvaluation.

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Indiana Commission Collects More Than Expenses

Collections made by the Indiana Public Service Commission during the fiscal year just ended total $295,692, or more than twice the expenses of the commission for that period, due to a system of collecting established by Howell Ellis, secretary. In his report, which covers activities of his department from Oct. 1, 1925, until Sept. 30, this year, Mr. Ellis points out that there has been a 100 per cent collection of all fees due the state as a result of formal orders issued by the commission. This has been accomplished through a rule established by Mr. Ellis, with the approval of the commission, that no order promulgated by the commisssion go into effect until the utility pay costs for conducting hearings and investigations.

The report shows that total expenditures of the commission for the year were $144,355, which is $26,644 less than the appropriation for the commission in the state budget. This latter sum will be turned back into the state general fund. Fees collected were $151,607 in excess of the actual operating expense of the department. The fees collected aggregate the largest amount ever collected in one year and expenditures for the year have been the lowest for the last five years.

Improvements Planned for Expediting Service in Tacoma

An active program of improving its tracks and the pavement along its rails, of repainting its cars and otherwise bettering its rolling stock and lines was outlined recently by the Tacoma Railway & Power Company before the City Council of Tacoma, Wash. The company states it will add about 25 men to its maintenance crews and will increase its monthly expenditure to about $23,000. In addition $39,000 will be spent on paving McKinley Avenue, where $35,000 was spent last year.

Plans will also be made at once to speed up service on all street car lines, to reduce operating costs by collecting fares at outlying points both on inbound and outbound trips and to install the skip-stop system. The report issued by the company shows that earnings are still disappointingly low under the new fares in force, but that the first weeks of August showed improvement over July figures. The fact that 60 per cent instead of 40 per cent of riders, as expected, are using tokens is throwing earnings off estimates.

Illinois Cities Denounce Utilities in Move for Home Rule

The growing hostility of many cities and villages of Illinois to state control of public utilities was again evidenced at the second "home rule" conference of the Illinois League of Municipalities, held in Rockford on Sept. 23.

Mayors, attorneys and Aldermen from 30 different cities dennounced the Illinois Commerce Commission as a "body of tyrants" and pledged their support to a finish fight to restore local sovereignty.

City Attorney W. S. Spaulding of Springfield declared that the utility companies "are gradually edging themselves into control of the government, instead of the government controlling them."

The conference adopted a set of resolutions demanding that the public utilities act allowing cities to withdraw from control of the Commerce Commission be amended so that the process could be carried out speedily, and that appeals from decisions on utility questions be made by the courts instead of by the Commerce Commission.

Chicago Transportation Heads and Bankers Disclose Merger

A plan for the consolidation of Chicago's entire traction properties, embracing all the surface lines and the elevated system into a new $250,000,000 corporation, is fast taking shape in the hands of committees representing all the companies.

A general scheme of consolidation with an interchange of transfers between surface lines and possibly motor coach lines, with tentative agreements as to extensions of lines and the use of subways, has already been reached by bankers representing surface line bondholders and executives of the elevated lines. It is based on the belief that the city will be able to secure state legislation permitting the granting of an indeterminate permit and then formulating an ordinance along this line. The general plan will be presented to the City Council committee on local transportation in a short time.

Under the present arrangement the Surface Lines will be taken into the consolidation at about the current purchase price to the city, as fixed in the 1907 ordinances. This is approximately $165,000,000. It is expected that the elevated lines will be taken in at about $80,000,000. The new corporation would have a bonded indebtedness of something like $200,000,000, or sufficient to convert the present outstanding bonds of the various companies. Some of the present junior securities would be converted into stock of the new company.

The plan contemplates that the city shall forego its present share of 55 per cent of net earnings. Just revenues and the increase in earnings expected would be devoted to two purposes: First, extension and improvements to the properties, and, second, amortization of the funded debt of the company over a period of years. It is further suggested that the city shall own the entire system when the bonds are paid off, or that the city may assume ownership at any time by paving off outstanding obligations, which will decrease from year to year. The plan calls for city construction and ownership of the first subway tubes, the cost to be defrayed by the present $45,000,000 traction fund accumulated by the city's division of earnings in the last twenty years. Extensions of subways would be taken care of by earnings or additional security issues.

If the purpose in general is sanctioned by the Council committee it is planned to organize the new corporation without waiting for the present surface lines franchise to expire and the present bonds of the companies become due next January. The bondholders of the Surface Lines will be asked to accept bonds of the new company on an equal basis, with the option of selling their bonds for cash at a discount of probably 10 per cent, which is well above current market prices. Holders of the obligations of the Chicago Rapid Transit Company will be asked to accept new securities of approximately equal value.

The Council sub-committee on local transportation was recently told by traction executives and bankers that if the Aldermen's fight for "home rule" over rates and service on the elevated and Surface Lines systems continues, the city's traction problem will be more chaotic than ever.

Even with both the bankers and traction people willing to have the city control the local utilities, the State Legislature would undoubtedly oppose such a plan and refuse to give the city powers to make it effective.

Certificate for St. Louis-Kansas City Line Denied

Judge Henry Westheus of the Cole County Circuit Court at Jefferson City, Mo., on Sept. 20 sustained the action of the Missouri Public Service Commission in refusing to grant a certificate of convenience and necessity to the St. Louis-Kansas City Short Line Railroad for the construction of an electric railway between St. Louis and Kansas City. The formal entry in the Circuit Court records of the order was delayed to enable counsel for the proposed road to prepare a motion for a new trial and an appeal to the Missouri Supreme Court.

The commission in May, 1925, declined to grant the certificate, which is the equivalent of a franchise, because the promoters of the road had failed to convince the commissioners of their ability to finance the project properly. However, they were given a year in which to present additional evidence of financial stability. Such evidence has not been given to the commission. When the state commission finally decided that the company could not get the desired certificate an appeal was taken to the Circuit Court.

The incorporators were Lee Dunlap, Kansas City, former State Factory Inspector, and several other residents of Kansas City and St. Joseph, Mo.

Made-to-Order Service in Georgia

"Made to Order" is the way the Georgia Railway & Power Company, Atlanta, Ga., characterizes the service it wishes to give its patrons. The company is conducting a campaign among the employees for ideas as to how the service can be improved. The thought suggested to each employee is, if he were an executive of the company, what could he think of to improve the service; in this way changes must be considered from the points of view of both the patron and the company. Any suggestions offered will be put before the officials of the railway and practical and helpful changes will be put into effect.

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Insignia of Coffin Medal Applied to Pennsylvania-Ohio Equipment

Quick work on the part of the Pennsylvania-Ohio Electric Company resulted in the fixing of the insignia consisting of reproductions of the Coffin Gold Medal on the side of every car and bus before it rolled out of the barns last Wednesday morning. The award was not formally presented until late Tuesday evening Oct. 5, but the spirit that prompted C. S. MacCalla, R. N. Graham and the employees of the company to win the prize made it possible to rush the job of applying the transfers on to the car panels so that the citizenry of Youngstown and the neighboring communities might know that here was a gold medal road.

Power Project Revived at Kansas City

The engineering firm of Woolfolk & Company, Chicago, and the banking firm of Eastman, Dillon & Company, New York and Chicago, are to be brought actively into the negotiations on the projected Osage River hydro-electric project. It is proposed that the Kansas City Power & Light Company and the Kansas City Public Service Company, the successor to the Kansas City Railways, jointly operate and control the hydro-electric project.

William G. Woolfolk is senior member of the engineering firm. His engineering partner, Frank L. Conrad, vice-president of Woolfolk & Company, will investigate the engineering features.

The suggestion is made that the two Kansas City public utilities take over control of the development, independent of the arrangements for financing its construction. The present proposal provides for the use of the new power as an auxiliary supply for the power and light company and the railways.

Following the failure of the original promoters of the project to arrange the sale to the Kansas City Power & Light Company and the Kansas City Railways, a proposal was advanced to the United Light & Power Company, holding organization of the local power and light company, to finance the development of the project.

After the Kansas City Public Service Company became the tentative owner of the local railways Mr. Woolfolk stated that the hydro-electric project would be considered by his company as a possible power development for the railway, since the present railway plant is considered inadequate.

Mr. Storrs on Vacation

Lucius S. Storrs. accompanied by Mrs. Storrs, sails for Europe on Saturday, Oct. 9, where he will take a brief vacation returning about the middle of November. When asked about his itinerary, he replied that his idea of a vacation was not to have any. He did intimate, however, that he would probably visit points of interest in England, France and Germany. Without doubt he will take occasion to look into the new car designs which have been reported from Paris and Berlin during the last few months.

News Notes

Contributions Sent to Florida by Chicago Men.—Donations of officers and employees of the Chicago Surface Lines, Chicago, Ill., to the Red Cross for Florida relief amount to $13,500. This exceeded by $1,000 the quota fixed by the Chicago Association of Commerce for all utilities in Chicago. Under this quota the Surface Lines was expected to raise only $2,500.

Twenty-eight One-Man Cars Expected.—Announcement has been made by the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., that approximately 28 one-man cars will replace the present 23 two-man cars on the Oakland-Delaware line in accordance with an order issued to that effect by the commission on Sept. 14. The change will be made about Nov. 1.

Good Morning—Grand Rapids Welcomes You.—A greeting card is the latest idea of the Grand Rapids Railway, Grand Rapids, Mich. The plan is to send good morning folders to the different hotels of the city from time to time during conventions, and at other times so that guests will have a message from the railway before they have done any sightseeing about the city. The welcome folder with the company's monogram can be kept as a souvenir. It tells about the electric rail coaches, the places of interest en route and the small expense incurred for such de luxe travel.

New Extension Being Operated.—For the first time since the war the Key System Transit Company, Oakland, Cal., has completed and is now operating a new extension. This latter, approximately 1 mile in length, was built along Park Boulevard, crossing Dimond Canyon on the new bridge and providing means of transportation for a recently built up section of Oakland that has previously been inaccessible so far as street car traffic is concerned. The cost was $40,000.

Benefit Association Formed. — A mutual benefit association has been organized by employees of the Northern Ohio Power & Light Company, Akron, Ohio. Benefits are $10 per week, commencing on the eighth day of disability. Dues are $1 per month. F. S. Summy, who has been associated with the company for several years, has been selected secretary-treasurer.

Tramway Refuses to Pave.—The Denver Tramway, Denver, Col., on Oct. 1 notified City Engineer Vickery that it was not disposed to pay for any paving between its tracks on various streets designated by the city engineer as in need of paving. The company took the stand that if it had a perpetual franchise it did not have to pay for the paving.

"E" on Sleeve Means Efficiency.—Thirty members of the transportation department of the Georgia Railway & Power Company, Atlanta, Ga., will wear a coveted "E" on the sleeves of their uniforms as a result of a campaign to promote efficiency of operation. Of the 30, 21 are conductors and nine motormen. These 30 trainmen are the first to meet the requirements specified. The method used by the company in awarding efficiency emblems is to set a "bogie" in power saving for motormen and a similar "bogie" on the Ohmer register for conductors. In order to gain the coveted emblem, this "bogie" must be met for three consecutive months. In order to secure the "E," conductors must work twenty days during each month with an average of 97 per cent or over, making it as difficult an accomplishment for the conductors as for the motormen. The campaign has been under way only three months.

Extends Air Mail Service.—The air mail service provided by the Philadelphia Rapid Transit Company, Philadelphia, Pa., between Philadelphia and Washington will be extended to Norfolk on Oct. 10. The mail will be transported between Philadelphia and Norfolk in 3¼ hours. This new service will place Norfolk in touch with overnight air mail service between Norfolk and Chicago by way of New Brunswick, N. J. Letters mailed in Norfolk at noon with special delivery stamps will be delivered in Washington and Philadelphia the same day.

Uniform Fare Desired.—The Southern Public Utilities Company, Charlotte, N. C., has received numerous requests from its Winston-Salem patrons to provide a uniform fare for all its lines there. At present the fares range from 5 cents to 10 cents. Only one bus line, that to the Union Station, has street car transfer privilege, but patrons of other lines are asking that the same privilege be accorded. Should this rate be established, with transfer privilege, patrons could go from any section of the town to another on only one fare.

Disapproves Traffic Plan.—The citizens' bond issue supervisory committee of St. Louis, Mo., by a vote of twelve to one on Sept. 20 decided against the plan of Director of Streets and Sewers Brooks to place street cars on Olive Street. The plans would put cars in a center parkway on Olive Street when that thoroughfare is widened from 60 ft. to 100 ft. between Twelfth Boulevard and Channing Avenue. Director Brooks' plan has been approved by the Board of Public Service.

Doing a Bit in a Big Way.—The Key System Transit Company of Oakland, Cal., has just "done its bit" to aid the Florida relief fund now being raised in the East Bay cities. A big theater was offered in which to hold the benefit show that began at midnight, Oct. 2, and lasted till 3 o'clock in the morning. Prominent actors and actresses gave their services free. There were ten bands and a big crowd came to enjoy the show. Oakland, however, is without all-night transportation; the cars stop running between 1 and 2 o'clock in the morning. The problem then arose, how to get the crowd home? The Key company solved this problem in a public-spirited way. Cars were sent to the theater where the benefit was held at 3 o'clock in the morning, and those who so desired were transported to their homes free of charge.

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Recent Bus Developments

Bus and Interurban to Stone Mountain Memorial

With the completion of a hard-surfaced road from the town of Stone Mountain to the memorial carving on Stone Mountain itself, bus service has been resumed between the interurban terminus and the mountain by the Georgia Railway & Power Company, Atlanta, Ga. In the shuttle service are seventeen passenger buses, painted cream and white, the same combination used on the Morningside and Virginia Avenue buses of the Atlanta Coach Company. The coaches will meet each interurban car as it arrives in Stone Mountain, carrying passengers wishing to see the memorial around the mountain and back in time to catch the next interurban. In case visitors wish to stop over, they can do so, taking the bus back at any time.

A special Sunday service to Stone Mountain has just been started by the Georgia Railway & Power Company which is proving very popular. Stone Mountain interurban cars are dispatched on a 30-minute schedule Sundays instead of the usual one-hour schedule, with a special price of 75 cents for the round trip, including car and bus fare.

Bus Line in Logan, Utah

Permission to abandon its street car line in Logan, Utah, and to substitute a bus line has been granted the Utah-Idaho Central Railroad by the Public Utilities Commission of Utah. The decision allows the company to tear up its tracks and repair the streets where the tracks have been.

Application for permission to abandon the railway was filed by the railroad on Aug. 4. This application declared that for many years the car line had been operated at a loss; that the revenues from such operation had been insufficient to meet the actual operating expenses, much less to pay interest on the capital invested. It was pointed out in the application also that, because of the growth and expansion of the city of Logan, the present street car line was inadequate to serve all the city, and that it was not feasible nor practicable to build other lines to certain sections. The application declared that it would be possible to give the citizens of Logan much better service with a bus line than with an obsolete railway. Permission was asked to operate the motor vehicle line, charging 7 cents for single fares, three fares for 20 cents, and selling twenty school tickets for one dollar.

At the hearing the commission found that a fair value for the 3 miles of track in Logan was $86,400; that the interest upon the fair value, at 8 per cent, would be $6,912. The net income in 1925, excluding interest and maintenance, was $1,599. A franchise to operate as a common carrier by motor vehicle of passengers over the streets, alleys and public places of Logan has already been granted by that city to the company.

Developments Continue in Lincoln Bus Tangle

The Lincoln Traction Company, Lincoln, Neb., a subsidiary of the United Light & Power Company, has made application to the State Railway Commission and the City Council for authority to substitute eleven buses for car service to the state hospital for the insane, the state penitentiary, the state college of agriculture, to Bethany suburb, and for a crosstown line, with the same fare as prevails on street cars, 10 cents cash and four tokens for 30 cents is asked, with 2 cents more beyond certain fare limits.

E. R. Heiny, general superintendent, in a communication to the Council, said that it was doubtful if there was enough business in the city to pay the operating expenses of one company, but that the owners were committed to do whatever was possible to maintain the system. He claimed that for the last two months the net income has been $1,700 each month less than enough to meet fixed charges. In order to avoid the payment of $16,000 paving tax in a newly created district the company has asked the authorities for permission to abandon six blocks of track on the old Epworth lake park line, and at the hearing a petition was presented from property owners asking that the company's tracks be removed and the street improved.

In addition to this situation City Attorney Peterson has advised the City Council that a recent Supreme Court decision places entirely within its hands the question of whether any permits to operate buses are granted. He says that this power also includes the question of how far the substitution of the bus for the street car shall go, whether there shall be free transfers between buses and cars, and the matter of securing bus service for newly developed areas of the city.

C. N. Chubb, general manager of the United Light & Power Company told a group of business men at the Chamber of Commerce that the directors of United Power have agreed to expend $1,300,000, estimated cost of the rehabilitation of the traction company, if the proper co-operation can be secured from the progressive business element of the city.

The discouraging feature of the Lincoln situation, he said, was that out of a clear sky came competition, referring to the request of the Omaha, Lincoln & Beatrice interurban to penetrate the downtown business section, where its rails never entered, with buses. Mr. Chubb said his company was willing to step out if any other company wished to operate the system in this city, where now there is no chance of one making an adequate return on its investment, but if no other company was willing to do that he thought his company should be given full leeway.

Buses Between Hamburg and Buffalo.—The Public Service Commission has issued a certificate of convenience and necessity to John F. Burke, as receiver of the Hamburg Railway, for the operation of bus lines between the village of Hamburg, N. Y., and the city of Buffalo over two distinct routes. It is proposed to operate four buses, with a fare of 40 cents, from Hamburg to Buffalo, divided into four zones, with a 10-cent fare in each, except that the fare on Ridge Road extension will be 5 cents. Local passengers are not to be carried in Athol Springs or between Athol Springs and Woodlawn and from Buffalo, nor in the city of Buffalo.

Would Substitute Bus Line. — The Scranton Railway, Scranton, Pa., has filed application with the Pennsylvania Public Service Commission for permission to abandon the Wilson Creek-Forest City trolley line. This permission is sought on the ground that operation is expensive and also unsafe because of mining conditions. Coincidental with the filing of the application for abandonment the Scranton Bus Company, a subsidiary of the railway, requested permission to operate buses in the same territory. The buses would run from Forest City over the public highway to the city hall and Carbondale. J. J. Coleman, vice-president and general manager of the Scranton Railway, explained that with the bus and trolley schedules to be arranged improved transportation facilities would be furnished.

Riding Into the Past by Motor Coach.—The Fifth Avenue Coach Company has published in leaflet form an account of the engagements during the Revolutionary War on Manhattan Island between Sept. 15 and Nov. 16, 1776. A most interesting feature of the leaflet is an excellent map showing the movement of the American and British troops prior to the battle of Harlem Heights on Sept. 16. The greater part of the district described is now served by coaches of the company.

Buses to Replace Cars on Some Troy Streets.—The Public Service Commission recently approved a declaration of abandonment by the United Traction Company of certain tracks in the city of Troy, N. Y. Simultaneously with such approval a certificate was issued to the Capitol District Transportation Company, Inc., a subsidiary company of the United Traction Company, to operate buses over the same route.

Church Charters Bus for Parishioners.—The Union Federated Church, East St. Louis, Ill., started on Sept. 19 the hiring of a bus from the East St. Louis & Suburban Railway to increase attendance at the Sunday morning services. On that day there was an appreciable increase in the attendance at the church and sunday school services. The plan, which will be tried out for six weeks, originated with the pastor, the Rev. Walter Schlaretski. He interested nine members of the congregation in his idea and they are now paying for the use of the bus. Each Sunday morning the bus starts out on a round of collections, picking up parishioners and their children. It reaches the church at 9:30 a.m.

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Financial and Corporate

P.R.T. Stock on Sale to Public

The public is again invited by the Philadelphia Rapid Transit Company, Philadelphia, Pa., to participate in the purchase of the last $5,000,000 of its 7 per cent preferred stock, being the remainder of an issue of $15,000,000 which was authorized by the City Council a year ago. The first $10,000,000 of the issue was purchased by the public some months ago. The stock is offered at par, which is $50 a share. This stock has no voting power, but its dividends are preferred over the common or voting stock. Right is reserved by the company to purchase outstanding stock at any time for $55 a share. Subscriptions can be made by mail to Securities Department, 433 Land Title Building.

It is the desire of the Mitten Management, Inc., that the stock be as widely distributed as possible, and to aid this purpose the stock is offered on the installment plan. The public can purchase the stock at the rate of $1 a week per share.

It is said the company will use a large part of the money in expanding its bus system and the city taxi system and to retiring securities. Approximately $800,000 will be spent in the installation of new service, construction of repair and garage buildings, and $150,000 will be used for bus service equipment. An appropriation of $1,700,000 will be made for extensions and improvements.

Deficit on Mexico Tramways in 1925

The gross earnings of the Mexico Tramways, Mexico City, Mexico, for the year ended Dec. 31, 1925, was $9,997,033 (Mexican currency), compared with $11,692,369 for 1924. The operations resulted in a net deficit of $530,255, after allowing for taxes and depreciation. This is a decrease of $684,834 on the net earnings for 1924. Managing Director Conway in his report, included in the twelfth annual report of the board of directors, said that the situation created by the jitney competition had been itensified owing to the improved organization of the jitney service and the co-operation of the jitney owners throughout the whole of the city and suburban districts. Aside from the question of the jitney competition, the company's gross and net earnings suffered heavily from a serious strike during the first two weeks in March. Apart from the financial loss of the company, the effect of the strike was to destroy for some time all discipline among the men, but during the latter months of the year this discipline was restored, conditions greatly improved, and a harmonious relation re-established between the company's officials and the men.

As a result of explaining the financial situation of the company to the President of the republic and to the Minister of Finance, a decree was published on June 29 which relieved all tramway companies from the 5 per cent tax on gross passenger earnings. Every effort was made during the year to reduce operating expenses to the lowest limit, and during the first few months of the year the staff in the shops was reduced by about 250 employees.

For repairs and maintenance of equipment the sum of $1,766,078 was spent during the year. For the same period $929,978 was expended on the track, overhead lines and buildings. The cost of operation decreased $112,093, and by the abolition of the tax on passenger earnings, already referred to, in the month of June, the amount of taxes over the whole year decreased $279,290. Owing to the continued decrease in gross earnings no improvement in operating expense ratio is reflected by the reduction in expenses.

The total capital expenditure during the year was $661,248. On the other hand, property had been retired against the depreciation account valued at $520,374, making the net amount chargeable to capital, $140,873.

	Mexican Currency	
Car Earnings:	1924	1925
Passengers	$8,932,977	$7,635,801
Monthly tickets	1,622,708	1,415,932
Chartered cars	45,857	49,251
Freight	351,874	339,050
Baggage and parcels	127,340	107,628
Funeral	230,336	211,723
Omnibus	241,563	78,081
Total	$11,552,657	$9,837,468
Miscellaneous earnings	139,712	159,564
Total earnings	$11,692,369	$9,997,033
Expenses:		
Operation	$6,594,912	$6,482,819
Maintenance, taxes and depreciation	4,942,878	4,044,469
Total expenses	$11,537,790	$10,527,288
Net earnings from operations in Mexico	$154,579	*$530,255
Passengers carried:		
1st-Class	69,625,847	62,947,208
2nd-Class	28,469,758	22,561,126
Omnibuses	1,961,634	510,805
Total	100,057,239	86,019,139
Car mileage:		
Motors and trailers	17,688,506	17,167,951
Gasoline and mule cars	79,907	113,430
Freight and sundry	606,037	604,098
Omnibuses	545,284	205,362
Total	18,919,734	18,090,841
Average number of passenger cars operated per day		
Electric	382.99	379.59
Gasoline and mule car	3.99	3.90
Omnibuses	12.02	3.98
Total	399.00	387.47
Average receipts per passenger car mile	.5965	.5283
Operating expenses, including taxes and depreciation, per car mile, passenger service	.6049	.5755
Daily average earnings from operation	$31,946	$27,389
Daily average operating expenses, including taxes and depreciation	31,524	28,841
Percentage of gross expenditures, including taxes and depreciation, to gross earnings	98.68%	105.30%

*Deficit

Commission Approves Kansas City Financing

The Public Service Commission of Missouri at Jefferson City on Sept. 29, eliminated the only remaining barrier to the operation and control of the properties of the defunct Kansas City Railways by the new Kansas City Public Service Company when it approved the proposed financing plan of the new company. At the same time the commission approved the transfer of technical control of the property from Powell C. Groner to the Kansas City Public Service Company.

Mr. Groner, who is chief counsel of the new company, bid for the property at the bankruptcy sale held in Kansas City by the federal court, bidding in representation of the first mortgage bondholders. Recently, first mortgage bonds, collateral gold notes and promissory notes to the total value of $24,542,602 were deposited in the vaults of the Federal Reserve Bank in Kansas City by Mr. Groner, who is also a vice-president of the new company. The securities deposited were those issued by the Kansas City Railways and are said to represent approximately 97 per cent of the outstanding indebtedness of that company.

It was said that, after the payment of the damage-suit claims and the preferred bills of the old company, about $3,000,000 or $4,000,000 would remain to be prorated among the holders of the first mortgage bonds of the old company. It was previously announced that such bondholders would receive prorated reimbursement in proportion to the value of bonds held, in cash rather than in securities of the new company.

Upholds Rehabilitation Against Dividend Payments on Bay State

The full bench of the Massachusetts Supreme Court has handed down a decision adverse to L. Sherman Adams in his suit to compel the trustees of the Eastern Massachusetts Street Railway, Boston, Mass., to pay dividends on the common stock and on some of the adjustment shares.

The case has been before the courts a long time and was referred to a master, Judge Frederic H. Chase. Judge Chase's report was in favor of Mr. Adams, but the full bench of the Supreme Court decided in favor of the trustees, appointed by the state, upholding their position in rehabilitating the property instead of paying dividends. The court upheld also the policy of including in the cost of service allowances for depreciation prior to the period of trusteeship, when the property was known as the Bay State Street Railway and was in a run-down condition.

In referring to the powers conferred by the law the court says: "The statute was not intended to deprive the trustees of all discretion in respect to dividends. It was intended that they should act with proper consideration for the interests of the corporation and its creditors as well as for the rights of stockholders, and the Legislature contemplated that the road should continue to be operated as a going concern."

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Morgantown Properties Go Over to West Virginia Utilities

The electric railway properties of the Union Traction Company, operating the South Morgantown line through the First and Second Wards of Morgantown, W. Va., has formally passed to the control of the West Virginia Utilities Company. Sale of the Union company's property to the West Virginia Utilities Company was negotiated six weeks ago, subject to a new franchise, under which the latter concern planned to merge the operation of the Sabraton and South Morgantown lines. That franchise was granted by the Council of the city of Morgantown several weeks ago, leaving only the transfer of corporate control as the final step of the sale.

At a meeting of the Union Traction Company and West Virginia Utilities Company officials new officers and directors of the Union Traction Company, which still retains its corporate entity, were elected, all of whom are local officers of the West Virginia Utilities Company. The new officers are: President, R. P. Stacy, vice-president and general manager West Virginia Utilities Company; vice-president, O. L. Eaton, Jr., commercial manager West Virginia Utilities Company; secretary-treasurer, F. M. Burchinal, holding a similar position for the West Virginia Utilities Company, and general manager, Clark Emerson, railway superintendent West Virginia Utilities Company. The four officers, together with Judge Frank Cox, counsel, constitute the new board of directors for the Union Traction Company.

In discussing the transfer of the property, Vice-President Eaton said there would be no changes for the time being in the schedule of cars, although it was possible there will be some betterment of the schedule within a week or ten days. The patience of the public was sought in the plan for combined operation of the Sabraton and South Morgantown lines. At the present time there was much improvement work to be done on the trackage of the South Morgantown line. In all, the company expected to spend $50,000 in track improvements and paving along this line.

As to when the new through service with the new cars and improved schedule would become effective, Mr. Eaton stated that it would all depend upon the rapidity with which the repairs to the South Morgantown line could be made. He felt sure that it would be not later than Jan. 1, 1927.

Seven-Cent Fare in Oakland Results in Slight Increase

Officials of the Key System Transit Company, Oakland, Calif., have revealed that since the 7-cent fare went into effect last January there has been a big slump in patronage. The net loss since Jan. 17 is 3,725,403 on street car lines and 835,862 on the Key division, or a total loss to the company of more than 4,500,000 riders. A loss in traffic was discounted by engineers before the higher rates on cars and ferries went into effect, but it was expected that there would be an increase in revenue amounting to at least $850,000. As a matter of fact, the new rates have produced an increase in revenue of only $152,025, insufficient to equal the amount of wage increase to platform men of $238,429. In addition the company has been compelled to add the sum of $280,000 per year to interest charges in order to finance its improvement program, amounting to $3,698,789.

So disappointing has been the financial return under the new revenues that the company has been forced to abandon a portion of its projected improvement plan. The elevated over Emeryville, to speed up Berkeley traffic to the Mole, will not be built for a while. It is likely, however, that before very much longer the Key System will take steps to run an automobile ferry service to and from San Francisco. Similar service on other lines, notably the Southern Pacific, has proved highly lucrative.

Valuation of Missouri Utilities Increases

The assessed valuation of the public utilities in Missouri for the 1926 taxes was placed at $485,115,754 by the State Tax Commission in a report submitted Sept. 25 to the Missouri Board of Equalization. This is an increase of $27,796,745 over the assessment last year. The valuations recommended by the Tax Commission compared with last year includes street railways, $68,721,741, an increase of $488,641. The United Railways of St. Louis was assessed at $47,144,102 and the Missouri Electric Railroad, a subsidiary, at $782,406, a combined assessment of $47,926,508, a decrease of $55,417. Public utilities will be given an opportunity to appear before the Board of Equalization to protest against their assessments.

Gross in Philadelphia $26,675,935

The Philadelphia Rapid Transit Company, Philadelphia, Pa., has issued the following financial and traffic statement:

INCOME ACCOUNT OF THE PHILADELPHIA RAPID TRANSIT COMPANY

	Six Months Ended June 30, 1926	Three Months Ended June 30, 1926
Operating revenue	$26,675,935	$13,768,010
Operation and taxes	19,585,558	9,961,016
Operating income	7,090,376	3,806,994
Non-operating income	275,105	145,053
	$7,365,482	$3,952,047
Payments to city Sinking fund and Frankford elevated	402,079	201,039
	$6,963,402	$3,751,007
Fixed charges, dividends and management fee	6,947,511	3,742,662
Surplus	$15,890	$8,345

Bonds Offered.—An issue of $1,500,000 Chicago, North Shore & Milwaukee Railroad first and refunding mortgage 5½ per cent bonds, series B, was offered on Oct. 1 by Halsey, Stuart & Company and the National City Company. The bonds mature April 1, 1956, and are priced at 98.50 and interest, yielding about 5.60 per cent. Proceeds of the issue will be used toward reimbursing the company for capital expenditures for additions and betterments to its properties. The company operates from Evanston, Ill., to Milwaukee, with a branch to Mundelein, Ill.

New Directors Elected.—Berry S. Spain, assistant secretary and assistant treasurer of the Nashville Railway & Light Company, Nashville, Tenn., and John C. Guild, vice-president of the Tennessee Electric Power Company, have been elected directors of the Nashville property. They succeed in this capacity H. H. Batchelor and W. R. Cole, resigned.

Receivers Appointed for Missouri Road.—E. Z. Wallower of Harrisburg, Pa., filed a petition in the federal court of Kansas City, Mo., on Sept. 14, asking that receivers be appointed to take charge of the affairs of the Southwestern Missouri Railroad, which operates electric railway lines at Joplin and at Webb City, Mo., and interurban services to Baxter Springs, Kansas, Picher, Okla., and to various other smaller cities in that district. The company, through its attorneys, on the same day filed an answer to the petition, consenting to the requested receivership. Judge Merrill E. Otis subsequently appointed F. C. Wallower and Harrison C. Rogers, both of Joplin, receivers for the company. Mr. Wallower, the petitioner, who is said to own 12,000 shares of stock and $400,000 in bonds of the company, pointed out in the petition that the interest on the bonds had not been paid for a long time and that other creditors of the company had previously threatened legal action.

Will Redeem Bonds.—It is announced that all of the outstanding first mortgage gold bonds of the Kentucky Utilities Company, Louisville, Ky. (series B and E) will be retired. The series B bonds, due 1941, will be paid on Nov. 15 at 107½ and interest and the series E bonds, due 1949, will be redeemed Nov. 1 at 105 and interest. The Kentucky Utilities Company is a subsidiary of the Middle West Utilities Company.

Audit in St. Louis Under Way.—The audit of the books of the United Railways, St. Louis, Mo., to determine whether the company is entitled to an increase in fare from 7 cents to 8 cents was started by auditors of the Missouri Public Service Commission on Sept. 27. The audit was ordered last June following the filing of the application for increased fare by Receiver Rolls Wells.

PASSENGER STATISTICS OF THE PHILADELPHIA RAPID TRANSIT COMPANY

	Six Months Ended June 30, 1926			Three Months Ended June 30, 1926		
	Total	Surface, Subway and Elevated	Motor Bus	Total	Surface, Subway and Elevated	Motor Bus
Passenger revenue	$26,281,114	$25,011,821	$1,269,292	$13,552,720	$12,800,498	$752,222
Passengers carried	483,571,941	469,916,443	13,655,498	248,835,184	240,791,676	8,043,508
Average rate per passenger, cents	5.43	5.32	9.30	5.45	5.32	9.35

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Acquisition Bonds Approved. — The Massachusetts Department of Public Utilities recently approved the issue by the Interstate Street Railway, Attleboro, Mass., of $150,000 first mortgage 6 per cent sinking fund gold bonds dated April 1, 1926, and due April 1, 1951. The proceeds are to be used solely for the payment and cancellation of $50,000 outstanding car trust notes and $100,000 in payment for the property and franchises of the Attleboro Branch Railroad.

Extra Dividend Declared.—Directors of the Pittsburgh Utilities Corporation, New York, N. Y., recently declared an extra dividend of $187,500 as well as the regular semi-annual dividend of $1 a share on the common and 2½ per cent on the preferred. The Pittsburgh Utilities as of Dec. 31, 1925, owned 491,500 shares of common stock of the Philadelphia Company and 25,000 shares of participating 8 per cent preferred stock of the Duquesne Light Company. An important subsidiary of the Philadelphia Company is the Pittsburgh Railways, Pittsburgh, Pa.

Meet on Appraisal Appointments.—A session was held on Sept. 30 by members of the Board of Public Works, Public Utilities Bureau and Mayor A. A. Will for the purpose of selecting engineers to appraise the value of the properties of the Louisville Railway, Louisville, Ky., such appraisal to be used as the basis on which to compute earnings and control fare rates. No appointment has been made as yet. A number of engineering concerns has filed proposals to handle the job.

Book Reviews

Safety Rules for the Operation of Electrical Equipment and Lines

Department of Commerce, Bureau of Standards, Washington, D. C. 64 pages. Price, 15 cents.

This handbook of the Bureau of Standards, No. 8, comprises part four of the fourth edition of the National Electrical Safety Code. The present edition is the result of the revision which has been carried out according to the procedure of the American Engineering Standards Committee and the revised rules have had the approval of a sectional committee organized in conformity with those rules of procedure.

Commerce Yearbook 1925

Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C. 800 pages. Price, $1.

This publication issued by the governernment gives a complete and authentic record in text and tables of the American trade and industry for 1925 with a view of industrial progress. Its material has been gathered from every available source and carefully digested by experts. The contents include a résumé of production, employment, domestic trade and prices. Besides discussions of transportation, finance, banking and foreign trade there are sections devoted to construction, construction materials, motor vehicles, railway equipment and electrical apparatus.

Personal Items

H. A. Mullett Goes to Minneapolis to Assist Vice-President

A prominent figure in the railway and bus field will become affiliated with the Twin City Rapid Transit Company, Minneapolis, Minn., as assistant to Vice-President T. Julian McGill on Oct. 15. This man is Howard A. Mullett, prominent in Milwaukee and Chicago and also well known in manufacturing circles. Only a little more than a year ago Mr. Mullett resigned as assistant general manager in charge of the railway and bus properties of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to join the Yellow Cab Company, in Chicago. Early in the present year, after his short service, he was named vice-president of the latter company, which is now a General Motors subsidiary.

His splendid work in Milwaukee and especially the development of the company's bus project under his supervision paved the way for his responsible position with the Yellow Cab Company of Chicago. R. H. Pinkley succeeded Mr. Mullett as assistant general manager at Milwaukee.

H. A. Mullett

In 1904, when Mr. Mullett was graduated from Rose Polytechnic Institute, he became associated with the Westinghouse Electric & Manufacturing Company, at Pittsburgh. Here he remained until 1906, when he left to join the Milwaukee Electric Railway & Light Company, as assistant to the superintendent of equipment. He did not remain assistant long, but assumed the rôle of superintendent from 1911 to 1918. In 1918 he became assistant general manager of the company's city, interurban and bus transportation department, and in 1919 his jurisdiction was extended to cover the company's newly created city and interurban bus division. Here it was that his efforts were crowned with success, for the company's bus project developed into one of the greatest in the country. Some few years ago, when the Milwaukee property acquired control of the Milwaukee Northern Railway, Mr. Mullett was made vice-president and general manager of that property in charge of operations.

Mr. Mullett was born in Louisville, Ky., in 1880. He was educated in the public schools of Kansas City.

Fred G. Buffe Appointed in Kansas City

According to an announcement made on Sept. 30 Fred G. Buffe, general manager of the Kansas City Railways for the receivers, has been named vice-president and general manager of the Kansas City Public Service Company, Kansas City, Mo., and will be in charge of all operations of the local railways when the latter company has formally taken over the property and the present receivership is officially closed. William G. Woolfolk, president of the new company, tendered the offer of the position to Mr. Buffe.

Mr. Buffe was manager of the Kansas City Railways for a number of years prior to the receivership, which has been in progress for about six years, and was retained in that capacity by Fred W. Fleming and Francis M. Wilson, receivers.

During recent years he has become very well known in mid-Western street railway circles, through his activities in the local company during the receivership and through his authoritative work in connection with the electric railway associations.

Harry Engle has been reappointed street railway commissioner of Youngstown, Ohio, by Mayor Scheible for a second term of four years beginning Jan. 16, 1927. The reappointment was approved unanimously by the Council.

Howard R. Stearns, assistant electrical engineer of the Detroit Street Railways, Detroit, Mich., has severed his connections and assumed the position of electrical engineer and statistician with the Miller-Schorn system. He had been with the city department of street railways for the past five years. Mr. Stearns was graduated from the University of Michigan engineering college and gained his shop experience with the Westinghouse Electric & Manufacturing Company. He has had experience with the valuation of electric and railway properties in Michigan and New Jersey.

J. J. Connors, safety supervisor of the transportation department of the Georgia Railway & Power Company, Atlanta, Ga., resigned recently. He has accepted a position with the Nashville Railway & Light Company, Nashville, Tenn., where he will continue his safety work. Mr. Connors spent most of his life in Nashville and was employed by the Nashville property for many years.

Norman F. Titus, San Francisco, Cal., has been appointed chief of the transportation division, United States Department of Commerce.

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Obituary

Judge Cicero Lindly, vice-chairman of the Illinois Commerce Commission, died at his home in Greenville, Ill., on Sept. 23. He was 69 years old.

Chester L. Bisbee, for 28 years identified with street railway work, died at his home in Fall River, Mass, on Sept. 26. For the last fourteen years Mr. Bisbee was superintendent of the Fall River division of the Eastern Massachusetts Street Railway. He was born in Middleboro, Mass.

Clermont Harvey Wilcox, president of the New York Insulated Wire Company, and for many years head of the banking and brokerage house of Wilcox & Company, died Oct. 2 in the Fifth Avenue Hospital, New York, N. Y. The New York Insulated Wire Company, of which Mr. Wilcox was the founder, was the first company to make insulated wire in the United States.

Anderson Gilbert Moore associated with the Insull properties, died Sept. 30 in New Albany, Ind. At the time of his death he was industrial agent of the Interstate Public Service Company, Middle West Utilities and the Kentucky Utilities Company. He began work with the Rock Island & Southern Railway in the claims department. Twenty-five years ago he went to New Albany as cashier of the Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway, absorbed by the Interstate Public Service Company fifteen years ago. At that time he became industrial agent of the Interstate in Indiana.

Arthur Holland, prominent street railway organizer and at one time president of the United Railways of San Francisco, Cal., died Oct. 1 at his home in Concord, Mass. His street railway career began in 1901, when he was elected president of the United Railways of San Francisco. He remained as president of this company for several years, and about 1907 became instrumental in the reorganization of the York Street Railways in Pennsylvania. Later he was made president of the Bangor & Aroostook Railroad. He was born in Boston in 1850. He was educated at the Brooks School of that city and Harvard University, being graduated from the latter institution in 1872. Early in life he became prominent as an iron and steel merchant. Mr. Holland established the firm of Holland & Company, Pittsburgh, Pa., in 1894.

Nicholas B. Trist, special wheel engineer with the Carnegie Steel Company. Pittsburgh, Pa., died at his residence in Sewickley, Pa., Sept. 29. As a young man he entered the service of the Pennsylvania Railroad as an apprentice in the Altoona shops and served with this road in various capacities for about 23 years. Through Charles T. Schoen he became connected with the Schoen Steel Wheel Company upon the entrance of that firm into the manufacture of solid wrought steel wheels. Mr. Trist became connected with the Carnegie Steel Company when that company took over the Schoen Steel Wheel Company in 1908. He was born in Savannah, Ga., in 1862.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Pennsylvania Railroad Places Order for Electrical Equipment

In accordance with its program of electrification of the suburban lines entering Philadelphia, the Pennsylvania Railroad has placed an order with the Westinghouse Electric & Manufacturing Company for the electrical equipment for 93 coaches, to be used on the Wilmington Division. The contract also calls for motors and controls for four huge electrical passenger locomotives of the same type ordered from the Westinghouse company last February. The car equipment just ordered is a duplicate of that previously developed by the Westinghouse Electric & Manufacturing Company for application to the Pennsylvania standard multiple-unit coaches. The Pennsylvania Railroad already has 130 of these electric coaches with Westinghouse equipment.

Improvements to Interurban Service in Oklahoma

The Oklahoma Railway has completed a three months program of improvements on its interurban service. About $1,000 has been spent on each interurban car operating out of Oklahoma City to El Reno, Norman and Guthrie and intermediate points. In addition to a general overhauling mechanically the cars have been repainted and reupholstered. Improvements in the interurban service of the Oklahoma Railway have been steady for the past two years beginning with the expenditure of more than $100,000 for substations. These substations have so increased the power available on interurban lines that all the schedules have been materially improved, the running time between stations having been reduced considerably on the Guthrie and Norman lines.

Twenty-two Double-Deckers Put on by Fifth Avenue Company

For the improvement of its service to the public, the Fifth Avenue Coach Company, New York, N. Y., on Sept. 30 put on the streets 22 of a fleet of 45 new double-deck motor coaches. The construction of these vehicles has been carried out in the shops of the company in New York City. It is expected that the last of these coaches will be finished and put into service before the end of October.

The new coaches, while retaining the best features of the company's "L" type covered upper deck vehicles, have many special improvements and are known as the "SL" type. They have a seating capacity of 55 passengers each. All lower decks are upholstered in leather. Five coaches have upper deck seats of a rubberized automobile fabric, five are upholstered in Kemi-Suede, a newly developed material, and 35 coaches have leather seats on the upper deck. Half of the coaches have permanent covered tops and the others have "roll tops."

The engines are of the Yellow sleeve valve type, four cylinders. On the rear platform an automatic electric fare box has been installed to increase the rapidity of loading.

Five Automatic Subs for Indianapolis

The Indianapolis Street Railway, Indianapolis, Ind., placed an order with the Westinghouse Electric & Manufacturing Company a few days ago for equipment for five substations, and the order included nine 1,500-kw., 600-volt converters, 28 transformers and auxiliaries. One substation will contain three units arranged for semi-automatic operation. It will be used as the base station. Two others will have two units and operated automatically while two others having single units will also be automatic. Although supervisory control is not included in the present contract, the stations will all be built to facilitate its application.

Rolling Stock

Birmingham Electric Company, Birmingham, Ala., has placed an order for sixteen new cars with the Cincinnati Car Company. The outlay will cost $250,000.

Key System Transit Company, Oakland, Cal., has ordered eleven new Fageol buses for use on the new Berkeley-Oakland Telegraph Avenue line, service on which will begin in December. The buses will be of steel construction, of the 29-passenger type, 29 ft. 9 in. in length and with a 230-in. wheelbase. This bus line will provide way service to and from the two East Bay cities, trolley cars providing the express service, thus reversing the usual process.

Metal, Coal and Material Prices

Metals—New York	Oct. 5, 1926
Copper, electrolytic, cents per lb.	14.25
Copper wire, cents per lb.	16.25
Lead, cents per lb.	8.625
Zinc, cents per lb.	7.68
Tin, Straits, cents per lb.	71.25
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$6.00
Somerset mine run, Boston, net tons	2.025
Pittsburgh mine run, Pittsburgh, net tons	2.075
Franklin, Ill., screenings, Chicago, net tons	1.525
Central, Ill., screenings, Chicago, net tons	1.40
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$5.75
Weatherproof wire base, N. Y., cents per lb.	17.75
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.4
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.25
Turpentine (bbl. lots), N. Y., per gal.	$0.935

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

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Results of Closer Co-operation in Association Work Are Apparent

SIGHT should not be lost of the fact that President Coates' address at Cleveland was an able presentation of the accomplishments of the year. It was not possible for him to be specific in every instance, but he did bring out forcefully the degree to which co-operation is being achieved in the industry. Progress along these lines has been due to the thorough co-operation of the executive committee, the Advisory Council, the managing director, the headquarters staff, under the guidance of Mr. Welsh; committee chairmen and committee members. The work was all well done. It is a continuing process, however, this co-operative effort, and it should not be permitted to lapse even for a moment.

At first there was a question in some quarters about the possible effect of the discontinuance of the mid-year meeting. Any doubts about the advisability of this action appear to have been dispelled by the accomplishments at the territorial meetings which displaced them. Moreover, the plan of having committee chairmen meet with the members of the executive committee appears to have been productive of good. It has helped to tie in the work to better advantage. Mr. Coates recommended that this plan be continued. That seems advisable. It makes for solidarity of effort.

These are just some of the things that the outgoing president mentioned. There were many more almost equally significant and indicative of progress. As Mr. Coates said, there is need for a closer tie-in between the sectional associations and the American Association. This process was advanced during the year and should be carried still further during the coming year. The sectional associations will gain by an extension of this plan and so will the industry as a whole. There may be some problems that are largely local, but, by and large, all problems are industry problems. As Mr. Coates pointed out, one of the most effective ways of tying in the sectional associations is to invite the president of each sectional association to meet with the executive committee whenever it is in session. This is an excellent plan. It makes for co-ordination of effort. And that is what is needed. Moreover, Mr. Coates had words of praise for the manufacturers. Their part in the recent accomplishments is not lightly to be dismissed. As he so aptly said, the industry is indebted to them for their studies and their development work.

As for the future, the recognition for which the industry has been striving will be found "with the manufacturers working to accomplish the results suggested and the operator studying the situation and carrying out his advanced ideas on the underlying principles of co-ordinated service and an adequate rate of return, and meeting the opposition to the electric railway squarely and fairly." These words are the words of Mr. Coates slightly paraphrased. It was courage that was needed in dealing with the situation in the last few years. And it was courage that was shown. Mr. Coates' review made that plain.

Penn-Ohio Company Finds the Way to Build Traffic Despite Obstacles

COURAGE to take the initiative—to make an aggressive fight for traffic along the very lines where its competitors had been most successful—gained for the Pennsylvania-Ohio Electric Company last year a large increase in its transportation business and the Coffin Prize for 1926. Post-war conditions in the territory served by this company were discouraging. Wages and other operating costs were high. The physical property was run down. Competitors had taken away a large volume of traffic. The company had its back against the wall.

But the management of the P-O system was not content to wage defensive warfare. Excuses and pleas for more liberal treatment were discarded as weak weapons. On the contrary, it was decided that the way to attain supremacy in the local transportation field was to furnish better transportation than did its competitors.

De luxe bus equipment was purchased on the theory that the best was none too good and the fare was made high enough to justify this kind of service. Following this, similarly attractive and comfortable electric railway cars were bought and put in operation. Lost traffic was regained from competitors and the positions of rail and bus service stabilized. This traffic fight was made on a quality rather than a price basis.

The company points to accomplishments under each of the six headings outlined by the Coffin Prize committee. It is significant that the progress made has followed closely in the wake of the improvement in equipment. Public relations have been improved with a resultant increase in earnings. Substantial economies have been effected in operation and maintenance. Construction practice has made steady advances. Accidents have been reduced in number, due in part to a vigorous safety campaign, but also in part to better rolling stock. Employee morale has improved coincident with the improvement in physical property. Financing has become easier as the position of the company has become more firmly established.

Many other noteworthy accomplishments mentioned in the brief presented by the Penn-Ohio Electric Company deserve the thoughtful attention of electric railway men. It is a record of all-around achievement of which the management may well be proud.

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Give the Accountant a Chance

IN THESE days of rapidly changing conditions accountants have their problems, equal in importance to those confronting the engineering, mechanical, operating and other departments of the industry.

It is believed that the small number of accountants attending the annual convention is due in no small part to failure of executives and even the accountants themselves to appreciate the benefits to be derived from forming acquaintance and periodically renewing contact with other street railway accountants.

This interchange of ideas stimulates a similar degree of progress in accounting methods to that noticeable in other departments of the industry and has a very definite value in dollars and cents, especially since the income tax and the steadily increasing volume of reports have multiplied the demands upon accounting departments everywhere.

During the past year the officers of the Accountants' Association directed their efforts toward increasing the attendance of accountants at the Cleveland convention, believing that the central location of the meeting justified the hope of larger numbers, with more diversified and profitable discussions.

Letters were sent to executives of member companies urging active co-operation of accountants and others engaged in the accounting departments of such companies, in order that the industry as a whole might benefit from the studies that the association is making constantly through its committees and that individual interest might be stimulated in the progress others are making along the most progressive lines.

While the attendance of accountants at the Cleveland meeting was only normal, the sessions were among the most interesting and profitable in the history of the association. One of the outstanding features was the "get-together" luncheon held Wednesday noon at the Cleveland Athletic Club. Here the accountants apparently felt more free to present and discuss their individual problems than on the convention floor and there was greater opportunity for personal contact.

It is earnestly hoped that next year will see a much larger attendance and a greater number of round-table sessions. Every member company should have its accounting department fully represented, for no similar expenditure of time and money will produce more profitable returns.

Change of Convention Dates Would Aid Attendance of Accountants

REGARDING the date for the annual convention, members of the Accountants' Association attending the Cleveland meeting were particularly interested in some informal discussion. It was brought out that the peak of the accountant's work comes during the first week or ten days of each month. Thus, the present practice of holding the annual convention of the American Electric Railway and affiliated associations during the first week of October places an obstacle in the way of many accountants who would like to attend. Frequently they are prevented from so doing by the pressure of their regular work. To hold the convention a week earlier would be much better so far as the members of this association are concerned, but would be open to objection on the score of difficulty in getting hotel accommodations, October being a better month than September for securing favorable rates. The second or even the third week in October apparently would not be subject to this criticism and would suit the accountants far better than the present arrangement. Probably this change would not inconvenience others as much as it would accommodate the accountants. Advantages and disadvantages of such a plan merit the careful consideration of the association.

Claims Delegates Have Good Meeting

PERHAPS the most interesting feature of this year's Claims convention lay in the extent of the attendance. The opening meeting witnessed not only an unusually large gathering but it reflected to a remarkable degree the representation from all parts of the United States. From the Pacific Coast to the Atlantic, from North to South, had come the delegates. There were many familiar faces of those who have been regular attendants in the past and have been largely responsible for the keen interest of electric railway claims men in the activities of the Claims Association. And the old timers had the great pleasure of welcoming to the meetings much new blood. The newcomers were made to feel thoroughly at home and fell quite naturally into active participation in the convention program. With so favorable a setting and under the able leadership of President "Joe" Handlon, great profit to all resulted from the prepared addresses and from the discussions that followed the delivery of each formal paper.

Freedom of discussion was the rule throughout the meetings. Virtually no limit was placed upon this right of free speech "discussion," and therein lay much of the reason for the marked success attained by the Claims Association this year. Fresh inspiration, clear thought on problems offering difficulties in their solution, new friendships, the cementing of old and friendly ties, all these and much more were obtained by those claims delegates who attended the 45th annual convention.

Light Being Thrown on Bus Accident Liability

BUS operation by electric railway companies introduces as many new problems to the claims department as to any other branch of the railway company's activities. Up to the time that buses were actually operated in considerable numbers by electric railway companies, all sorts of theories were held as to their relative accident liability as compared with trolley cars. The experience of independent operators offered no definite answer to this question. Outside of a very few bus companies in the largest cities of the country, there were practically no bus operators who kept their accident records in the same detail as is customary on electric railway properties. It is only within the last year or so that electric railway companies have been able to compile very much in the way of data on the relative accident liability of these two forms of public carrier vehicles.

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The best information yet available on this subject is undoubtedly contained in one of the papers at the Cleveland Claims meeting, as this paper treats the topic not only in detail but gives the experience on it of one of the largest bus operators as well as one of the largest trolley car operators in the country. While Mr. Drown's paper presents the results of only one full year's operation of buses by his company, during that time it had in service approximately 800 buses, mostly of modern type, so that the information given is a very valuable contribution to our knowledge of the subject.

Operators of buses in similar service, i.e., city and suburban, will do well to study Mr. Drown's figures and conclusions. They will not be repeated here except to say that liability of buses to cause accidents is probably higher than that of the electric car and that the need for good equipment maintenance is at least as great.

Lack of Interest Fatal to Committee Activities

OUTSIDE conditions may not be all that hamper the progress of the industry. Lack of interest may be a potent cause of some results that today come unsought. One instance that brings this home was the attempted meeting of the special taxation committee during the Cleveland convention.

Although the meeting was well advertised and considerable preparation was made to present the general subject of the gross-net tax with the hope of forming a nucleus for nation-wide action, not one member of the committee appeared! The committee had recently been augmented by one advisory member from each of the 48 states to further the work of tax standardization and possible reduction. Fortunately, twelve of these members were present and some valuable discussion ensued.

Without doubt there lies in this subject a tremendous opportunity for the reduction of costs, at least for many properties. There has been no voice raised against the plan proposed except that many difficulties are seen in the offing. If this be true, it is to be regretted that valuable time was lost at this annual congregation of railway men. Association work deserves better support than this, not because of the association, *per se*, but because the progress of the industry demands such action.

With a moment's reflection on what might be accomplished along the line of tax reduction, it is difficult to justify such complete lack of attention on the part of this committee.

Marked Progress Made in Accident Prevention Last Year

STATISTICS presented in the report of the joint committee on accident prevention show that continued improvement has been made throughout the year just ended. The figures are based on the records of 171 companies operating more than one-third of the total annual electric car mileage of the country. In the light of growing congestion and increased schedule speeds these figures testify forcefully to the effectiveness of the work being done by electric railways to increase the safety of street travel.

A decrease occurred in the total number of reported accidents and in nearly every individual classification of accidents. Although the number of motor vehicles on the streets increased considerably over the preceding year, the number of collisions between electric railway cars and automobiles was reduced. Collisions with vehicles other than automobiles, derailments, boarding and alighting accidents and the number of injuries to pedestrians were materially decreased. In these classifications the reduction ranged from 8 to 22 per cent.

The cost of accidents decreased slightly. In addition to the saving made by actual accident prevention, further economies thus resulted from safety work because the character of the accidents that occurred was less serious.

Co-operation with state, municipal and civic bodies in the work of accident prevention is one of the chief reasons for the improvement shown. The committee recommends that particular attention be paid to such activities in the future. Especially valuable is the educational work done by railway representatives in the schools. At the same time the education of transportation employees in accident prevention should continue without let-up. By following these principles, it is hoped that the record for the coming year may be better even than that for the year just ended.

Too Much Paper Used in Some Committee Reports

BULK rather than informative value was the most impressive feature of a number of the committee reports presented at the convention. Not because they contained too much information are these reports subject to criticism, but because the essential points which the committees wished to bring out were buried under a mass of material of doubtful value.

The purpose of such a report is to tell the association what has been accomplished by the committee during the year. Its value to the industry depends on the number of electric railway men who read it. This year a number of reports were extremely long, containing in at least one case more than 200 printed pages. Probably the number of railway men who will read in its entirety a 200-page report could be numbered on the fingers of one hand. A shorter report that received careful consideration from a large part of the industry would be of infinitely greater value.

Material that is already available in printed form elsewhere has no place in a committee report. Neither should information be included simply because it is more or less interesting. There should be some definite reason for putting it in the report. It should pertain directly to the particular subject under consideration. Inclusion of other material occasions not only a waste of money for printing, but also acts as a deterrent to reading the report. Findings of genuine value may go unnoticed because no one cares to wade through a multitude of pages to discover them.

Information that properly belongs in the report should be presented in the briefest possible manner consistent with clarity. When the matter intended for inclusion in the report is so presented electric railway men will not be able to offer the excuse that they "haven't time to read the reports of committees."

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Demonstration of Transportation Progress Won Coffin Prize for 1926

Central Square, Youngstown, the Hub from Which Radiate the Electric Railway and Bus Lines of the Pennsylvania-Ohio System

Pennsylvania-Ohio Brief Tells How Improvement of Railway Rolling Stock and Track and the Establishment of Attractive Co-ordinated Bus Service Have Resulted in the Elimination of Jitney Competition and Have Placed Public Transportation on a Paying Basis Throughout the Territory Served —Modernization and Standardization of Equipment Have Paid Well

CONVERSION of deficits into net earnings on the transportation system operated by the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, has been brought about by the application of modern methods and equipment. Rehabilitation of the railway property and inauguration of bus operation made it possible to provide a service capable of competing successfully for traffic under present conditions. Concrete evidence of the company's intention to give thoroughly up-to-date transportation service and constantly to improve its facilities won the co-operation of the public with a resultant considerate attitude in franchise matters, assessments for bridges, etc. At the same time, jitney competition was eliminated throughout the territory served.

In pioneering with de luxe buses in an industrial territory the company avoided the temptation to hold bus fares below the cost of operation and definitely endeavored to give a type of service with buses different from that given by the railway. It established the precedent that the bus fare under such conditions should be higher than the rail rate. While building up its bus service the company has at the same time brought its rail lines up to a state of excellence which has permitted the proper field for each to be determined. Its experience shows that the bus may be used to attract new business to a transportation system as a whole, while improved cars and service are at the same time increasing the riding on the rail lines. It has demonstrated that when both bus and car services are intensively developed in comfort, speed and convenience, and when rates of fare are proportionate to the cost of operation, neither vehicle threatens to supplant the other, but both prosper together.

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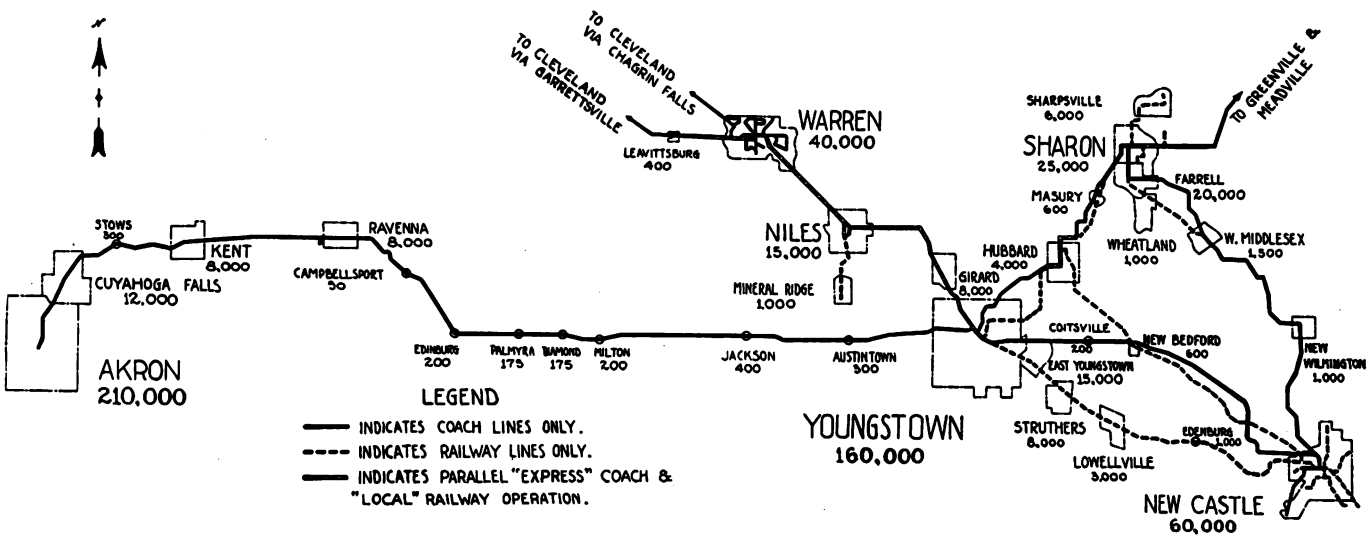


Rail, Bus and Combination Routes Operated by the Penn-Ohio Electric Company and Subsidiaries

Substantial economies have been made through the extension of one-man operation to all forms of interurban and city service operated by this company. Bus equipment has been standardized to reduce operating and maintenance costs. Attention to accident prevention has resulted in a decrease in accidents of 46 per cent in suburban territory and 34 per cent in the city of Youngstown. A policy of taking employees into the confidence of the management has brought about effective co-operation. These accomplishments are set forth in detail in the brief which the company presented in the Coffin Prize competition.

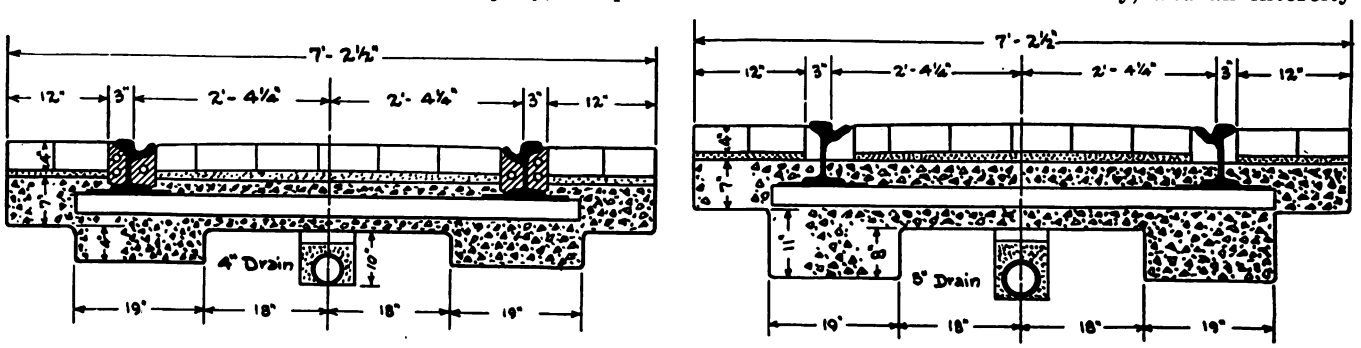
P-O System Combines City and Interurban Operation

OPERATIONS of this company cover three distinct fields of public transportation. The Youngstown Municipal Railway exemplifies co-ordinated bus and rail service in a city of 165,000 population. Examples of small city operation are found in Newcastle, Warren and Sharon, having populations of 60,000, 40,000 and 25,000 respectively. Three short interurban lines illustrate still another type of operation.

As a whole, the system comprises seven railway companies and two bus operating units. These are (1) the Youngstown Municipal Railway, operating in the city of Youngstown and suburbs under a service at cost agreement; (2) the Shenango Valley Traction Company, operating in Sharon and Farrell, with lines from these towns to Sharpsville, Wheatland and West Middlesex; (3) the Pennsylvania-Ohio Electric Company, the parent company, furnishing car and bus service in Newcastle; (4) the West End Traction Company, operating a 15-mile line between Youngstown and Warren via Girard and Niles, with shorter lines to Leavittsburg and Mineral Ridge, as well as local bus routes in Warren; (5) the East End Traction Company, running from Youngstown to the Pennsylvania state line, a distance of 5 miles; (6) the Newcastle and Lowell Railway, operating from the Pennsylvania-Ohio state line to Newcastle, a distance of 15 miles; (7) the Pennsylvania-Ohio Power & Light Company, operating a 15-mile railway between Youngstown and Sharon.

Bus service is provided by the Pennsylvania-Ohio Coach Lines, running express coaches at a higher fare to supplement the lower fare local rail service between Youngstown and Sharon. Similar service is given also between Youngstown and Newcastle, 21 miles; between Sharon and Newcastle, 24 miles; between Youngstown and Akron, 52 miles, and between Youngstown and Cleveland, 71 miles. The Pennsylvania-Ohio Tourist Lines run tourist coaches between Youngstown and Meadville, Pa., 54 miles.

Operations are divided into five groups, namely, the Youngstown Municipal district; the Newcastle district, comprising the Penn-Ohio Electric Company, the Newcastle and Lowell Railway and the East End Traction Lines; the Trumbull district, comprising the West End Traction Company and covering all rail operations in Niles, Girard and Warren, as well as the bus operation in the latter city; the Sharon district, comprising the lines of the Pennsylvania-Ohio Power & Light Company, the Shenango Valley Traction Company, the Sharon & Newcastle Street Railway, and an intercity



Reduced Weight of New Rolling Stock Permits Use of Lighter Track Construction. At Left Is Shown 103-Lb. Rail Surrounded by Elastite Filler. At Right Is Former Design Employing 134-Lb. Rail

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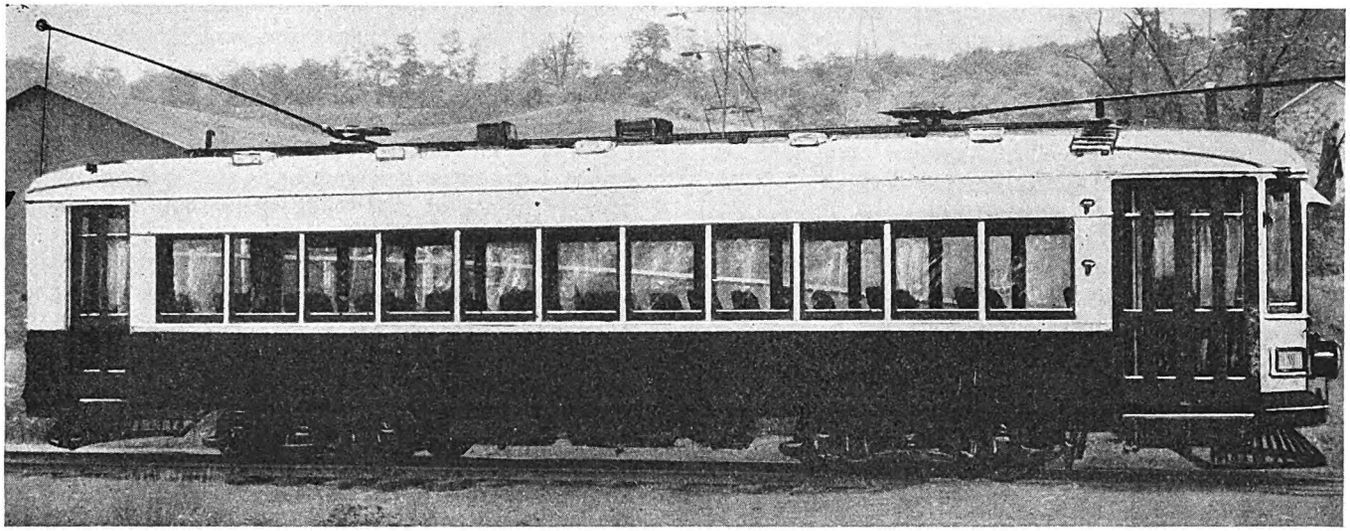


Large Single Sash Plate Glass Windows 26 In. x 42½ In. Give Interurban Passengers an Unimpeded Outlook

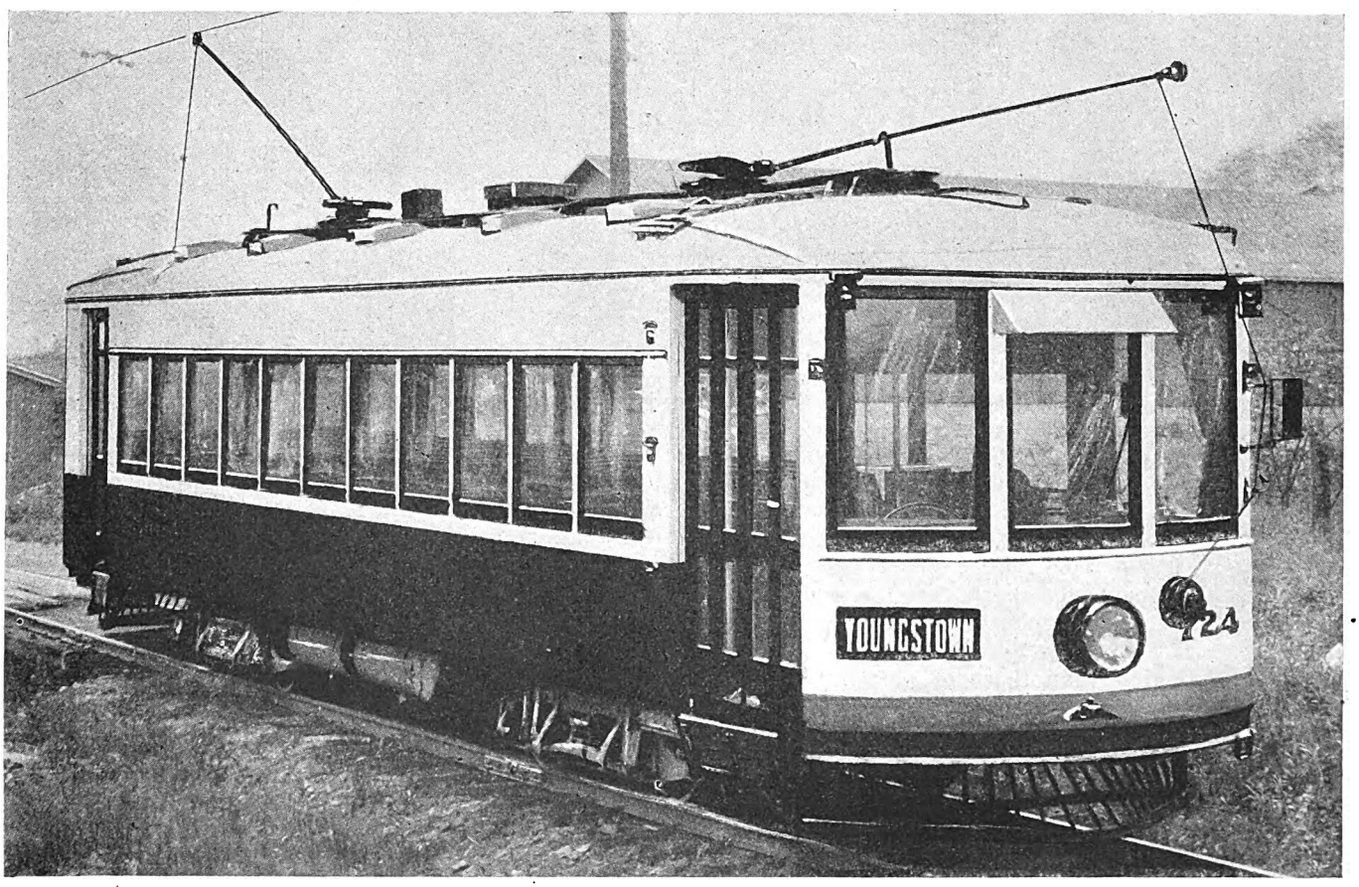
bus division comprising all bus and coach operations exclusive of those of the Youngstown Municipal Railway. The relation of the various rail and bus lines to each other is shown on an accompanying map.

Attractive Equipment Makes P-O Service Popular

FIRST among the achievements set forth in the brief is that of popularizing the service and gaining good will, or, in the words of the invitation sent out by the committee early in the year, "success in gaining public good will as indicated by the initiative, skill and enterprise manifested in popularizing electric railway service —more riders and more revenue."

Particular interest attaches to the experience of this company because the system has had to face the difficult problem of making mass transportation successful in cities where the average length of ride is 1.5 miles or less and also on short interurban railway lines where the right-of-way is inadequate to permit speeds higher than those of express buses.

About 1920 the Penn-Ohio railway business was at its lowest ebb. Competition from jitneys and buses was at its height. Cars, tracks and other facilities of



New Cars Have Been Designed with a View to Attracting Riders. Sun Visor Over Vestibule Window Increases Safety

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the railway were none too good. The public relations that followed in the wake of such service were not what might be desired. As the result of these conditions the financial results of operation were unsatisfactory.

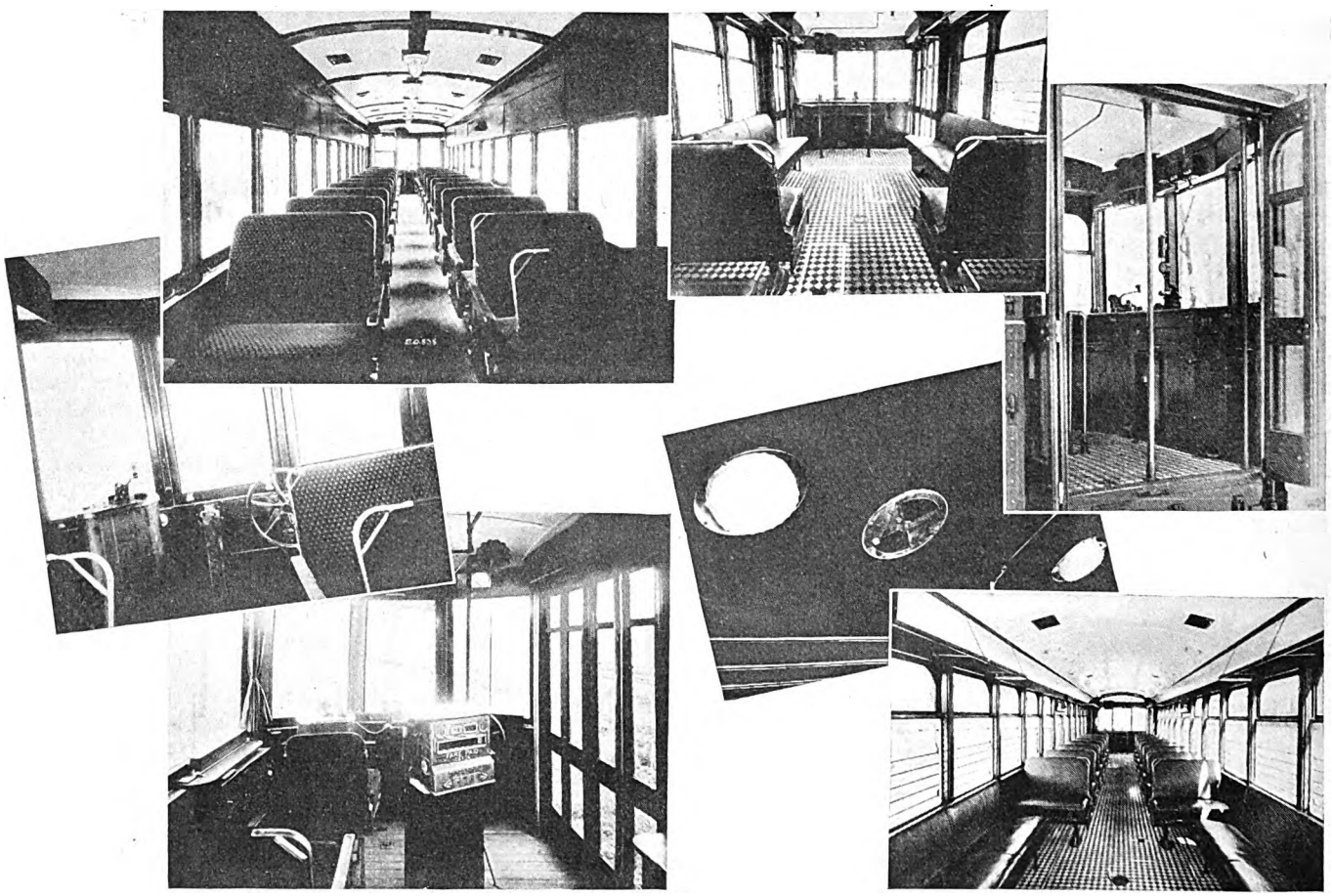
Facing this situation, the management decided that the first problem to be solved was that created by the independent bus operation between Youngstown and Warren and between Youngstown and Sharon. Careful investigation showed that the buses operating in competition with the company's service were faster and more comfortable than the railway's cars. As a result the company determined to meet this competition with bus service more comfortable and attractive than that afforded by its competitors.

When in fulfillment of this plan the Penn-Ohio Coach Lines Company was organized, in August, 1922, there was in the East no precedent by which to be guided. The slogan "the best is none too good" was adopted in designing the new equipment. Independent competition was rapidly conquered. Many operations not very solidly founded financially disappeared in a short time. All others have been purchased at reasonable figures. Despite the fact that coach fares were approximately 50 per cent higher than those of paralleling railway lines, the bus business increased rapidly.

Many people at that time prophesied the passing of the railway. The company, on the other hand, saw in this situation an opportunity to improve its service.

In September, 1923, therefore, the company purchased twelve interurban cars fitted up with the same degree of comfort as the motor coaches, but light in weight, operated by one man and carrying thoroughly modern equipment. In the following years additional cars of the same type were purchased and cars previously purchased were remodeled, so that at present all rail service is on a high plane. The public has a choice of express motor coach service at a higher fare or moderate priced rail service. The latter is growing in popularity.

Where there was a sound basis for bus operation because of a lack of rail facilities in some sections of the community the company has undertaken to provide service. Study has been made of the transportation situation throughout the company's territory and where service can be given better by bus than by railway the company has not hesitated to make the substitution. Every section of every community in which the company operates is now reached either by rail lines or by bus.



Every Effort Has Been Made to Give an Attractive Appearance to the Interiors of the New Youngstown City Cars. All Rods, Pipes and Other Apparatus Are Hidden from View

To bring the Penn-Ohio service up to the desired level of excellence old transportation vehicles have been scrapped and new vehicles acquired. On the railway lines outside of Youngstown, out of a total of 83 cars now in use only seven were in service prior to March 1, 1918. These are used only for tripper or extra service and have been entirely rebuilt for one-man operation. On the Youngstown Municipal Railway the average age of cars is less than seven years. Only the highest standards of maintenance, painting and cleanliness are tolerated. No stone has been left unturned to make the rolling stock attractive.

The appearance of the operating personnel is in conformity with the attractive appearance of the equipment. The old blue serge uniform has disappeared on the Penn-Ohio system. Every operator, inspector and supervisory official is arrayed in a whipcord uniform.

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Because the company is proud of its property and service an emblem has been designed to mark and distinguish it. Actually the emblems used are four in number—one for the Penn-Ohio system, including railways outside of Youngstown; a second for the P-O Coach Lines; another for the P-O Tourist Lines, and a fourth for the Youngstown Municipal Railway. The emblem is used on the cars, on schedules and other printed matter, on caps of all employees, as zone markers on rural routes, on stations, car and bus stops in the cities and is emblazoned in electric signs on company offices and waiting rooms. No other trademark in the district has been so effectively distributed as that of the Pennsylvania-Ohio Electric Company.

Genuine service is given to the public and newspapers by the department of public relations. When a director of public relations was appointed in 1914, the desirability of dealing intimately and frankly with the public, newspapers and employees was not so widely recognized in the electric railway industry as it is now. The guiding principles of the department's twelve years of work are simple. They are to give the fullest information possible regarding the company's affairs, its plans and its purposes, to supply promptly to all newspapers information regarding accidents, interruptions to service and emergency changes in operation, to give equal, ready service to all newspapers regardless of politics, corporation bias or other considerations. The fruitfulness of this policy is evidenced by the fact that letters of commendation have been received from the publisher or editor of every daily newspaper in the cities in which local transportation service is furnished by the company. A typical letter is reproduced on another page.

Public relations work is carried on throughout the entire organization. Employees are members of every civic organization of standing throughout the territory and are active in every civic movement. Executives and other company representatives are frequent speakers at public functions, either in behalf of state public information committees or their own company.

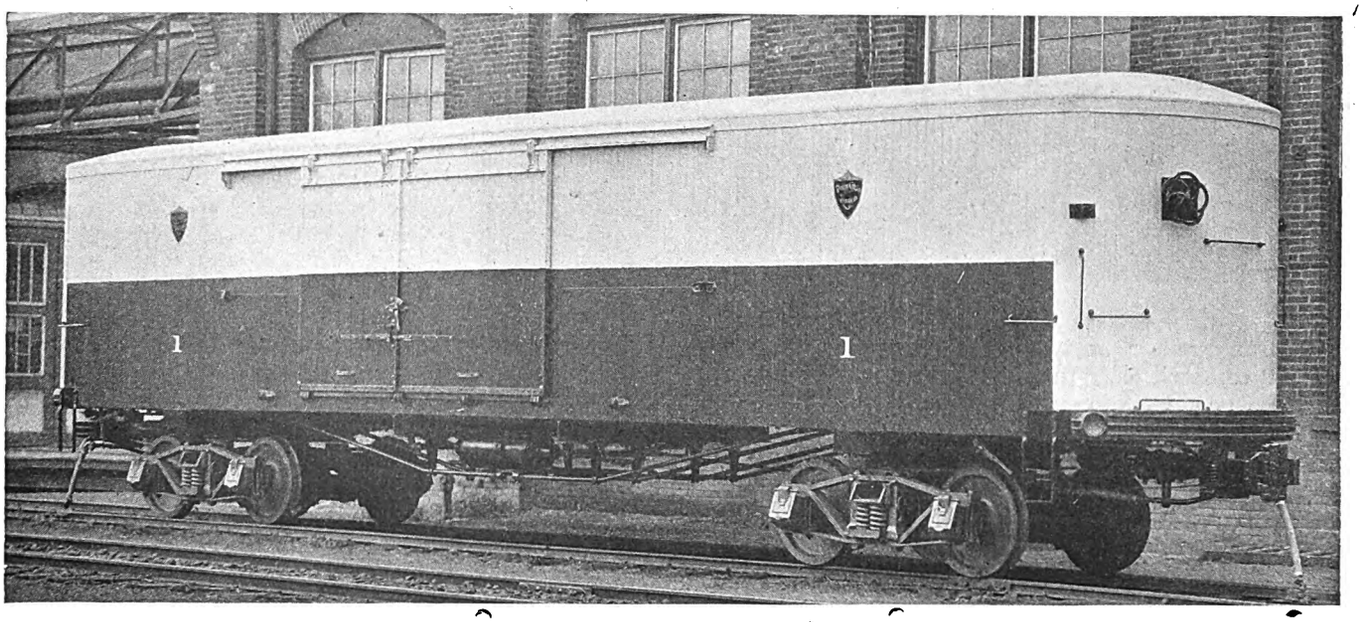
Co-operation is given by the company to many other organizations. For example, the newest and largest garage on the property was placed at the disposal of the Youngstown Automobile Association for its 1925 show.

Advertising done by the company is designed to place before the public full information concerning the service, especially to advise the public in advance of changes in operation or equipment. Aside from such service advertisements, the company has a wide variety of publicity dealing directly with the sale of rides. Paid space in the newspapers, window posters and cards in the cars, calendars in offices, post cards in homes, blotters in hotels, timetables in card and folder form and similar widely distributed reminders are mediums used to push both passenger and freight business.

At hotels and theater box offices attractive framed schedule cards are prominently placed. Outdoors are scores of painted billboards to invite people to travel by coach. Neither a visitor in this territory nor a local resident can pass a day without being faced by some form of Pennsylvania-Ohio publicity.

Indicative of the results of these merchandising efforts is the fact that within the last eight years the company has obtained fourteen new franchises and numerous fare increases depending largely on local consent. When the Youngstown Municipal Railway was formed in 1818 a separate organization was set up because it was deemed necessary to have entirely separate administration and accounting due to the service-at-cost agreement. Late in 1925, however, the management concluded that a merged organization would be more efficient and economical. Despite the fact that there is room for difference of opinion in the allocation of expenses, the city of Youngstown, through its Commissioner of Street Railways, has approved this consolidation. Such willingness to co-operate toward more economical operation may be regarded as strong proof that the city has faith in the railway management.

Communities have shown a considerate attitude in assessments for bridges, viaducts, etc. As the territory is much broken by hills and water courses, relief from paving expense is often secondary to relief from bridge and viaduct costs. Each improvement is a matter of negotiation, but the actual allocation of expense for past work is evidence of the reasonable attitude of the public officials.



Standard C.E.R.A. Freight Car Designed for Use on Connecting Electric Lines. Ten Cars of This Type Were Recently Bought by the P-O Company to Handle Its Growing Freight Business

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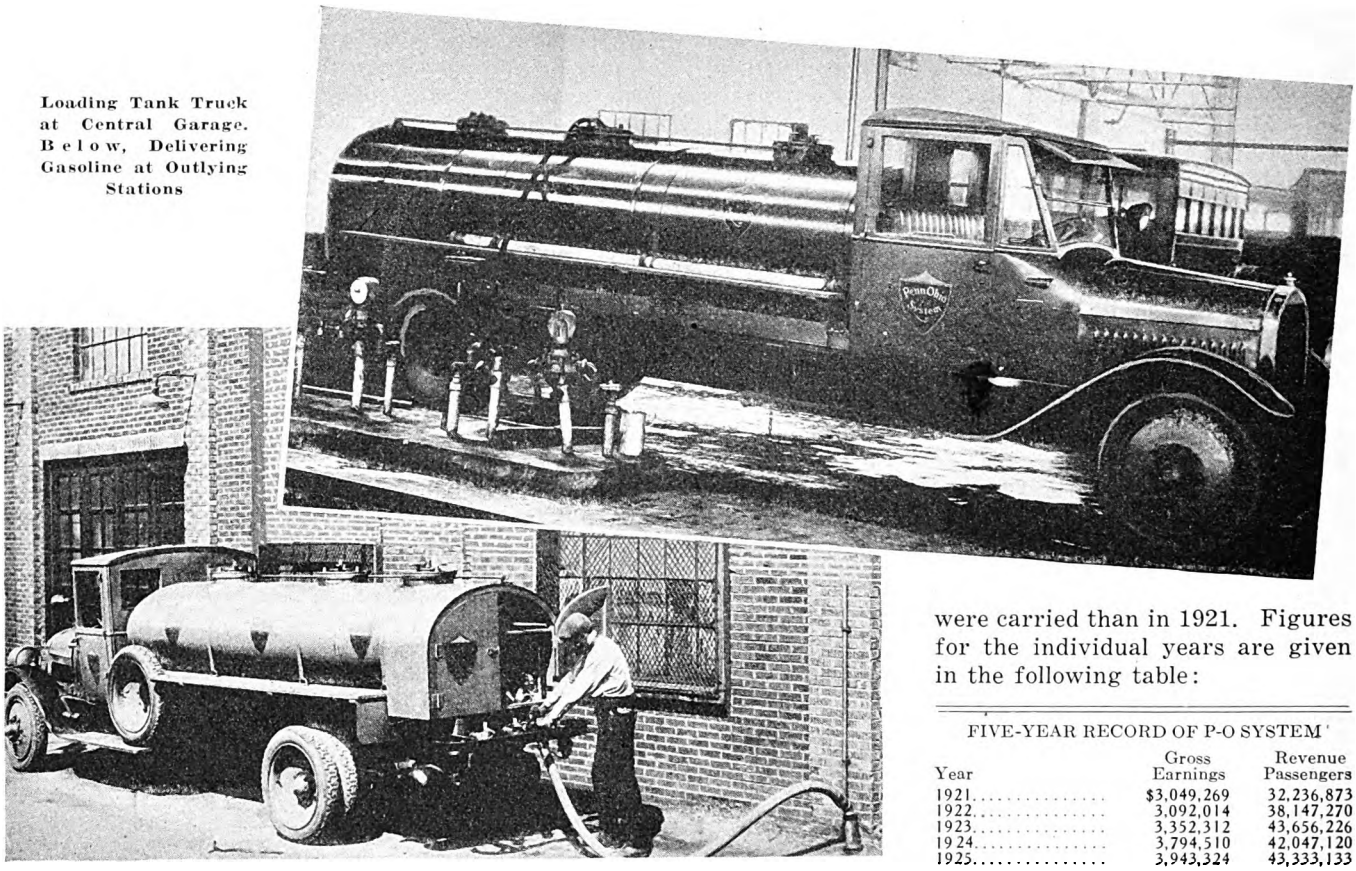


Loading Tank Truck at Central Garage. Below, Delivering Gasoline at Outlying Stations

were carried than in 1921. Figures for the individual years are given in the following table:

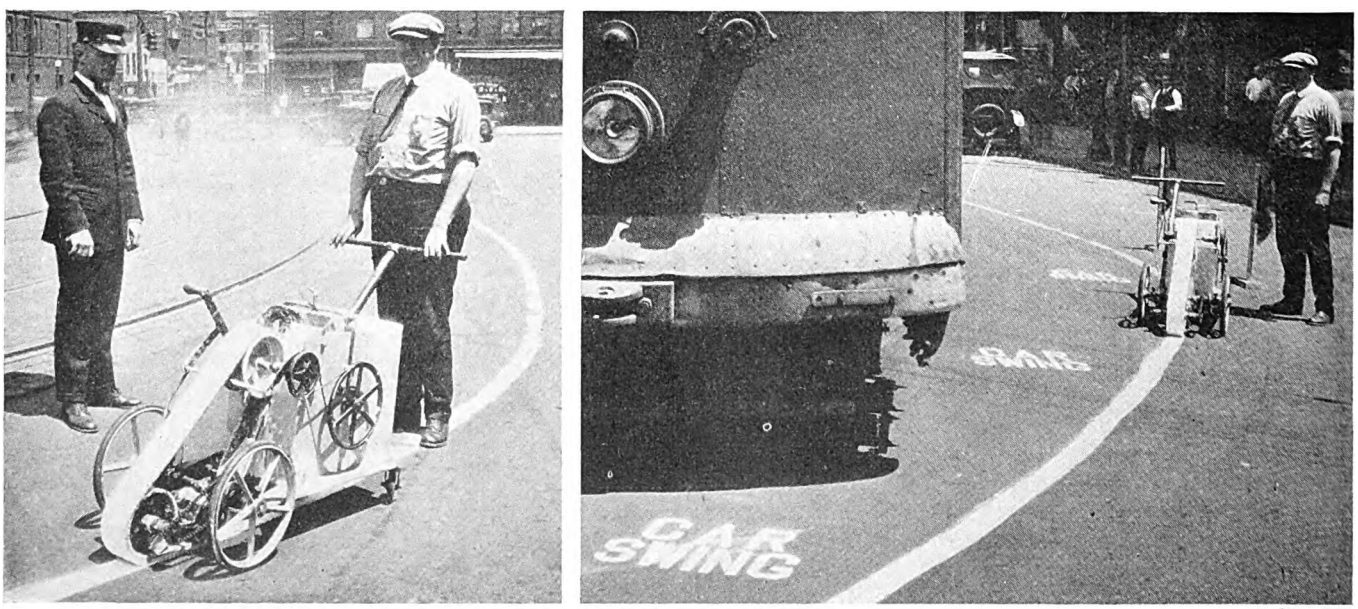
FIVE-YEAR RECORD OF P-O SYSTEM

Year	Gross Earnings	Revenue Passengers
1921	$3,049,269	32,236,873
1922	3,092,014	38,147,270
1923	3,352,312	43,656,226
1924	3,794,510	42,047,120
1925	3,943,324	43,333,133

Of even greater importance has been the elimination of competition. In all the territory served by the Pennsylvania-Ohio system the jitney is dead. This has come about through the appreciation on the part of the public that reliable co-ordinated railway and bus operation is preferable to haphazard service from ever-changing operators. Local ouster legislation was passed wherever required to accomplish this end.

Financial results have been most encouraging. Since the present policies were inaugurated in 1922, the growth of the gross and net earnings has been uninterrupted. Last year, 11,000,000 more revenue passengers

A rapidly growing freight business has been another source of revenue to the company. In 1919 joint tariffs became effective from the Penn-Ohio lines to many points in Ohio, Indiana, Michigan and Pennsylvania. Delivery is made in from one to three nights via the electric lines as compared with steam railroad deliveries varying between three nights and three weeks. This freight service has grown so rapidly that it has already become necessary to plan a Youngstown terminal and warehouse larger than the one built in November, 1924, covering almost an entire city block. Ten new C.E.R.A. standard freight cars were ordered in 1925. Special



White Lines Painted on the Pavement to Indicate the Car Swing on Curves Have Been Helpful in Reducing Accidents

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pains have been taken in preparing and distributing a "Shippers' Handy Tariff Guide." This is a looseleaf publication with a complete index of the freight stations reached, a map of the line and the classification of commodities and rates.

Substantial Savings Effected

UNDER the heading of "Economies which have been introduced in operation resulting from original ideas as well as the extent to which the company has taken advantage of new developments in operating and maintenance practice and equipment originating with others," the brief submitted by the Pennsylvania-Ohio Electric Company presents an imposing list of accomplishments. The sound merchandising policies which have resulted in more revenue have also made possible material economies. These savings result from the fact that all cars, buses and coaches are one-man operated and that the new cars due to their lighter weight and modern equipment require less power and less maintenance.

One-man operation is now 100 per cent complete on the Pennsylvania-Ohio system. The chronology of the change was as follows:

1919—One-man operation begun in Newcastle city.

1920—Change-over completed in Newcastle and Sharon.

1923—One-man interurban operation begun except on Girard line.

1924—Change-over of interurban operation completed.

1925—One-man operation everywhere except Youngstown.

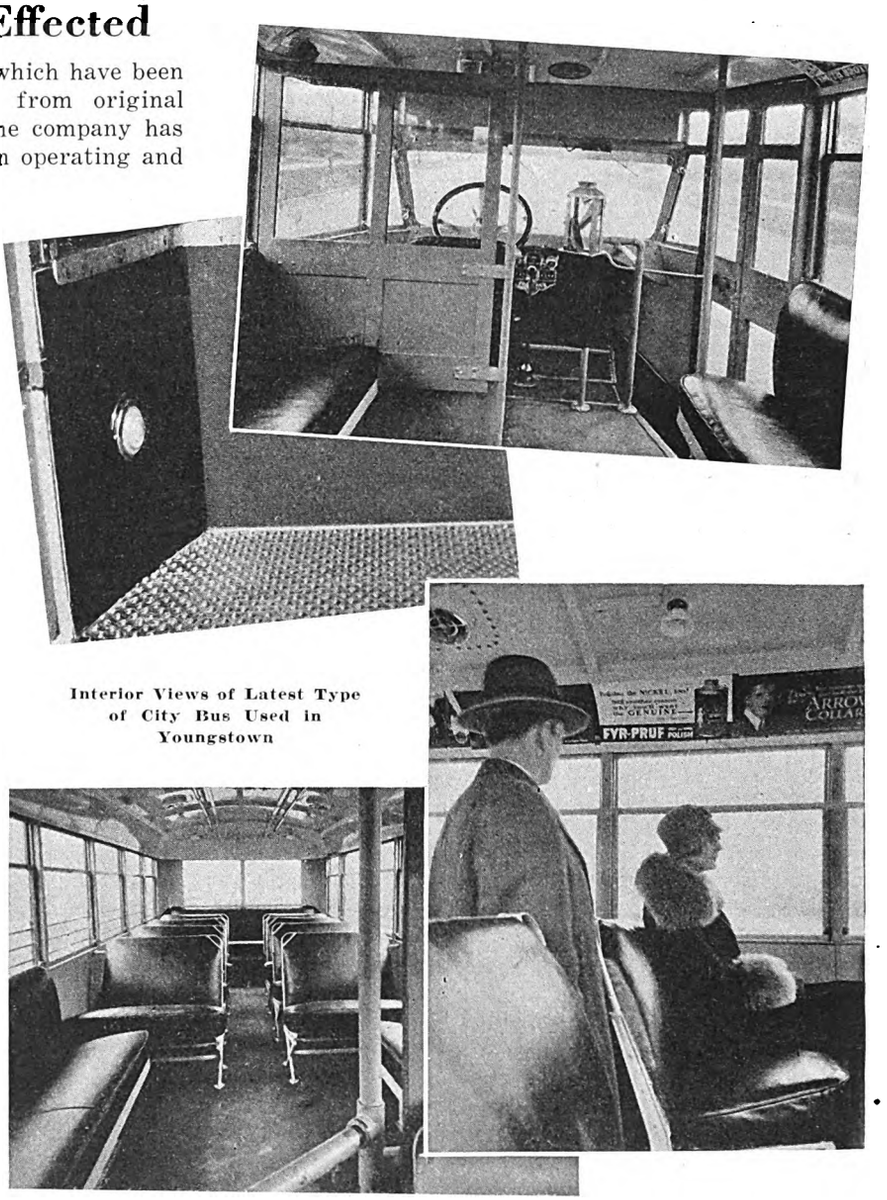
1926—100 per cent one-man operation including Youngstown.

On the railway lines outside of Youngstown the effect of one-man operation has been to reduce the number of trainmen from 228 in 1920 to 159 in 1925. Man-hours were reduced from 818,502 to 474,646. Total wages fell from $578,052 to $294,168, while the average yearly wage per trainman increased from $1,596 in 1924 to $1,850 in 1925. All changes were made in the course of the normal turnover of platform men except that some men on the Trumbull division were furloughed without loss of seniority or wage rights. Most of them returned again in a few months.

Complete modernization has reduced operating expense per car-mile from 35.6 cents in 1924 to 32.5 cents in 1925. Energy consumption on the new interurban cars in 1925 was 2.76 kw.-hr., a saving of 28 per cent. Upkeep is 51 per cent less and platform wages 15 per cent less, despite the higher wages per man. Comparison of costs for 1922 and 1925 shows a saving of $30,000 in equipment, power and platform labor. On the first five of these cars to be placed in operation the rate of return on the investment was approximately 41 per cent.

Further economies have resulted from the building of a garage with labor-saving machinery for storing and maintaining buses and coaches, from the handling of gasoline in carload quantities, and from the adoption of pyroxyline lacquer for refinishing cars and coaches.

Standardization of bus and coach equipment has resulted in material savings. Revenue and cost figures for various years are given in the following table:



Interior Views of Latest Type of City Bus Used in Youngstown

BUS OPERATING DATA—CENTS PER BUS-MILE

Type Service		1922	1923	1924	1925
City	Costs	20.60	24.60	30.20	30.10
	Revenue	25.20	24.90	29.40	29.39
Interurban	Costs	.....	.....	28.22	23.75
	Revenue	.....	.....	30.45	25.15
Tourist Lines	Costs	.....	.....	.....	15.30
	Revenue	.....	.....	.....	14.25

The foregoing table covering operations from September, 1922, to Dec. 31, 1925, shows that the true cost of service per bus-mile in city service was approximately 30 cents after the newness had worn off. In 1924, this figure was 30.2 cents and in 1925, 30.1 cents.

Since Jan. 1, 1926, motor-bus costs have been in accordance with the classification recommended in 1925 by the American Electric Railway Association. Figures

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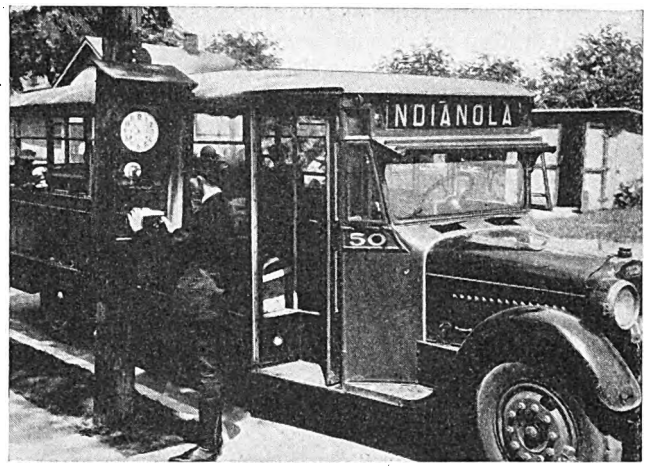


Time Clock Used to Check Regularity of Bus Operation in Youngstown

in cents per bus-mile for the first five months of 1926 follow:

January	29.83
February	31.23
March	30.26
April	27.31
May	29.04

As this period included severe winter operation and did not benefit from new and greater capacity equipment at the start, it is expected that the cost for this year will be 1 cent to 2 cents under 1925.

Improvements in Construction

"IMPROVEMENTS in construction which have resulted in reduced first cost and greater reliability of service" have been numerous on the Penn-Ohio System. Original features incorporated in the design of new cars have had an important bearing in reducing costs as well as increasing the attractiveness of the vehicles.

On the new interurban cars every seat is deep cushioned and upholstered in plush. The floor is covered with battleship linoleum easily cleaned, easy to walk on and durable. Not a pipe, bar, rod or cord obstructs the view or irks the eye. The rodless, cordless Ohmer register and table were specially devised for this operation with one man per car and nine fare classifications. On these cars the switches are inclosed in cabinets, as are also the engineer's valve and controller. The rear platform has been left as a spacious lobby. Inclosure of the equipment gives a better appearance and avoids interference by the passengers. Mahogany is used to conform to the general interior trimming.

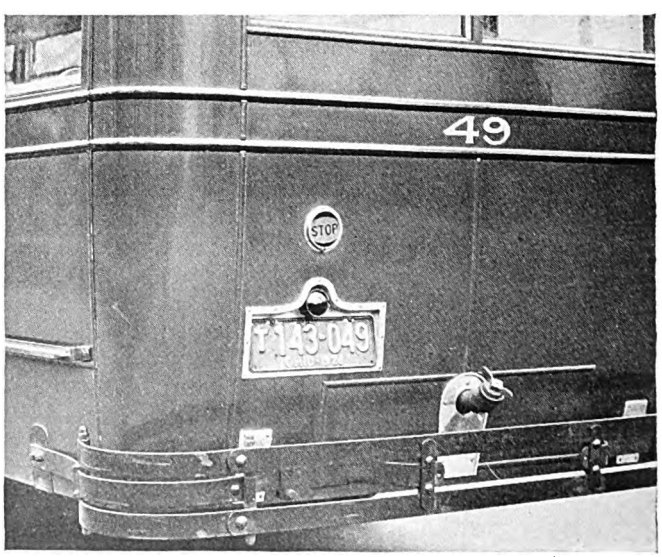
Diffused lighting fixtures give pleasant and effective illumination. Both front and rear vestibules have extra large sash to give the passengers a better view. Pneumatic control permits remote operation of the rear door. A mirror in the operator's vestibule gives a clear view to the rear.

Up-to-date features have been included also on the latest Youngstown city cars. There is a similarly complete absence of cords, rods, bars, piping or exposed apparatus. Rubber flooring is an advance on battleship linoleum in durability, appearance and ease of cleaning. The floor over the motors has a recessed manhole cover which is less conspicuous than a ring. Plate glass sash is framed in narrow fittings to improve the passengers' vision. A new system of lighting with twenty opalescent domes per car was evolved by the company's engineers.

Selective pneumatic control of wide double doors in front as well as at the rear makes it possible for one man to handle the large 64 seat industrial trippers which are used. Additional safety features have been installed on Birney cars purchased several years ago. Peacock hand brakes have been added for emergency use. Box jaws instead of clevices have been installed for the brake rigging to avoid disablement in case a bolt falls out. Steel wheels have replaced the cast iron wheels formerly used. Two home-designed mechanical sanders have been added to supplement the air sander—a special precaution taken because of the heavy grades. Plate glass has been used in the car windows because it is both safer and more attractive than ordinary window glass.

Improvements have been made also in the bus equipment operated. Special features on the new city buses include deeper chassis frame, new radiator suspension, engine with new manifold and heating attachment, chassis with new type rear axles with air brakes, and dual rear tires 34 in. x 7 in. instead of 36 in. x 6 in. for easier riding. A wireglass panel behind the operator saves him from annoyance by passengers. Longitudinal seats at front give passengers easier ingress and egress. Rubber flooring, modern lighting fixtures and ceiling ventilators are used. Wide, deep steel steps with safety tread and step light add to safety. A standing passenger has outside view. Narrow aluminum frame sash gives maximum glass area for vision of seated patron. The rear end has a single recessed panel for stop light, tail light and license plate. The fuel tank is now installed at the rear instead of the side because in this position it is more likely to stay level, to cause less slopping of gasoline and to reduce fire hazard.

On the latest interurban coaches the seating capacity has been increased from 18 to 25 and the length increased from 27 ft. 6 in. to 28 ft. 7 in. The first coach cost $7,000; latest type, $9,000. A change in seating arrangement has eliminated middle doors. Lighting improvements have been worked out by Penn-Ohio engineers in co-operation with Ivanhoe-Regent plant of General Electric Company. Lamps of 21 cp. in Miller opalescent domes are used. Seats are double, except a five-passenger seat at rear under which the baggage



License Plates of Buses Are Recessed in Rear Panel. Gasoline Tank Has Been Placed to Reduce Fire Hazard

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compartment is located. The cross seats are 32 in. back to back. All seats are upholstered in grained leather and equipped with air cushions. The driver's seat is also equipped with an air cushion and is at a more comfortable height than in earlier types. The battery is now accessible from inside instead of outside of the coach. A safety light has been added at the entrance step. The cowl has a greater flare because the width has been increased from 7 ft. to 7 ft. 8 in. The windshield is now one piece, narrow vertical louvers at the side serving for ventilation. On the windshield is a spotlight operated from inside the coach. The visor is of metal instead of leather. The sign box is integral with the visor under the roof extension. The destination sign is operated from the inside.

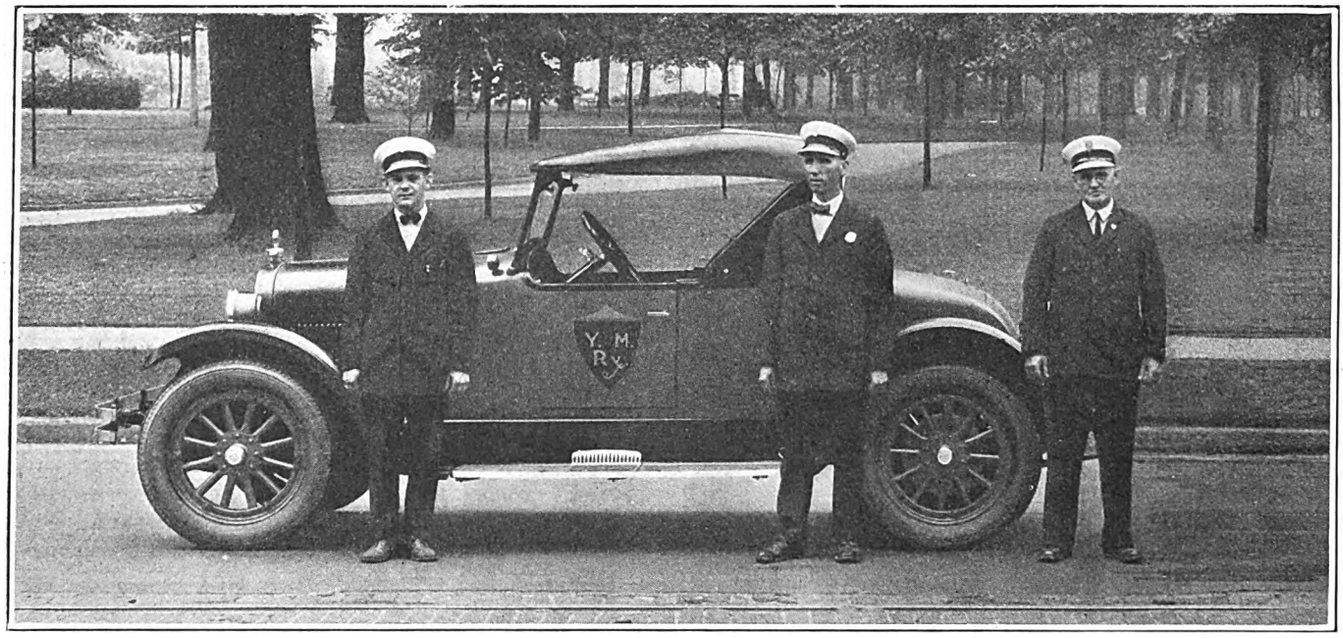
A worthy building has been constructed to house this automotive equipment. The new Youngstown garage, opened early in 1926, has a frontage of 116 ft. and a depth of 262 ft. with a rear extension running 172 ft. along a private court. Underground storage tanks are provided having a capacity of 100,000 gal. of gasoline and 20,000 gal. of oil. Their large capacity permits the company to enjoy tank car prices, sometimes 7 cents under the retail and 4 cents under the tank-wagon price in the same territory. The temperature of the brick and concrete oil chamber is maintained in winter at a minimum of 60 deg. F. for easy handling and efficient use. Electric centrifugal pumps deliver both gasoline and oil to the service station at the rear of the storage and inspection area.

Economies have been accomplished in the purchase and delivery of fuel. Tank cars deliver gasoline and oil directly to the underground tanks at the rear of the garage. A tank truck of original design is used to distribute gasoline and oil to outside garages and service stations. It has two 250-gal. gasoline compartments and one 350-gal. oil compartment. The chamber at the back is used for hose connections and miscellaneous gear.

Vehicles enter the garage via a rear court and leave via electro-pneumatically operated doors on the side. The total area is 40,700 sq.ft., of which 30,000 sq.ft. is for storage and inspection. Lamps of 200 watt capacity with enameled steel dome reflectors give 5 ft. candles intensity of illumination at the floor level. The Curtis "Air Mist" system cleanses vehicles quickly and effectively. Two "service station" pits are equipped for high pressure oiling and greasing.

During 1925, after two years of tests with a dozen kinds of lacquer, 40 per cent of the cars and 70 per cent of the buses were lacquered in accord with the chrome orange color scheme standard for Youngstown equipment. Lacquering has cut the shop time for two men from six days of the paint-varnish-enamel era to two days. The saving in cost of material is about 40 per cent. Because of the smoke and sulphur laden air of Youngstown vehicles are relacquered once a year. As this can be carried out within eight hours, a car can be put through practically between the peaks of the same day. Lacquering can be done in the open in bright sunshine. Aluminum panels have been found superior to steel for bus upkeep.

During 1925 the company completed the installation of automatic reclosing circuit breakers to tie together sections of the railway feeder distribution system. In this way loads have been balanced to better advantage and the installation of additional copper has been avoided.



One of the Service Automobiles Used by Inspectors Supervising Intercity Coach Operation

For use in the Trumbull, Sharon and New Castle districts, three line trucks were bought during 1925 to replace line cars. Aside from their greater flexibility, line trucks are cheaper to run because one driver takes the place of two trainmen. The New Castle interurban, which has much right-of-way distant from the highway, is the only division now left with a line car. The widest efficient use is made of automotive service equipment, whether in the transportation or engineering department. The automotive fleet includes trucks for slag, paving, cement, ties, rail, etc.; also welding trucks in place of welding trailers.

Modern light-weight cars permit savings in track construction. A 134-lb. Trilby section was used in Youngstown track rebuilt in 1916. This track was thermit-welded and laid on International steel twin ties spaced 6-ft. centers and laid in 7-in. concrete with 11 in. under the ties.

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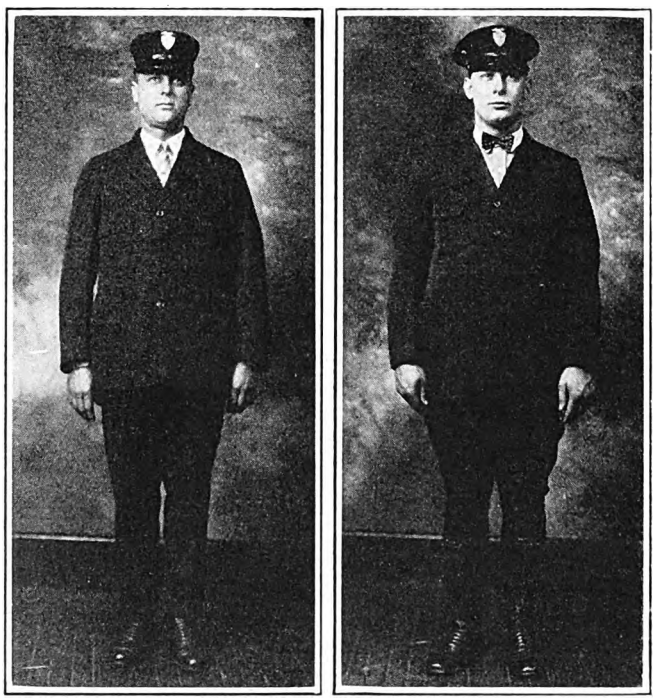
With the general adoption of light-weight cars it became possible to continue this long life construction, using only a 103-lb. section with but 4-in. concrete under the steel ties. The 1916 type of construction would cost today $68,600 per single track mile. The present type cost $55,400 per single track mile—a saving of $13,200 due to the use of lighter cars, although the new track has the additional cost of "Elastite" as a sound deadener. An index to the permanence of the track and its smooth riding qualities is afforded by the fact that during 1925 there were only seven breaks in 1,800 thermit welds.

Substantial Reduction in the Number of Accidents

"Particular success in conducting a safety program and actually reducing the number and seriousness of accidents" has been attained by the Pennsylvania-Ohio



Snappy Whipcord Uniforms Worn by Transportation Employees of the Penn-Ohio Company

Electric Company. Every passenger car in operation on the system is equipped completely with standard safety devices. Part of the credit for the reduction of accidents can be attributed to this fact and part to the closer inspection and better training of operators.

This management has engaged in safety work of an intensive character since 1920. The safety organization consists of a central safety committee, with representatives from every department, under the chairmanship of the general manager, together with intermediate safety committees within each department. All safety work is done through such committees in close co-operation with specialists of the Bureau of Safety of Chicago.

Practical suggestions for greater safety are solicited from all sources. In 1925 such suggestions numbered 215. In addition to its internal safety work, the company, as such, and its employees take an active part in all public safety organizations and movements, its general manager being president of the Youngstown branch of the National Safety Council.

Through improvement in equipment and plans for consistently maintaining the enthusiasm of the personnel, accidents per 100,000 car-miles on lines outside Youngstown declined from 36.6 in 1920 to 23.6 in 1924 and 22.6 in 1925. Accidents of all kinds, whether due to company or outside causes, declined from 1,768 in 1920 to 953 in 1924 and 887 in 1925.

There were fewer accidents with 100 per cent one-man operation in 1925 than with the two-man operation in 1920. Account 92, "Injuries and Damages," declined from 12.57 per cent of gross in 1920 to 7.62 per cent in 1924 and then to 3.54 per cent in 1925.

In Youngstown the use of modern cars having uniform equipment has been an important factor in accident prevention. Beginning in 1925, the original green body color of the cars was changed to chrome orange for greater conspicuousness in a hazy atmosphere. Cars are made still more visible by painting the bumper white. Equipment of all cars with air operated Folberth sash cleaners or squeegees gives the operator a clear view automatically.

In December, 1922, the Youngstown Municipal Railway began to segregate "chargeable" accidents. Accidents were cut from 682 in 1923 to 452 in 1925, or 34 per cent. At the same time, accidents beyond the company's control decreased only from 1,541 in 1923 to 1,516 in 1925.

ACCIDENT REDUCTION RECORD
YOUNGSTOWN MUNICIPAL RAILWAY

Accidents	1923	1924	1925
Reported	2,223	2,017	1,968
Chargeable to railway	682	497	452
Per 1,000 car miles	0.54	0.50	0.49
Per 100,000 passengers	8.68	8.12	8.11

The city of Youngstown and the company shared in the purchase of a $350 machine which is used to paint "car swing," "safety zone" and other markings on street paving. The painting is done by city workers, with a railway representative on hand, when necessary. While the work is being done, space is kept clear by means of red flags.

Red Cross first aid instructions have been added to the other safety work. In all 642 employees have received instruction. While this work has been carried on only since the early part of 1926 there have been at least two cases where the knowledge of first aid on the part of the employee has resulted in the saving of life.

Safety meetings are held in the schools and for the public. In 1925 as many as 1,200 persons attended such a rally at Warren, which was held directly under the auspices of the safety organization of the company. This meeting resulted in the organization of a community safety council.

Accident prevention contests were started in December, 1922. The car men were divided into four groups, and at a later date the bus men were similarly divided. The winning team each month is entertained at a dinner to which prominent citizens or noted workers in accident prevention are guests and speakers. The claim department acts as umpire in passing on all accident reports by team members and only those accidents which could have been prevented through the vigilance of the car or bus men involved, are charged to their respective teams. The first full year of the competition, 1923, the average monthly total of accidents charged to the car men's teams was 57. In 1924 the number was reduced to 41 and in 1925 was further reduced to 37.

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A bonus system rewarding car men and bus men as individuals has been in effect since Jan. 1, 1924. One dollar is paid for the first month without an accident, two dollars for the second successive month and $3 for each successive subsequent month without an accident. During 1925, the car men earned $4,423 and the bus men $1,191 in accident prevention bonuses.

The three operating divisions outside of Youngstown also participate in safety contests. On each division, both the trainmen and bus drivers are included in the teams. However, on account of the fact that the divisions vary considerably in car mileage operated, the contest is waged, not on the basis of the number of accidents, but upon the mileage operated per accident.

The first contest of this year, ended Feb. 28, 1926, was won by the Newcastle division with a record of 14,394 miles per chargeable accident. The second contest was won by the Sharon division with a record of 39,456 miles per chargeable accident. The third contest was won by the Sharon division with a record of 44,469 miles per chargeable accident.

Excellent Relations Enjoyed with Employees

OUTSTANDING accomplishments in the development of good relations between management and employees are claimed for the Pennsylvania-Ohio Electric Company in the brief. All the trolley and city bus operators of this property are members of the Amalgamated Association. Although operating in a highly industrialized area, subject to changes in the demand for high wage workers, this management has a record of twenty years of harmony with its employees, all negotiations being conducted directly between the management and committees of employees.

Facts are given to the men on company finance, on the local wage and business situation, on the cost-of-living indices, etc., so that the men negotiate upon the same economic basis as the management. One proof of the reasonable attitude of the trainmen is that they relinquished the "two-men-per-vehicle" clause when shown that one-man operation was economically necessary. They have co-operated willingly in the use of power-checking watt-hour meters and have approved special awards for freedom from accidents.

One aid to the amicable settlement of all questions between management and men has been an unbroken agreement for the past six years that no statement regarding matters under discussion will be given to the press by either company officials or men until negotiations are ended or suspended. This has been an excellent preventive of public agitations and publicity, particularly concerning wage matters.

Trainmen no longer wear conspicuous badge numbers on their caps. The small numerals are on the back of the badge, unseen by the public. This step toward humanizing the platform job was made for the reason that complaints had diminished to the point where such iden-

Typical Examples of Commendatory Letters Received by the P-O Management

Erie Railroad Company

MEADVILLE, PA., Nov. 20, 1925.

PENNA. & OHIO ELECTRIC COMPANY,
Youngstown, Ohio.

Gentlemen:

A case has just come to my attention where your motorman, Mr. F. A. Blott, running between Warren and Leavittsburg, noted brake sticking and fire flying on our second 88 Engine 4126. Upon arrival at Leavittsburg he advised our operator, and arrangements were made to stop the train and get the brakes released. His prompt action may have prevented serious trouble, and I feel that his action is highly commendatory.

I would be pleased if you would advise him of our appreciation of this service and in case you can consistently do so, if you would make proper record thereof on his service papers.

Yours very truly,
A. L. KLINE,
Superintendent.

The Youngstown Telegram

YOUNGSTOWN, OHIO, July 28, 1925.

MR. C. S. MACCALLA,
Vice-President & General Manager,
The Pennsylvania-Ohio Electric Co.,
Youngstown, Ohio.

Dear Mr. MacCalla:

For several weeks I have been planning to write you to compliment your company on its policy of free and frank discussion with newspaper men of all subjects pertaining to the welfare of citizens in general.

Always a believer in free discussion of all subjects, I feel sure that this attitude on your part has done much to improve the relations between your company and the general public.

In this connection it would be only fair for me to add that information coming to us through your publicity department has not only been fair but thoroughly reliable.

Very truly yours,
W. L. STURDEVANT,
Editor *The Youngstown Telegram.*

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51 Willis Avenue,
Youngstown, Ohio.

MR. R. N. GRAHAM,
Mgr. P. & O. Electric Co.

Dear Sir:

Wish to extend my deep appreciation in recovering diamond lost from my ring on Hillman bus No. 32 last Thursday night due entirely to alertness and willingness of one of your inspectors by name of James Fire, who followed and reached bus before it left termination, took friend and myself with him and found diamond.

Surely having such efficient employees is a fine recommendation for your company.

Very truly yours,
MRS. S. MCLAUGHLIN.

MR. JOHN HARVEY,
Youngstown Municipal Railway,
City.

Dear Sir:

Last evening I boarded a Mahoning Avenue car in charge of operator No. 348 and while a passenger on this car I had the pleasure of witnessing an act of courtesy which was indeed worthy of commendation. I assure you that this deed did not pass unnoticed by any of the passengers on this car.

When approaching Deed Street this operator received a signal from an old man who wished to board this car. Operator No. 348 stopped his car and alighted to assist this old man in every possible manner. He escorted him into the car and saw that he was seated before he returned to the front of the car.

The old gentleman left the car at Hazel Street and again this operator left the front of the car and went back to where he was seated and assisted him to the front of the car. The operator then left his car and lifted this old gentlemen from same to the street and escorted him through the traffic and did not return to his car until the old gentleman was safely on the sidewalk.

Trusting that I may have the pleasure of again riding behind operators of this kind, I beg to remain,

Very truly yours,
S. J. HOLT,
1651 Wellington Avenue.

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tification was no longer needed. On the other hand, the name of the operator appears in his vehicle.

Early in 1926 the company took another step forward in raising the morale of all its bus and car men by presenting the newly adopted whipcord uniform to every operator, inspector and supervisor. Forty-two trainmen had paid for such uniforms, after seeing a sample, before they knew they would be reimbursed. Furthermore, a $1,000 life insurance policy was issued free and without physical examination to every employee.

The good teamwork between the company and the men is well exemplified by the fact that there exists among the company's men one full military band, three orchestras, basketball, bowling and baseball teams. Sixteen per cent of the trainmen belong to the Twenty-Year Club founded in 1925.

Noteworthy Accomplishment in Financing

THE securities of the company cover its combined light and transportation properties. Since 1917 the company has been selling its securities on the customer-ownership basis to the public through its employees and to the employees themselves, each offering resulting in a substantial over-sale. At least 75 per cent of railway employees are stockholders in the company.

The localities embraced by the Penn-Ohio System being essentially industrial, the principal product being steel and steel products, it is only natural that the public has been educated over a period of years in trading in local industrial securities, the public utilities having been considered a relatively unimportant factor. During the past year, however, the securities of the company have been established as one of the most reliable investments. Through the agencies of the securities department, 24,593 shares of $100 par value have been sold through 7,398 transactions to 2,695 customers and 1,035 employees.

A bulletin, the P-O Investors' News, issued monthly to stockholders, acquaints them with interesting and intimate affairs of the company, emphasizing its activities and relations to civic development, new business items stressing the part played as a public service organization in industrial achievements and presenting articles dealing with the affairs of the light and power industry. This bulletin is the medium for offering the industry's news on political questions and for spreading information rather than serving as an advertising medium.

The experience of employees gained in stock selling campaigns proved valuable in 1924 when it was necessary to purchase easements for a 132,000-volt transmission line between Toronto, Ohio and Youngstown. To avoid excessive prices, plans were made for a surprise attack *en masse*. First an airplane map of the entire district was made. On this every piece of property involved was plotted in relation to the course of the right-of-way. These maps were suitably subdivided for the instruction of, and use by, the squads assigned to each portion of the route. Each captain and his men knew exactly what they were to do at the zero hour when the drive for options was started simultaneously over the entire 40 miles. So effective was this mass attack that 93 per cent of the easements were obtained in two days with no further work than the cash closing by the right-of-way department. Among the participants in this drive were the manager of railways, three railway superintendents, a machine shop foreman and almost a score of railway inspectors and platform men—all of whom were chosen because stock-selling campaigns had developed the fact that they were salesmen.

Success Has Rewarded Company's Efforts

Adoption and consistent carrying forward of a progressive policy of efficient service and selling that service to the people is thus the basis of the claims made by the Pennsylvania-Ohio Electric Company in its brief. This policy has recognized the fact that the private automobile is the real competitor of public transportation companies and that public transportation must be conducted with a view to approximating the comfort and convenience of the private automobile, resulting in the necessity for rehabilitated track, new cars, high standards of maintenance and cleanliness, improved appearance and a higher standard of courtesy and efficiency on the part of all employees. Increased revenue has rewarded its efforts along these lines. Frankness in dealing with the public through its representatives in all the company's affairs and problems has enabled the company to enjoy pleasant relations in all communities through which it operates. Truthfulness and impartiality in dealing with the press have won the confidence and good will of all the newspapers in the district regardless of their political affiliations or corporation policies. A continuous and intensive safety program has materially reduced the number of accidents. Establishment of pleasant relations with its employees has avoided labor trouble and secured the hearty co-operation of all of the men.

Youngstown Municipal Railway Employees' Orchestra Is in Demand for Entertainments

Initial Dinner of the Twenty-Year Service Club Organized Among the Transportation Employees

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Handling Accident Claims and Discouraging Litigation

Various Methods of Doing This Were Recommended by Speakers at Monday's Session of the Claims Association—Thursday Morning Meeting Was Devoted Largely to Discussions of Claims-Medical Questions

THE program of the Claims Association at the Cleveland convention was divided into three parts. Monday afternoon was devoted primarily to a discussion of methods of handling accident claims and discouraging accident litigation. The proceedings on Tuesday afternoon are represented in the joint meeting of the Claims Association and the Transportation & Traffic Association, reported in last week's issue. On Thursday morning the Claims Association devoted itself to a consideration of medical and surgical matters.

About 75 claim agents, attorneys and adjusters and safety managers were present at the meeting on Monday afternoon to hear the one address and four papers scheduled. The discussion was very active and presented views on all sides of the subject by delegates from all parts of the country.

J. H. HANDLON
President Claims Association, 1925-1926

The close connection of the work of the claims department and accident prevention was emphasized in an address by Charles E. Scott, president National Safety Council, Chicago. Mr. Scott pointed out the need in accident prevention for the adoption of a definite systematic plan, whether the company was large or small. Any plan lacking definiteness, orderly procedure, continuity or that close amalgamation by which it is sure to become a part of operation, he said, is sure to give disappointing results and ultimate failure. An essential feature of such a plan is the education of the employees to safety methods. Some electric railways tend to over-concentrate the efforts of safety organizations on the education of the public.

The organization of public opinion in America toward the reduction of accidents is of comparatively recent development. It was in 1913 that the National Safety Council was organized in the interest of public safety. It has two reasons for its existence. One is everlastingly to remind the general public that there is an accident problem in America, and the second is to interpret that problem to the general public. The council is trying to awaken the public to its responsibility for the country's deplorable accident situation and its efforts are not being sufficiently utilized by the transportation interests of the country. The value of the council is too often measured by the direct service it gives to its membership. The broader and better view to take is of its general influence on the public at large and that its purpose is the creation of a strong conviction in the mind of the public that we must be a more careful people. No single industry can conduct a national public movement for greater safety. It can be accomplished only through a national organization with a substantial membership having the cooperation of every industry.

In considering electric railway problems primarily, the speaker urged a separation between the claims department and the safety department, particularly in the larger operating companies. Where the two are combined, he said, there is a natural emphasis on the economic reasons for safety work. There should be a constant close, frank and friendly relationship between the two, but the employees of the company must not be led to believe that the company's interest in safety is wholly mercenary.

METHODS OF DISCOURAGING LITIGATION IN ACCIDENT CLAIMS

A paper on this subject was presented by Trevor C. Neilson, claim agent East St. Louis & Suburban Railway, who laid great emphasis on the need of fairness in dealing with claims. Otherwise, he said, the natural antagonism in every community against a traction company will find outward expressions of antagonism. Each individual claims man should check up his own personality on this matter and then consider that of the other members of the staff. Finally, the claims men should be taught to realize the importance of all employees being on the best of terms with the company's customers. Courteous treatment by car crews, when an accident occurs, may go a long way toward cutting out the aggressive attentions of the "ambulance chaser."

In connection with ambulance chasing, the speaker described a recent experience which was unique. There had been a collision of cars, and while there were no

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serious injuries, a number of female passengers had been jarred somewhat. Representatives of the company's claims department were looking after the injured, when two representatives of a firm of attorneys were also noticed. One posed as a representative of the railway company and treated the persons affected by the accident with very scant courtesy, so little in fact that he was ordered off the premises. The second "runner" then called on the same persons and found the stage all set for a favorable reception. This enabled him to secure the business on a 50-50 basis.

In conclusion the speaker urged fair treatment of attorneys with claims to present and deprecated attempts to make settlements with claimants behind the backs of their attorneys. Nevertheless, he believed that at the time of the presentation of the claim a railway company is justified in pointing out to the claimant that it is to his or her advantage to save the expense of attorney's fees.

In the discussion following Mr. Neilson's paper, a difference of opinion developed as to whether it was desirable for a representative of the claims department to make an early call on a person injured in an accident. Mr. Funk, Louisville; Mr. Jack, Wilmington, Del.; Mr. Drown, Newark, N. J., and others favored the early call as a natural, humane and courteous act. Mr. Robinson, Cincinnati, and Mr. Muir, Memphis, were inclined to the opposite view, on the ground that the person injured might think the call was made from mercenary motives and primarily to obtain a release. Mr. Schmeiser, Aurora, Ill., said his policy was to have injured person sent to the best hospital and after a day or two for a representative of the claims department to call on the patient to show that the railway company has an interest in his welfare. This visit is followed by additional calls. Mr. Sweeney, Chicago, South Shore & South Bend Railroad, has found the best way to discourage ambulance cases is to advise claimants who insist upon litigation to engage the best lawyer that money can secure.

T. C. NEILSON

W. G. MARSHALL

CHARLES B. SCOTT

AUTOMOBILE CLAIMS AND METHODS OF HANDLING THEM WHEN INSURANCE COMPANIES ARE INVOLVED

A paper on this subject was presented by William G. Marshall, manager of the adjustment department, Pittsburgh Railways, who said that in that city the casualty men have an association which conducts semi-monthly evening conferences. Ten members of the Pittsburgh claims department are affiliated with this association and find that acquaintance with the casualty representatives is of mutual benefit. There is greater disposition to discuss merits of claims before legal action is brought. This applies not only to accidents caused by trolley cars but accidents to them, as where an automobile collides with the rear of a street car. In cases of this kind, insurance carriers are showing noticeable co-operation in the adjustment of the claims of the company against their assured.

In the past few years a limited amount of liability insurance has been placed by the Pittsburgh Railways covering railway, bus and auto operation. In such cases, the company does not tell the claimant simply to see a representative of the insurance company. It offers an explanation as to the coverage, telephones the insurer in the presence of the claimant and, if possible, makes an appointment for him. In claims made by letter, the acknowledgment gives the name and telephone number of the carrier's representative and information that the claimant's letter has been forwarded to the insurance company.

BONUS SYSTEMS

On presentation of the paper by G. T. Hellmuth, claim attorney Chicago, North Shore & Milwaukee Railroad, on "Bonus System—Its Value in Claim Work," a motion was carried that a committee of three be appointed—with Mr. Hellmuth as chairman and the two other members to be from companies having bonus systems—to prepare and print a report for the midwinter meeting of the executive committee, setting forth a bonus system which they recommend. Mr. Hellmuth said that he did not think bonus plans led to an increase of unreported accidents.

BUS ACCIDENTS

After the presentation of Mr. Drown's paper on "Bus Accidents," in reply to an inquiry Mr. Drown said that in his state the courts had ruled that trolley cars were not included in the automobile right-of-way rule in the traffic law, but the courts have not yet decided whether a bus is so included or not, though it has been classed as a "common carrier."

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Mr. Schmeiser, Aurora, Ill., and Mr. Funk, Louisville, Ky., said that on their properties the bus drivers were men who had been street car operators and this plan of promotion was successful.

President Urges Co-operation

In his presidential address, J. H. Handlon, San Francisco, said that the outstanding feature of the work of the Claims Association this year, to him, had been the increasing interest in accident prevention. At the midwinter meeting of committees held in Indianapolis, it was also quite evident that there existed a keen desire for close co-operation between the transportation and traffic departments and the claims department. "The transportation man," said he, "is not now disposed to look upon the claims man or safety engineer as an interloper who has injected himself without leave into the problems of the transportation department. Today the claims man or safety engineer is an invited guest. His aid is sought and his advice welcomed."

Continuing, President Handlon said, in part:

"With the awakening of the transportation man to the fact that he can utilize to his advantage the resources of the claims or safety man, or both, it has dawned upon him that he has at his command the selection and training of the man-power, and that the most efficient safety device known is a careful man. Impressed with this fact, greater care is being exercised than ever before in hiring trainmen. Haphazard methods of selection have been abandoned, and intelligent, modern ideas of classifying applicants for employment have been substituted for them. Students are placed on probation instead of being accepted as full-fledged employees after having passed one examination. They are taught more, examined oftener and watched closer. There is also a growing tendency to see that company rules are rigidly enforced, especially rules designed to prevent accidents."

Physicians and Surgeons Discuss Operating Problems

Delegates Consider Desirability of Company Doctors Taking Charge of Cases of Injured Patrons, Need for Periodical Examinations of Transportation Employees and Other Live Topics

THURSDAY morning's session of the American Electric Railway Claims Association was set apart almost entirely to the discussion of medical and surgical problems. During this part of the session Dr. Frederick L. Mosser, surgeon Third Avenue Railway System, New York, occupied the chair, and while most of the papers and discussion related to the medical aspects of claims, there was also consideration of the medical care and inspection given by some companies to their employees. The meeting emphasized the constantly increasing importance attached by electric railway companies to their medical departments.

The subject was fittingly introduced by a paper presented by Dr. Mosser himself on "Practical Methods of Obtaining Greater Efficiency from the Medical Departments of the Street Railway Companies." It is published in abstract elsewhere, and the conclusions in the paper were considered seriatim in the discussion.

There was general agreement on the need for the prompt examination by the company's surgeon of persons injured in an accident and a prompt report by him of his findings to the claims department. One of the medical delegates present stressed the importance, in this connection, of the surgeon including in his report any statement made by the claimant of the extent of his injury, quoting the exact words used. Experience in a number of cities has shown, he said, that later, after the claimant has discussed his claim at length with lawyers, he is apt to adopt an exaggerated view of the injury and its effects. Discussion also developed the point that several companies were already following the recommendation of Dr. Mosser to follow up physicians who have testified as to permanent neurasthenia conditions, so that they can be checked up in future cross-examinations, and to keep a card index system for future reference of physicians who have testified at trials. Thus, it was pointed out, a doctor may testify in a case that the plaintiff has received permanent injury and the company has to pay large damages. If the claimant recovers completely later and the same physician appears in court again with a similar statement for another claimant, the earlier case can be cited. In reply to inquiries as to whether evidence of this kind is admissible in court, the point was made that it is, because the previous testimony was an official record. Several delegates took exception to the recommendation in Dr. Mosser's paper that the company doctor should not tell the claimant the results of his investigation of the claimant's injury and should not recommend any special course of treatment. They pointed out that advice from a company physician would often reduce the time of convalescence and avoid the possibility of a lasting injury, where the attending physician lacked skill. Dr. Mosser agreed that in some cases such a course might be desirable and the company doctor should use his judgment, but in general he thought his recommendation should be followed.

Another medical paper to receive extended discussion was that by Dr. Miller of Milwaukee on "Health Service Examination and Organization of a Medical Staff for the Care of Injured Patrons of a Public Utility." It is published in abstract elsewhere in this issue. In addition, Dr. Miller pointed out that while the Milwaukee system covers a wide area, his paper was confined to practice within the city of Milwaukee. The author also explained that the company has a private telephone system of its own with a telephone at practically each street intersection or car intersection so that it is a simple matter for a motorman or conductor to notify the medical department promptly when an accident happens. A feature of Milwaukee practice is for company physicians to take medical charge of persons injured by its cars, if they are willing to accept this service.

The speaker was asked whether the company found this policy less expensive than to pay for the attendance of the family physician and whether the latter did not object to giving up his case to the company. Dr. Miller replied that as the system described had been in use in Milwaukee for a long time, it was very difficult to give comparative figures, with the cost of allowing local physicians to take charge, especially as the company doctors care for employees and their families as well as for injured patrons of the utility, and it would be difficult to segregate their expenses completely. He thought,

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however, that the cost is less with the present plan. As far as opposition from local doctors is concerned, if the system was to be installed today, there would be obstacles which perhaps could not be overcome. Where a recognized physician has already taken control of the case the company physician makes no attempt even to examine the injured person. An advantage of the plan, not mentioned in the paper, is that the medical department is sometimes asked to give medical aid by patrons injured in accidents which have not been reported by the car crews. In the vast majority of cases there is absolutely no opposition from the medical profession in the city to the present plan.

Physical Examinations of Employees

The discussion on Dr. Sibley's paper on "Observations on the Physical Examination of Electric Railway Employees" centered largely upon his remarks regarding high blood pressure and conditions surrounding the work of trainmen from a health standpoint.

Dr. Sibley pointed out that his experience showed the work of transportation men to be a very healthful one. Many trainmen on the Boston Elevated Railway have told him they have not lost time for any sickness for twenty years or more. He also pointed out that of the men mentioned in his paper as having died as the result of high blood pressure only one died on a car.

Mr. Funk, Louisville, said he could not recall any accident on his system having been caused by a man with high blood pressure, and he thought that an effort to retire perhaps 9 to 10 per cent of the employees because the blood pressure was above a certain amount, though many of the men had been with the company for from twenty to twenty-five years, would affect the morale of the organization.

Another delegate pointed out that while on his property a number of older transportation men had been retired because of unsatisfactory physical conditions, they had not been discharged. They were kept in use in other positions at practically the same rate of wages. Cripples were being used as flagmen. Others were in the tailor shop, pressing uniforms for car operators and bus operators, etc. Even if there was nothing for them to do, the company considered it cheaper to put them on a pension than to have the claims department pay out money for damage claims, but he thought that it is possible always to find something for them to do.

Resolutions Passed and Officers Elected

At the business session at the close of Thursday's meeting resolutions were passed on the death of Past-President Samuel B. Hare and of John J. Stanley, also expressing appreciation of the hospitality of Messrs. Weh and Kubu and other members of the Cleveland Railway claims department.

The nominating committee reported the following officers for the ensuing year:

President—C. B. Proctor, claim agent Memphis Street Railway.

First Vice-President—J. S. Kubu, assistant superintendent accident department, Cleveland Railway.

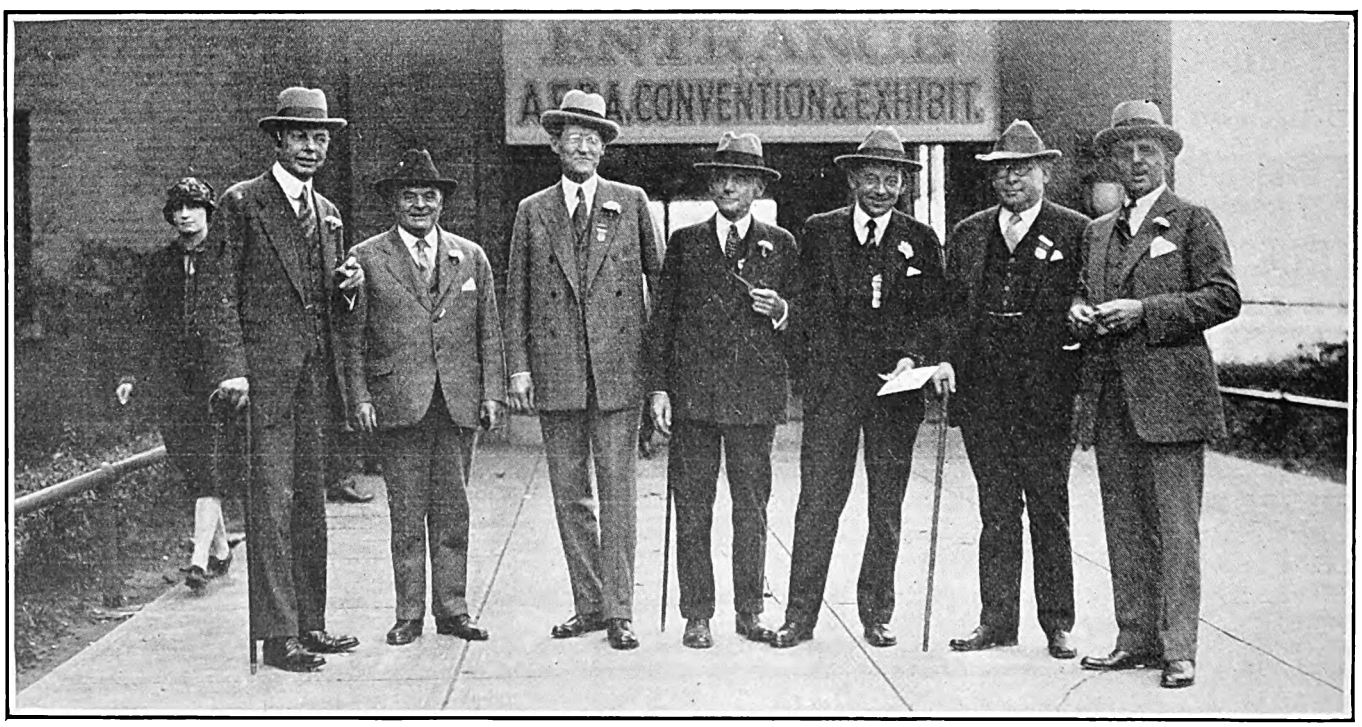
Second Vice-President—E. L. Lindemuth, manager claims department Wilkes-Barre Railway.

Third Vice-President—L. F. Wynne, general claim agent Georgia Railway & Power Company, Atlanta.

Executive committee—S. J. Herrell, claim agent Knoxville Power & Light Company; W. E. Robinson, claim agent Cincinnati Street Railway; C. E. Redfern, general claim agent United Electric Railway, Providence; B. F. Boynton, claim agent Portland Electric Company, Portland, Ore.; G. T. Hellmuth, convention secretary, claim attorney Chicago, North Shore & Milwaukee Railroad.

They were unanimously elected.

The installation of Mr. Proctor as president for the ensuing year and the presentation by H. K. Bennett of a past-president's badge to Mr. Handlon concluded the session.



Manufacturer and Railway Man Joined to Make This the "Best Convention Ever"

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Accountants Aid in Constructive Policies

Vital Problems Confronting Many Properties May Be Helped by Scientific Accounting Methods—Publicity Should Be Given to Frank and Open Pictures of the Facts, Holds Accountants' Association—Committees Report on Bus Classification, Freight and Other Problems—L. E. Lippett Elected President

MAKING the work of the accountant essential in solving industry problems was the general theme of the sessions of the Accountants' Association at the Cleveland convention. Despite small attendance the discussions developed in the meetings gave insight into many problems and showed the way to more constructive thinking. As the association standardized electric railway accounting a number of years ago it now has standardized bus accounting. Authority was given the committee on this subject to make definite rulings on cases that may be brought to its attention. Other subjects considered included bus accounting, stores accounting, fare collections, freight accounting, and taxation.

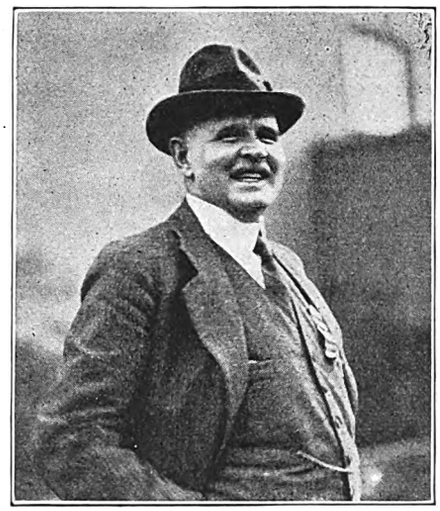
In welcoming the delegates to Cleveland at the opening session held Monday afternoon, Oct. 4, Urban F. von Rosen, accountant for the City Street Railroad Commissioner, pointed out that Cleveland, having lived through or now facing nearly every known problem relating to the accounting for and financing of transportation facilities, forms probably the best laboratory for electric railway accountants in the country.

President John J. Duck, in his formal address, congratulated the association on its accomplishment in bringing about a uniform system of accounts enabling a detailed comparison with other properties. Continuing, Mr. Duck said in part:

"We are now in the midst of what appears to be one of the most important periods of our industry. The period of reconstruction, with its great problems, looms up directly before us. Among the most important are depreciation, either by obsolescence or otherwise; increase in the use of buses, that in some cases may result in the abandonment of trackage; public relations with all that that subject entails, requiring more detailed information from the accounting officer to supply the management or publicity department with the facts to enable it to present to the public the truth of how our industry is burdened with expenses that in these days are unjust, such as paving, maintenance of paving, sprinkling and cleaning of streets, and other public benefits imposing increased taxation upon our industry. These are vital problems confronting many properties whose life and existence may be helped by scientific accounting methods.

"This is a day of publicity. Public confidence can be created and encouraged by giving a frank and open picture of facts, and acquainting the public with some of our unjust burdens. Put these figures and facts in language understood by the public, for the public is not always familiar with the accountant's language.

"We should cultivate suggestions from our assistants and clerks who handle the detail, for improvements and short cuts in compiling our figures. Also a survey should be made of our work to find out if we could make more use of the many mechanical devices used in office work. We may find that we can use more of them to improve our work and at a saving that will well justify their purchase."



JOHN J. DUCK

BUS ACCOUNTING STANDARDIZED

Questions on the classification presented by the committee on bus accounting should be given publicity and official rulings made, according to M. W. Glover, chairman. Everybody knows there are things that are wrong and will have to be changed in time, but in order to get the classification adopted throughout the country it is considered undesirable to make any minor changes at the present time. Companies operating more than 3,000 buses are now using the classification.

The condensed classification submitted by the committee is in no sense a revision of that in the report submitted last year. It is merely a less detailed classification for those motor bus operating companies where the volume of business is not large enough to warrant the use of the full classification.

Adrian Hughes, Jr., pointed out the necessity for cooperation between heads of operating departments and the auditing department. It is essential, he said, not only to get over-all costs correct but to analyze the individual parts of the operation so as to know where we are making money and where we are losing. For this reason he feels that the classification proposed should be used for all bus operations.

After adoption of the report on classification of bus accounts, a motion was adopted giving the committee on bus accounting authority to make official interpretations and rulings on bus accounts, until such time as the Interstate Commerce Commission takes over the matter and is in a position to give rulings.

It was also agreed that any questions and answers arising from interpretations of the accounts should be

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LESLIE VICKERS, ECONOMIST OF THE A.E.R.A.

published from time to time in ELECTRIC RAILWAY JOURNAL, *Bus Transportation* and *Aera.*

The principal criticisms, according to Mr. Glover, were with respect to division in groups. Certain items which are now in the group of garage expenses were classed as maintenance items, others as transportation items. The groupings were made to agree as nearly as possible with the electric railway classification.

E. A. Tuson, Newark, N. J., explained that three classes of accounts were made to cover maintenance, movement costs and transportation.

A resolution of appreciation of the work of W. F. Ham, a member of the committee on the classification of accounts since its organization in 1897, was passed. Mr. Ham has resigned from the committee because of the press of other duties.

The address of the afternoon was delivered by Carl H. Nau, C.P.A., of Nau, Rusk & Swearingen. He defined the accountant as a very important factor in a company. His work is far more than that of bookkeeping or auditing, as he must be able to plan expenditures and be skilled in the affairs of commerce and finance. In closing, he expressed the debt of his profession to this and similar organizations for the constructive work they have done.

Fare Collection Methods Discussed

Registration in Addition to the Fare Box Is Favored by Accountants—Successful Use of the Weekly and Sunday Pass in Several Cities Described

ON TUESDAY the first part of the afternoon was devoted to a joint session of the Accountants' and Engineering Associations, the subject being depreciation. The principal paper on this subject was presented by Prof. Henry E. Riggs of the University of Michigan. A report of this session appeared in ELECTRIC RAILWAY JOURNAL for Oct. 9, page 618. Following the close of the discussion on Professor Riggs' paper the members of the Accountants' Association resumed their regular session.

A resolution offered by T. B. MacRae upon the death of John J. Stanley was adopted by a rising vote.

The report of the committee on fare collections was presented by its chairman, E. A. Tuson of Newark, N. J. In the ensuing discussion it was pointed out that in all cases registration is recommended in addition to the fare box record. There was some question as to whether all fares should be registered or only those which are not placed in the fare box. Following the discussion the report was adopted as submitted.

O. H. Bernd, Des Moines, told the association about the experience in his city with the weekly and Sunday pass. The Sunday pass was inaugurated on June 4 and was found to give an additional revenue of $300 a Sunday or about 6½ per cent. Special counts made by the conductors showed that the pass holders were taking many more rides than they previously had when paying cash fares.

J. P. Longon, Cincinnati, was also enthusiastic about the use of the pass on his interurban line. The car operators are furnished with green checks, one of which is deposited in the fare box when the passenger displays his pass for fare. This gives a check on the number of rides taken by pass holders.

On the Chicago Rapid Transit Company's lines Mr. MacRae stated that a check is kept by means of Veeder counters which are operated by the station agents.

H. E. Vordermark, Fort Wayne, stated that in his city passes were put on for political reasons some three years ago. The pass created good will with the public and has enabled the company to keep up the rate of cash fare. He is in favor of the pass and would not want to give it up.

The only difficulties that have been found with weekly passes have been due to certain persons obtaining admission to the car and then throwing the pass out of the window for others to ride. The opinion was that this is easily taken care of so as to present no particular difficulty.

Freight Accounting Considered

Use of Three-Part and Five-Part Waybills Discussed at Final Meeting—Resolutions Adopted and Officers Elected for the Ensuing Year

FREIGHT accounting occupied the greater part of the time at the Thursday session. Previous to its presentation the report of the committee representing the Accountants' Association at the annual convention of the National Association of Railroad and Utilities Commissioners, of which W. L. Davis, Allentown, Pa., was chairman, was read and adopted into the record.

The report of the committee on freight accounting was read by the chairman, O. H. Bernd. A lively discussion ensued. W. A. Blasing, Albany, N. Y., stated that the Hudson Valley Railway has changed from the practice of making the waybills at the point of origin while the freight bills were made at destination. The agent at the forwarding point makes out the freight bill and the waybill all in one writing, so the destination agent has no freight bill to make out.

C. A. Dugle, Rushville, Ind., said that some years ago the Central Electric Railway Association adopted the five-part waybill, but it was objected to by some roads doing an interchange business, so that both the five-part and the three-part waybills are now used. O. A. Small, South Bend, is of the opinion that the five-part waybill, including the expense bill for the use of the destination agent, has been almost entirely eliminated. This is because of confusion from having the originating company's imprint on the freight bill.

Walter Shroyer, Anderson, Ind., feels that the American Association can afford to follow the work of the

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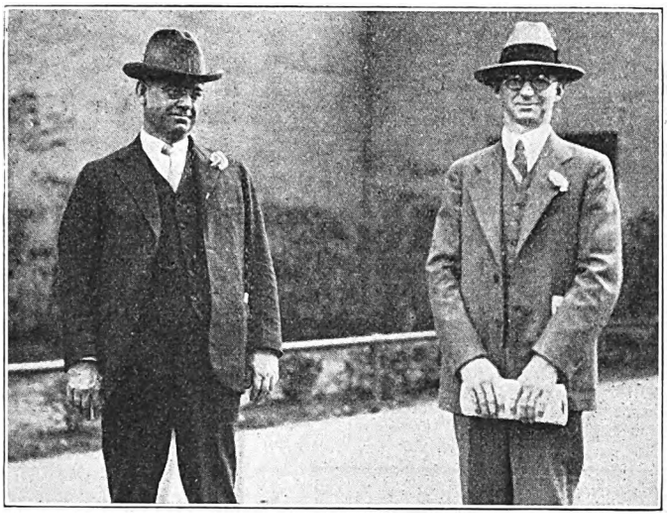
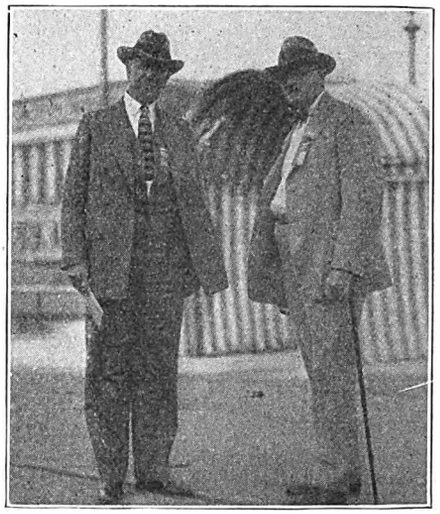


M. R. BOYLAN AND A. J. WARNER



J. P. BARNES AND H. A. NICHOLL

C.E.R.A. and the steam roads. He believes the unit waybill, carrying with it the freight and expense bill, is the one for electric railways. It was the opinion of Mr. MacRae and Mr. Duck that where there is interchange with a steam railroad the electric line will almost be forced to adopt the latter's methods.

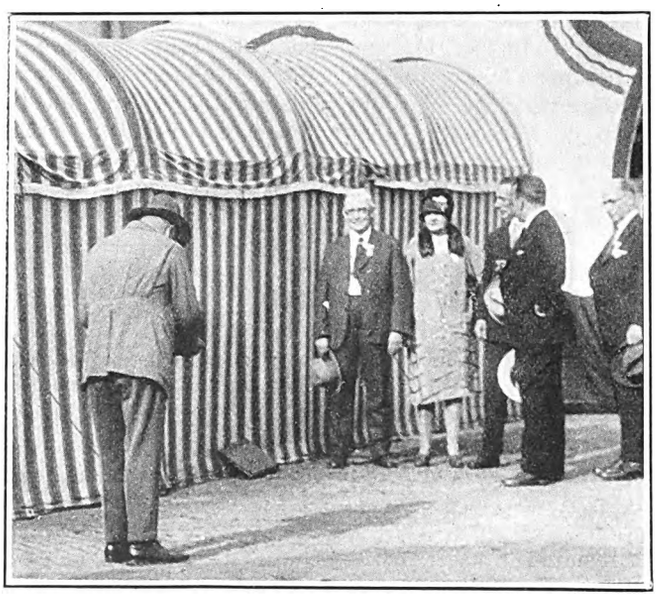
Following the discussion the report was adopted as an interim report.

The report of the committee to review the proceedings of the Accountants' Association was read by its chairman, J. E. Heberle, and adopted without discussion.

A paper on "Transportation and Taxation" was read by A. F. Elkins, manager Peat, Marwick, Mitchell & Company.

Depreciation of amusement park property was brought up for discussion by Mr. Lyons. If the receipts could be classified as auxiliary operating revenues and the expenditures as auxiliary operating expenses he feels it would assist to accomplish the desired result. It was the opinion of those present that the classification must follow the standard set by the state commission, but that in some cases the accounts may be carried in two different forms to cover the item on the company's books and in the commission report.

C. R. Mahan read the report of the resolutions committee in the absence of Chairman May. Appropriate resolutions were adopted acknowledging the efforts of the retiring president, and expressing thanks for his successful administration, for the efforts of the committees, for the speakers, for the technical press, and for the courtesy of Mr. Bernd in acting as convention secretary.



GETTING ILLUSTRATIONS FOR THE DAILY—
C. L. HENRY AND PARTY POSE

OFFICERS ELECTED FOR THE ENSUING YEAR

The committee on nominations, T. P. Kilfoyle, chairman, presented a list of names for the various offices. These were duly elected as follows:

President—L. E. Lippitt, general manager Auburn & Syracuse Electric Railway, Auburn, N. Y.

First Vice-President—T. B. MacRae, general auditor Chicago Rapid Transit Company, Chicago, Ill.

Second Vice-President—O. H. Bernd, secretary Des Moines City Railway, Des Moines, Iowa.

Third Vice-President — Edwin H. Reed, auditor Brooklyn City Railroad, Brooklyn, N. Y.

Secretary-Treasurer—J. W. Welsh, executive secretary American Electric Railway Association, New York City.

Executive Committee—C. E. Yost, auditor and assistant treasurer Wilmington & Philadelphia Traction Company, Wilmington, Del.; J. E. Heberle, assistant to president Capital Traction Company, Washington, D. C.; Edward A. Tuson, general auditor Public Service Railway, Newark, N. J.; C. R. Mahan, auditor Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

President Lippitt then took the chair, and after pledging his support to the association, called on the other new officers for remarks. After presentation of the past-president's badge to Mr. Duck, the meeting adjourned.

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Bonus or Award Systems*

More than Fifty Companies Have Found the Plan Successful in Reducing Accidents, Accident Claims and Unreported Cases —Bonus Plans Offer Inspiration to Continue Safety Work

By **G. T. Hellmuth**
Claims Attorney
Chicago, North Shore & Milwaukee Railroad

AT PRESENT there are at least 50 electric railways in the United States using one variation or another of the bonus plan for the reduction of accidents. The list of users includes companies in very large cities as well as in small communities, for example: Birmingham, Brooklyn, Denver, Los Angeles, Milwaukee, Louisville, St. Louis, Washington, D. C.

G. T. HELLMUTH

So far as I know, there are only two reasons given for their attitude by those who do not believe in the bonus plan. First it is said by some objectors that it is not right in principle to reward men for doing unusually well what they have already been paid to do. Such a position, it seems to me, is equivalent to the argument that one ought always to work in whatever endeavor one is engaged, without any expectation of promotion or increase in pay. Such a situation would deaden for me both initiative and mental activity. In fact, I do not think it would be too broad a statement to say that to work with the definite knowledge that no sort of reward could be expected, either in the shape of a promotion or a pay increase, would inevitably take from any individual the incentive for extra effort. And it is the extra effort, and extra effort only, that will produce results above the average.

The second objection advanced to the use of the plan is that trainmen will attempt to keep their accident records clear by omitting to report some of their accidents. However, this situation, as may be ascertained by examination of some of the plans contained in my files, has been anticipated and successfully handled by a provision that an unreported accident will be scored as two accidents, or demerits, against the individual failing to report. Consequently, so far from producing unreported accidents, the adoption of the plan has had just the opposite effect and has resulted in users of the plan being able to reduce their unreported accidents.

*Abstract of a paper presented at the annual convention of the American Electric Railway Claims Association, Cleveland, Ohio, Oct. 4-8, 1926.

I would like to call attention to one representative plan—the one in use by the Nashville (Tenn.) Railway & Light Company. There the year is divided into three contest periods of four months each and at the beginning of each contest the company sets up a bonus fund of $1,500. The contest consists of a comparison in each four months contest period with the corresponding four months of the previous year. If there are more accidents during any contest period of the current year than there were during the corresponding period of the previous year $20 is deducted from the fund for each accident above last year. For every accident less than the number charged during the same period during the previous year $20 is added by the company to the bonus fund of $1,500, but an unreported accident is counted in getting at the total of the contest period as two accidents. This means that unreported accidents will cut sharply into the fund distributed among all the employees. Consequently, unreported accidents are at a minimum with the Nashville Railway & Light Company.

Brief extracts from comments by officials of some of the railway companies using the bonus plan follow:

We started our bonus system in 1923. . . . Since the system was inaugurated we have had but one blind case. . . . The amount received by each man with a clean record is from $15 to $20, each six months. We feel that the bonus system has resulted beneficially in every way.—BUTTE ELECTRIC RAILWAY, Butte, Mont.

This plan has undoubtedly reduced the number of our accidents and in doing so has reduced our claim costs. . . . You will be surprised how our men covet the Star Class and how hard they strive to reach that goal.—CHARLESTON INTERURBAN RAILROAD, Charleston, W. Va.

In 1919 we began giving a bonus to the platform men and others eligible under the rules governing the bonuses. For the ten years preceding 1918 the average cost of the claim department was 12 per cent of the gross passenger revenue earned. For the years 1919 to 1924 inclusive the cost was 5.72 per cent; for the year 1925, the cost for the first six months was 3.25 per cent. . . . We have been able to reduce our pull-ins from 350 per month to 49 per

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month.—TENNESSEE ELECTRIC POWER COMPANY, Chattanooga, Tenn.

Our figures show a decrease in accidents from 1923, when the bonus system was started. . . . In the final analysis, to have the men interested in their work is the best accident preventive, and we think this interest is produced by the spirit of competition and personal gain.—CITY RAILWAY, Dayton, Ohio.

We feel that its popularity and benefits (of the bonus system) are constantly increasing, and we have watched the program very carefully and with much interest.—EL PASO ELECTRIC COMPANY, El Paso, Tex.

The Gary Street Railway is sold on the five-day-a-year vacation bonus plan.—GARY STREET RAILWAY, Gary, Ind.

The merit system has succeeded beyond our expectations, and after five years the higher officials of the company, as well as all others in authority, could not be prevailed upon to abandon it, nor would the trainmen themselves give their consent to such a course.—LOS ANGELES RAILWAY, Los Angeles, Cal.

The first year the plan was in operation the men received 1.65 cents per man-hour; the second year 2.60 cents. During that period our total accident costs were reduced from 5.59 per cent to 3.43 per cent of gross. Outstanding liability was reduced 36.8 per cent; number of accidents 34.3 per cent, and cost of repairs to equipment damaged in accidents, 64.6 per cent. The turnover of men during this same period was reduced 63 per cent.—MEMPHIS STREET RAILWAY, Memphis, Tenn.

In 1921 the company expended 9.5 per cent of its gross revenue in settlement of accident claims; in 1922, 6.2 per cent; in 1923, 5.8 per cent, and in 1924, 3.4 per cent. During 1923, the first year of the bonus system, claim costs amounted to $128,638. This amount was reduced to $77,284 in 1924, the latter amount including the bonus awards, which totaled $9,640. . . . We attribute the net savings of $51,354 largely to the bonus system. . . . This company expended 3.2 per cent of its gross revenue in settlement of claims during the six months ended June 30, 1925, as compared with 4.5 per cent of its gross revenue expended for the same purposes during the first six months of 1924.—NASHVILLE RAILWAY & LIGHT COMPANY, Nashville, Tenn.

We feel that the bonus method has increased the number of reported accidents, whereas before the institution of this system there were numerous slight accidents which were considered by the crews too trivial to report.—WEST PENN RAILWAY, Pittsburgh, Pa.

In February, 1921, our company inaugurated its trainmen safety contest. . . . The first statement, or that for the year ended Jan. 31, 1922, and the statement for the second year, or that ended Jan. 31, 1923, follow:

REDUCTION IN PER CENT OVER PREVIOUS YEAR

	First Safety Year	Second Safety Year
Accidents	15.9	24.6
Claims	16.9	24.5
Collisions of cars	48.1	66.7
Personal injuries serious	43.3	42.0
Personal injuries not serious	18.3	24.6
No reports	27.2	47.8
Deaths	40.0	43.7

—WASHINGTON RAILWAY & ELECTRIC COMPANY, Washington, D. C.

The Milwaukee Electric Railway & Light Company has enlarged and added to the scope of its award plan.

Going outside our field we find that prizes are given in Cleveland to careful taxi drivers and that Armour & Company distribute bonuses to "better than average" employees.

While the plan is largely in use, to those of us who do not use it it is a new way of aiding in our work of accident prevention. Accident prevention is the finest and highest development of claim work. We have all preached it; we have all contributed as best we could to it. To be most effective, it must be carried on continuously. When one method becomes stale, fresh inspiration is needed to "carry on." I think that we can obtain it through use of the bonus and award plan.

Bus Accidents

Their Causes and Successful Methods of Prevention*

Last Year Bus Accidents per Million Passengers Were Higher on Public Service than Trolley Car Accidents—Causes of Bus Accidents Analyzed and Remedies Suggested

By **H. V. Drown**

General Claim Agent Public Service Railway and Public Service Transportation Company, Newark, N. J.

H. V. DROWN

IN THE fall of 1923 Public Service decided to go into the bus business and in July, 1926, was operating 833 buses on 101 lines, most of the lines having been formerly operated by so-called independents. The company, however, has discarded most of the buses taken over, as almost every known type and manufacture of bus was included. In their place it has in operation 729 new buses and further replacements will be made when practicable. These buses are operated by the Public Service Transportation Company, but this company is jointly managed and operated with the Public Service Railway.

When confronted with the problem of handling bus accidents, naturally the first questions to arise in one's mind are: What will they amount to? How much work will be involved? My own first thought was they would

*Abstract of a paper presented at the annual convention of the American Electric Railway Claims Association, Cleveland, Ohio, Oct. 4-8, 1926.

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be less troublesome and expensive than those with cars and that a vehicle not confined to rails would have a distinct advantage. My experience has been that while the bus has the advantages mentioned, it also has disadvantages to be reckoned with. It is a smaller vehicle carrying considerably fewer passengers, and while our last year's operation showed 442.46 accidents per million bus-miles against 444.99 accidents per million car-miles on the railway, there were 82.86 accidents per million passengers for the buses as against 51.91 for the railways.

The Bus More Fragile than the Car

The bus is a much more fragile vehicle than the trolley, and in severe smashes it is more susceptible to being crumpled up, with consequent injurious effects to passengers. While the bus is not held to a fixed course, as is the car on its rails, this advantage is at least partially offset by the fact that in turning from its course the bus may sidewipe other vehicles or otherwise get into collisions with vehicles in congestion. Then the bus with its rubber tires may skid on slippery pavements.

In arriving at conclusions based on our experience for the first full year, claims men will, of course, take into consideration that on a new proposition such as this, all things being equal, claim costs will increase from year to year until a peak is reached, due to the necessary delay in liquidating certain claims, particularly those that have gone to suit. Our expenditures on account of bus accidents for the first year, including everything chargeable to the accident and damage accounts, amounted to 3.17 per cent of the revenue. For the same period the claim cost for Public Service Railway amounted to 5.37 per cent of its revenue. On this showing alone, I would assume that in about four years, when I should expect the bus percentage to hit its peak, it will at least equal and more than likely exceed that of the railway, but I confidently expect that it may be kept lower through the beneficial effect on the accident situation of standardization and improvement of equipment and operation, toward which great strides have already been made. I also look forward to marked improvements in traffic regulations which will materially help.

Our expenditures for the last year amounted to $253,263, divided as follows: For personal injury claims, $93,404; property claims, $78,458; workmen's compensation, $21,885; expenses $59,516. The accompanying table shows the percentage of accidents by classifications to the total number of accidents for both buses and trolleys respectively, coupling like or similar classifications.

Character of Hazard Not Greatly Different

It is apparent from the comparisons in the accompanying table that there is not a great deal of difference between the character of accident hazards arising out of the operation of the two vehicles. Our railway claim men took up the work with practically no difficulty. However, I think there is sufficient difference in the operation to justify separate printed forms and records throughout. We did this of necessity because the bus company was a separate corporation, but even where the business is merged with the railway I should deem it an advantage to keep separate records. There is sufficient difference in the physical layout to warrant it, and the records afford opportunity for profitable study.

As to the cause of bus accidents, there are three general causes, and this statement applies to trolley car accidents too. In the order of their frequency they are, first, negligence on the part of the public; second, negligence on the part of employees, and third, defects in construction and equipment.

To minimize the first, we are dependent on various educational features well worked out through this association and allied bodies, on the enforcement of existing traffic laws and ordinances and on enactment and enforcement of additional regulations when necessary. Where the proposition is large enough to justify it, the services of the National Safety Council will be found well worth while. Probably the greatest opportunity right now for bringing about a reduction of bus accidents lies in the direction of better traffic regulations, particularly in the direction of parking, of exceeding the speed requirements at highway and street intersections and of "keeping the line" in heavy traffic.

CLASSIFICATION OF BUS AND TROLLEY CAR ACCIDENTS IN PERCENTAGES OF TOTAL NUMBER, PUBLIC SERVICE OF NEW JERSEY, YEAR ENDED APRIL 1, 1926

Type of Accident	Bus	Trolley
Collisions with automobiles	49.05	52.81
Boarding and leaving	7.10	7.29
Employee accidents	6.53	3.47
Collisions, bus with bus or car with car	5.20	2.35
Collisions, bus with car or car with bus	3.97	(a) 4.93
Accidents involving injuries to passengers while on bus or car	3.47	3.58
Collisions with fixed objects	2.26	(b)
Pedestrians struck	1.81	2.17
Derailments	(c)	1.18
Collisions with wagons	1.13	1.40
All other accidents	19.48	19.82

(a) Includes collisions of cars with independent buses; (b) no such classification with cars; (c) no such classification with buses.

In minimizing the negligence of the employee, much can be done in the original selection of the man, and then in giving him proper and sufficient training.

Defects in the construction and equipment of buses are, if anything, more harmful in relation to accidents than in the case of trolley cars. It is therefore highly important that the bus be constructed with due regard to safety and maintained in as near a state of perfection as is practicable.

Standard Company Buses Desirable

Standardization is most desirable, so that the operator in shifting from one bus to another will find conditions with which he is familiar, so that when the emergency arises he will not have to stop to think, for that moment, so often fatal. Uniform widths and lengths of buses count much in obviating costly mistakes in judging clearances. The matter of clearance comes into play very frequently, not only in straightaway running, when other objects are being passed, but also when the bus must deviate from its course, particularly in turning to or from the curb, where a miscalculation may result in sidewiping other vehicles.

The steering apparatus merits a lot of attention. Here the trolley car has a great advantage as, confined to its track, it is practically a self-steerer. The brakes should be of the best type and be serviced up to the minute. With traffic already highly congested and still increasing steadily in density and with four-wheel brakes appearing in increasing numbers, even on the cheaper and lighter autos, by means of which they may be stopped in their tracks, so to speak, good braking equipment is increasingly essential.

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Greater Efficiency from the Medical Departments*

Suggestions on Ways in Which the Company Doctor or Surgeon Can Be of Greater Help to the Claims Department, Particularly in the Information Given in His Reports

By **Frederick L. Mosser, M.D.**
Surgeon Third Avenue Railway, New York

PRACTICAL methods which will produce greater efficiency from the medical departments can be obtained in two ways: (1) The medical examiner can select for employment the standard, healthy individual, and (2) the railway surgeons can render to their claim agent or legal department, instructive, intelligent and helpful reports, covering their examinations of those individuals who have been injured in accidents. It is my intention to address you mostly on the latter subject. I shall not dwell long upon the former, except to say that the examination of a prospective employee should be undertaken in a regular, systematic way. In this connection, several points stand out as prevailing topics of the times, and may work great harm or great benefits to railway corporations.

F. L. MOSSER, M.D.

As to the harm: I think principally of the danger of impending legislation in many of our states which will permit employees to choose their own physicians in workmen's compensation cases, and it is recommended that proper committees be organized by those interested to work against the passing of such legislation in any of our states.

As to the benefits: (a) The periodical examinations of all employees is recommended by most of our corporation surgeons. (b) The maintenance of competent first-aid captains. Dispensary and hospitalization facilities under the direction of the industrial surgeon are beneficial to those employees who are injured in the discharge of their duties and are facilities of which they are in duty bound to avail themselves. Lastly, under my first group division, let me call your attention to the great necessity of maintaining a well-equipped and efficient welfare department. Such a department can help employees greatly by posting notices warning of impending epidemics and of social and economic disturbances. These warnings not only benefit the employees of street railway companies, but all industrial organizations and corporations.

In the second group division, namely, the relations between the examining surgeon on accident cases and the claim agent and legal departments, let me suggest that one of the most important essentials is the selection of competent medical men, those with considerable experience, especially those who are alert and willing to make the examinations when assigned to them without delay. You will concur with me when I say that to make the examination immediately after the accident is reported, or as soon after the accident as can possibly be arranged, does more to discourage malingering on the part of a claimant and more to keep ambulance chasers away from your cases than anything else with which I am acquainted. The net results to my mind of a quick and concise surgeon's medical report to the claim agent represents 100 per cent efficiency.

How the Surgeon Can Help

Practical help can be further rendered to the claim agent by the examining surgeon in the manner indicated as follows, which I will set forth under suggestions or topics for your consideration and discussion in order to save time. These suggestions or topics I believe will prove instructive and of a material aid to those who are called upon to interpret intelligently the surgeon's report rendered to claim agents.

1. A surgeon's report will help greatly by giving the physical characteristics and make-up of a claimant

*Abstract of a paper presented at the annual convention of the American Electric Railway Association, Cleveland, Ohio, Oct, 4-8, 1926.

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such as: age, weight, married or single, etc., together with the type of claimant, as if, in your opinion, he is truthful or is inclined to exaggerate or malinger.

2. Before an examination of a claimant, it is well for the surgeon to have the claimant specify to him in the claimant's own words a detailed account of the alleged injury. This helps the surgeon not only in the making of his report but, in the course of his examination, to discover some condition not claimed by the injured, such as hernia. Do not apprise the claimant of your findings by spending too much time over such a fact; but continue with your examination.

3. In cases of fractures or sub-luxations, the surgeon should make clear in his report whether it is a case of bad union; whether there will be a shortening of the limb; whether a limp will persist, or whether the limb, when union is completed, will properly function; state if there is any possibility that the result of any fracture or sub-luxation will interfere with the plaintiff following his regular occupation. This latter is very important. In examining injuries to the spine or sacro-illiac joints the surgeon as a rule finds no objective symptoms. In these cases the surgeon should try to reserve the right to get X-ray pictures, if such a procedure is later approved by the claim agent. In the examination of eyes, ears, nose, throat, etc., or in fact any special condition, it is also advisable for the surgeon to reserve the right to employ the services of a specialist, if necessary, or if thought advisable later on in the case.

4. *Neurasthenia*—After the trial, claimants whom physicians have declared to be permanently neurasthenic should be followed up to learn whether these doctors are in error. This procedure can be used in subsequent cross-examinations of the same doctor. In similar cases a card index record of physicians who have testified at trials has been found to be of great value for references by the legal department in future cases. This, not only refers to neurasthenia cases, but in all permanent injury cases. The surgeon's report of neurasthenia cases could also well include the following:

(a) Does claimant appear of the type that will be susceptible to suggestions?
(b) Is there anything about the physical condition of the claimant that could be a producing cause of neurasthenia?
(c) A concise and complete history of any previous medical or surgical records that can be obtained, is naturally a great assistance at the trial.

5. *Women*—In reporting the examination of women claiming miscarriage the following suggestions will help the claim agent to interpret the surgeon's report:

(a) How long has she been married?
(b) How many children has she had?
(c) Has she ever had any previous miscarriages; if so, at what months?
(d) In your opinion, is an apparent constitutional condition the cause of miscarriage? Where have previous children been born, at home or a hospital? If in a hospital, try and obtain the name of the institution.

6. Where the examiner finds some condition is alleged, that he believes or knows could not be caused by such an accident as a claimant describes, it is very helpful for the surgeon's report to give a statement to that effect, suggesting some authority if possible. For example, where the claimant alleges an assault and claims hernia from a probable kick in the abdomen, it is generally conceded by the authorities, I believe, that violence of that kind cannot cause a hernia unless there is a penetration of the abdominal wall.

7. It is helpful if the surgeon's report states whether he knows the attending physician, and if he does, whether the physician is a man of ability and honesty, and if he would be apt to be persuaded by his feeling toward his patient.

8. The surgeon's report to the claim agent should say whether the claimant's injury has dangerous possibilities. This should be specifically mentioned. It should also give a statement of the alleged injuries which cannot be verified by the surgeon, and whether in the surgeon's opinion the case will be a hard one to dispose of. In the latter, aggravation from old conditions must be thought of and in the examining of pregnant women, whether the surgeon finds any reason that might lead to a miscarriage, such as nervousness, etc. Acquaint your claim agent with these facts.

9. The surgeon's report should give his opinion as to whether the claimant is being properly treated by a competent physician, and if there is any possibility or danger of a bad result therefrom.

10. The examining surgeon should never indicate to the claimant by his actions or verbally what his findings are, nor should he direct or suggest any treatment.

Topics to Be Emphasized

In conclusion, permit me to reiterate the topics which to me seem important.

1. The danger of permitting employees to choose their own physicians in workmen's compensation cases.
2. The advisability of immediate examination after an accident and the examining surgeon's prompt report of such to the claim agent.
3. The following up of physicians who have testified as to permanent neurasthenia conditions, so that they can be checked up in future cross-examinations, and the keeping of card index systems of physicians who have testified at trials for future reference.
4. Concise and intelligent reports should acquaint the claim agent with the proper explanations as to conditions found and the probable results. I speak especially of neurasthenia, fractures and dislocations and information regarding accidents to pregnant women, miscarriages, etc.
5. The surgeon to report about the reliability of a claimant's physician and whether the claimant is receiving proper treatment.

Committee on Medical and Surgical Work

The committee on medical and surgical work of the Claims Association this year consisted of:

Dr. Frederick L. Mosser, chairman, surgeon Third Avenue Railway System, New York, N. Y.

Dr. A. S. Driscoll, railway surgeon Richmond Light & Railroad Company, Staten Island, N. Y.

Dr. C. H. Ernst, surgeon the Wilkes-Barre Railway Corporation, Wilkes-Barre, Pa.

Dr. H. A. MacLean, chief surgeon Virginia Electric & Power Company, Richmond, Va.

Dr. Ernest W. Miller, surgeon the Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

Dr. B. E. Sibley, surgeon Boston Elevated Railway, Boston, Mass.

During the past year the committee has been active in carrying on the work outlined for it by the Claims Association. It has been in communication with many surgeon members, and judging from the many replies received, the committee reported a very general increased interest on the part of every one in the work and a desire to co-operate. The program of the medical and surgical session of the Claims Association at the Cleveland convention on Thursday morning was under the direction of this committee.

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The Medical Department and the Injured Patron*

The Proper Kind of Organization and a Well Selected Personnel Are Essential to Success —In Milwaukee Good Results Have Followed Permission to District Physicians to Take Outside Practice

By **Ernest W. Miller, M.D.**
Surgeon Milwaukee Electric Railway & Light Company

SUCCESS of any enterprise in these times depends largely upon the formation of its forces into a well-balanced, smoothly operating organization, with careful selection of its units. This discussion is confined to public utilities in cities of not less than 100,000 people, as it is my belief that a utility medical staff for the care of injured patrons can scarcely be organized with economy in smaller cities. It is also essential that the foundation for such organization be based largely upon the relations between the medical department, the claim department and the public. These relations should be extremely close, yet this relation must never be stressed to the point of spreading even the suggestion that the medical department is an adjunct to, or an accompaniment of, the claim department.

For 30 years it has been the pleasure of the Milwaukee Electric Railway & Light Company to render medical and surgical care to a large majority of patrons injured on its lines. Institution of such medical service at this particular time would undoubtedly meet with many obstacles unheard of 30 years ago.

The plan which many public utilities have of engaging medical men to make examinations of injured patrons immediately and pass them on to some other physician for treatment, can in most cases meet with but indifferent results at the best.

The initial step in an organization of this character is proper selection of a head or chief. It then remains for the head to select such associates as may be qualified for this particular kind of work.

As years go by, I am more convinced that to serve the patrons of a public utility properly, the medical man must be born, not made. It requires men with a broad view of life; men with more than ordinary tact and diplomacy. During the past fifteen years, the Milwaukee Electric Railway & Light Company has found that only about 50 per cent of the medical men who apply for positions on our staff qualify to carry the work to a successful conclusion.

The chief surgeon or head, having selected carefully the personnel of his department, must outline the most economical distribution of duties. The division of our city into eight districts has made much improvement in the handling of injured patrons. Primarily there is a smaller territory for the physician to cover; he can arrive at the scene of an accident with no loss of time,

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E. W. MILLER, M.D.

and in the course of a few years he can extend his acquaintance within the district in which his work is confined. The medical department of our utility cares for about 4,000 injured patients a year, which is something like 90 or 95 per cent of all those injured.

The physicians selected in these various districts, while on the payroll of our company, are not full-time employees. They are obligated to carry on our work at all times, but in addition are permitted to extend their private practices. This removes much of the stigma which in the past has befallen the title of "company doctor" or "company physician." Indeed, now it quite frequently happens that the injured patron has been for some time a personal patient of the doctor in question.

ALSO ATTEND EMPLOYEES AND THEIR FAMILIES

The work of our district physicians has been further augmented by the rendering of medical and obstetrical care to employees of our company and their families within the districts in which each physician resides. The medical service is primarily for the benefit of the employees and their families, but secondarily it has the advantage that the satisfactory medical care given to the employees and their families by these district physicians spreads further the favorable contact of the physician. The medical care of employees and their families is organized under and paid for by the Employes Mutual Benefit Association. The combined remuneration for the care of injured patrons and medical service to employees and their families is sufficient to make possible employment of well-trained and carefully selected medical men.

Each district is equipped with a surgeon's office at its carhouses and other properties, so that the district physician may remove his patient from the scene of accident to one of these offices for first-aid treatment. In case an accident happens near one of these offices, the motorman or conductor almost without fail will transport the injured person to these localities, where, in

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many instances, the physician is awaiting their arrival, having received notice by telephone of the accident and of the disposition of the injured. The physician in each district is instructed to report immediately to the chief surgeon, or his first assistant, the condition which he finds after the examination of any injured patron. If the condition found is other than a minor one, or one which does not come under the scope of the general practitioner, the case is referred to the chief surgeon, or his first assistant, for subsequent treatment and if hospitalization is necessary, the patient is immediately sent to an institution and cared for at the expense of the company.

Further facilities for caring for patrons and injured employees, and also for medical diagnosis and treatment of employees and their families, are afforded by central offices in the Public Service Building. These offices are equipped with the most modern means for diagnosis and treatment and are centrally located, making them readily available to the entire territory served by our utilities. The executive work of the medical department is carried on in these offices. The office hours are spread over practically the entire day. Regular office hours are held regularly by the district physicians at each of the local district offices further to accommodate the convenience of the employees and their families as well as injured patrons.

Subsequent to the telephone report of the condition found by the district physician, a written report of each injured patron must be in our claim department within 24 hours after the doctor has made his examination. These reports are supplemented from time to time as new conditions may arise, or as progress is noted in the recovery. This enables the claim department to have frequent information as to the possibility of the opportune time for effecting a settlement in the event that immediate settlement is not possible.

Weekly reports are sent to the chief surgeon by each district physician, incorporating the name of the injured patron, the dates of treatment and the progress of the case. These reports may be transmitted to the claim department, giving them a complete survey of the cases for which the medical department is caring. Frequent staff meetings are held for discussion of all cases of injuries to patrons, as well as topics of general interest to the members of the staff. These staff meetings are probably as valuable to the claim department as anything we can do.

Four Advantages Cited

The advantages of an organized medical service, such as I have briefly described, are manifold. First, it gives immediate knowledge of the condition from which the injured patron is suffering. Second, it insures to the injured patron adequate and thorough medical and surgical service, thereby in many instances minimizing the permanent disability which might arise; I could cite a number of cases where claims for personal injury have been reduced thousands of dollars by rehabilitation and reconstruction work necessitated by primary unqualified medical attention. Third, such service establishes a better relation between the public and the utility. Fourth, the complete care of any given case is a marked advantage in the event of litigation. Fifth, organized medical and surgical service effects economies to the public utility.

Physical Examinations of Employees*

Every Uniformed Employee More than 50 Years Old in Boston Is Examined Yearly and the Results with the 900 Men So Tested Last Summer Are Given—High Blood Pressure Considered Most Important Pathological Condition

By **Benjamin E. Sibley, M.D.**
Surgeon Boston Elevated Railway

LAST year at Atlantic City I presented a paper on the "Routine Methods of Physical Examination of Employees." That discussion was based on the examination of 1,200 men during the summer of 1924 and on the physical examinations given to all uniformed men employed by the Boston Elevated Railway, about 28,000 in all. This number includes all car and train operators who have entered the service since 1901. Two years ago, all uniformed employees 50 years of age, or over, were re-examined. Beginning with this year, the company has adopted the policy of examining the men who are 50, or over, every year. We have just completed the physical examination of 900 men ranging in age from 50 to 76 years, and the present discussion is based largely on the conditions found in this group.

After considerable experience in studying the physical condition of street railway employees, I have become a firm believer in the importance of making yearly examinations of the older men. After 50 years of age, the development of changes in arteries, heart and kidneys becomes most important, and there arises the necessity of a change in the personal habits and hygiene of these individuals. This health axiom is well known to many but we are dealing with a class of men who give little thought to personal hygiene and health, until conditions arise which interfere with their work.

Yearly physical examination and advice to these men will do much to prevent and retard the development of those organic changes which appear in this era. Loss of time may be minimized and years of service lengthened.

I have found that periodical examination stimulates the interest of the men, and impresses them with the importance of following the advice given. Without a regular "follow up," the things the doctor said are often forgotten, and nothing is done until some serious condition develops and causes disability.

Each year I find men who have done nothing to remedy the defects found, and they are again impressed

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with the importance of attending to physical ailments at once. Each year I am also gratified to find an increasing number of men who return with pathological conditions corrected.

In a group of 74 men with blood pressures of 200 or more, 42 per cent were able to get reductions to points below 200. Cases of albumen and sugar in the urine have been cleared up, trusses secured for herniæ, and bad conditions of the teeth remedied. A man this summer proudly displayed a set of artificial teeth which had displaced some very bad ones he had when examined previously. He said that his chronic indigestion had disappeared and he had gained 10 lb. in weight.

The interest and co-operation of these men has been gratifying. Over and over again they tell me that they regard the examination as a good thing. They ask many questions about their condition, and when given a "clean bill of health" are very much pleased. When told of conditions which need attention, they are very willing to do whatever is advised.

Moreover, this spirit of appreciation and co-operation is growing each year. This is true because the men realize that the examination is not a means of finding some reason for laying them off, but rather to keep them in health and on the job longer. Every man is told the results of his examination, and if he needs treatment he is sent to his own physician. He is given a blank form covering heart, urine and blood pressure for his doctor to fill out and return, so that we thus obtain a further observation and check-up on whether medical aid has been sought.

The examination is not a long one. Eyes and ears are tested, and conditions of the teeth, heart, lungs, blood pressure, urine, hernia and varicose veins noted. Men found unsafe to run cars or trains are laid off, and given other work until in better condition. Cases found to be not immediately unfit, but not really good risks, are kept under observation and re-examined at intervals of a few months, and sometimes more often.

The following is a brief review of the results obtained in the 900 men examined during the past summer. The teeth head the list of defects.

Twenty-five per cent showed bad teeth, very many more poor teeth, and most of them showed almost complete neglect of the teeth.

Twenty-one per cent had varicose veins, but in no case were they causing disability.

Sixteen per cent had hernia, most of them wearing trusses.

Three per cent showed some disturbance of the lungs, i.e., bronchial, not tubercular.

Sugar was found in the urine in 2 per cent and albumin in 3 per cent.

Heart trouble was noted in 7½ per cent.

High blood pressure existed in 9 per cent., i.e., blood pressures with systolic readings of 180 or over. This percentage would be higher if the reading abnormal for each individual at his age was tabulated.

Of these hypertension cases, 23 per cent showed pathological heart conditions as well. Four per cent of them showed heart conditions and albumin, and 9 per cent showed albumin with no heart pathology.

In this group, then, we have a considerable number of cases where the high blood pressure is due to sclerotic changes in the arteries, the heart and the kidneys, and these cases will be kept under the most careful observation.

Many in this group, however, owe their hypertension to bad habits of eating and resultant overweight, to excessive use of tobacco, tea and coffee, and can readily be helped. Perhaps it is to this particular group that the yearly examination renders its greatest service, by the prevention of later chronic, incurable organic changes.

The hypertension group, while relatively small, is by its nature the most important. I will return to it later.

The next most important pathological condition is that of the teeth; it is by far the most prevalent condition, and is a factor in causing bad digestion, heart and arterial trouble and rheumatism.

But let us return now to the hypertension group, which furnish the greatest and most imminent threat to the safe operation of cars and trains. This class has become doubly important since so many of the older men, formerly conductors, have now become one-man car operators.

Two years ago we selected 76 men with systolic blood pressures ranging from 200 to 210, 230 and even 250, and with diastolics from 120 to 140. These men have been under treatment by their own doctors and have been tested by me personally at frequent intervals. In two years time, one-fourth or 25 per cent of these men have passed off the scene. Of these men no longer actively employed, 68 per cent have died and the others have been pensioned. In some cases, death was due to "shock" or "heart failure," but other causes, such as carbuncles, pneumonia, appendicitis, etc., were given as the cause.

Whatever the immediate cause, a group which loses 25 per cent of its personnel in two years time, offers a grave risk if employed in operating street railway cars or trains. It is simply a matter of chance whether some of these men die at the front end of a car in motion, or at home.

It is a difficult matter to lay down hard and fast rules about blood pressure limits. The whole picture, including the condition of the heart, kidneys and general health, must be considered. However, as a rough working standard, we have adopted certain arbitrary limits as a guide in these cases. No man with a diastolic pressure of 120 or more is permitted to operate a car or train, even if he seems sound in other respects, and no man with a systolic pressure of 200 or over, unless he has a diastolic pressure below 120, is permitted to operate a car or train. Men with lower readings but with bad heart action or other conditions, may be laid off also.

In determining the fitness of men with hypertension for work, we are laying greater stress on the diastolic than on the systolic pressure. The men who have died have been those with high diastolic readings, while we have a considerable number of men with high systolics and relatively low diastolics who are doing well. None of the high systolic with relatively low diastolic have died.

The cases removed from car or train operating are given other work and not returned to regular duty until their physical condition indicates that they are reasonably safe risks.

I believe that the yearly examination covering an age era when hypertension is to be expected, and a close following up of the cases found, offers us the best safeguard we have in dealing with men who operate street railway cars and trains.

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Value and Uses of Medical Testimony*

In Preliminary Investigation, Company Physician's Report Is Sent for Approval or Comment to Attending Physician—In Court Proceedings Medical Testimony Should Be Given in Language Easily Understood by Laymen—Careful Preparation by Trial Attorneys Is Most Essential

By **H. Stuart MacLean, M.D.**
Chief Surgeon Virginia Electric & Power Company
Richmond, Va.

MEDICAL information is essential in the consideration of personal accident claims. This information is to be used under two conditions: In settlement of a claim by compromise or adjustment, and as testimony in trials.

In the first instance this information is of the greatest importance to the claim department, and it should be full, simply stated and given with due regard for probable or possible disagreement, of an honest character from the physician treating the claimant. The methods of obtaining this information vary with different companies, and as these variations are the outcome of long standing local customs it is not possible to adopt a universal plan for obtaining it. Some companies treat or see all injured parties promptly; others have medical investigation of injuries only as claims or other occasion arises, while still others pay no attention to the nature and extent of the injuries as a routine measure.

H. S. MACLEAN, M.D.

In outlining the procedure of the company which I represent, it is not intended to give the impression that we believe our system so much better than others. We have found it to work satisfactorily, showing at least an apparent interest in the injured party and in no small degree facilitating early and prompt settlements. We offer treatment to all injured parties, including hospital attention when necessary, provided they have not called or state that they do not want their own physician. Our doctor makes a prompt report of the nature and extent of the injuries together with a liberal estimate of the probable duration.

Cases treated by company physicians are carefully reported upon when discharged. Those treated by physicians of their own choice are checked by the preliminary report from the company's physician who called immediately after the accident. As the claim comes up for adjustment the name of the attending physician is obtained, also permission for the chief surgeon to call this physician and obtain a report as to the extent of the injuries. This is done promptly, a report of the conversation is written to the claim department and a copy of the report sent to the patient's physician. Accompanying this copy is a letter to the physician asking him to correct any errors or misquoting which may appear in the report.

This plan affords an opportunity for the chief surgeon to "iron out" any differences in diagnosis, prognosis or opinion which may appear between the information we have at hand and the opinion of the physician. By consistent fair dealing with attending physicians we have reached a point where we can almost always get a fair and conservative opinion from the physician and come to a surgical understanding upon which we both practically agree. The influence of this is considerable. In the event of liability it means that the attending physician agrees to physical injuries which the chief surgeon can approve. A report from the chief surgeon uncorrected by the physician means a tacit agreement in the salient points in the report, and if the claimant chooses to refer back to the attending physician the latter has the moral support of an opinion already given with the claimant's consent and will come pretty near "standing pat." The chief surgeon confers frequently with the claim department and interprets the medical reports as nearly as possible in terms of dollars and cents.

In the matter of medical testimony in suits for damages, a different view is held by the writer. The papers in the suit should, of course, include full and accurate information as to the nature and extent of the injury. This is an important factor in considering questions of

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compromise, and the information must therefore be as accurate as obtainable and in the last analysis should "lean" toward the plaintiff.

Medical Testimony in Court Proceedings

The use of medical information in the court room comes under two heads: favorable and unfavorable statements from plaintiff's physicians.

The average jury is skeptical about medical testimony. The jurymen become listless or indifferent during immaterial medical testimony, particularly when given in the manner common with physicians, that is to say, testimony embellished with long, unintelligible words or statements given without reasonable effort to make them plain to a layman.

If a physician must be put on the stand, impress upon him the desirability of using "words of one syllable," and explaining or defining so that a layman can understand any technical terms for which he can find no fitting substitute. When we enter the trial of a contested case we have the statement of our own physicians and that of the attending physician as already outlined. If these two statements reasonably agree, we consider the medical phase settled. If the plaintiff's physician testifies along the lines of our advices on direct examination, he is thanked, complimented and released. One of the worst things that can be done is to cross-examine a reasonably satisfactory medical witness on some minor aspect of the case. Physicians on the witness stand, when cross-examined, are prone to imagine ulterior motives or veiled reflections upon their ability or judgment, and their reaction may result in some impulsive statement which will be damaging to the case or at least give rise to acrimonious, immaterial discussion. Under such conditions it takes a physician trained in court testimony and a suave lawyer to avoid making a bad impression upon a jury, and then the defendant usually gets the credit for causing it.

When the testimony of a plaintiff's physician is expected to be adverse and not in accordance with the facts as known to the defendant, it becomes necessary to combat him. When occasion arises, this should be done frankly, without any malice or feeling, and thoroughly.

The chief surgeon of the company, if a competent witness, should testify last in order to clear up any obscure points, make plain any technical information, and minimize any suggestion of personalities which may have arisen during the testimony of the other medical witnesses. The chief surgeon who cannot make plain any medical terms or conditions and who cannot abstain from all suggestions of personal feeling in his testimony is a poor man to put on the witness stand.

Expert Testimony as a Last Resort

As for experts, they are good things not to have to use. They should be a last resort, used only when you are convinced the claimant is flagrantly imposing or the claimant's physician is obviously wrong. When an expert is used, it often happens that the greatest value of his testimony is lost by reason of carelessness or insufficient preliminary discussion. He should be chosen not only for his general standing and peculiar knowledge of the matter in controversy, but because he is skilled in making the facts simple and plain. When a case is serious enough to need expert testimony, it is worthy of painstaking preliminary work. All the facts of the case, including any animosity or other unfavorable attitude of the plaintiff's physicians, should be placed before him. Then the questions which he will be asked in court should be considered and answers outlined. After this is done, a careful effort should be made to view the case from the plaintiff's angle and questions on that line asked in order to develop any weak point in the expert's opinion.

Proper Preparation and Presentation Most Desirable

After 25 years experience in giving medical testimony I am forcibly impressed with the frequent lack of proper preparation and presentation of good, sound medical information in such trials. It seems that the following important facts are lost sight of: (1) The jurymen are anxious for plain, straightforward facts which they can readily grasp and apply to the issue. (2) Trial attorneys are too often possessed of only a superficial knowledge of medical facts in general (total ignorance would really serve them better), and they are unable to draw the facts from their own medical witnesses or successfully cross-question an opposing medical witness. (3) Physicians are sent to the stand when the attorneys have no foreknowledge of their testimony other than a brief report on the case or a sentence opinion expressed in a five-minute interview.

If medical testimony is to be used certain considerations should be observed.

1. The facts must be studied and arranged with a view to "getting them across to the jury." Don't give them any facts unless you are going to do it in a way they cannot fail to grasp and apply to the case. Be careful that you do not belittle any ailment testified about unless you can fully establish your contention. Some of the jury may have that very trouble.

2. A trial attorney should have a good working knowledge of the medical facts in a case and be prepared beforehand. A medical advisor seated by the side of an attorney may be helpful in suggesting certain questions at a trial, but it makes a deeper impression on both the jury and medical witnesses if such an adviser neither suggests questions nor is called upon for advice during cross-examination. All these points should be anticipated in preparation for the trial.

3. Spend too much, rather than too little, time learning what your medical witness intends to say may inadvertently say, or might be lead into saying by opposing counsel. In conference, do not take a medical witness' initial statement as final. Approach the point from different angles and with different qualifications. Physicians on the witness stand are prone to accept suggested qualifications or modifications in cleverly worded questions which are made to appear as contradictions and then the witness will become confused or offer a technical explanation. When this happens, "good night" jury.

Above all, make the testimony plain, make it simple, make it brief and make it in a kindly, considerate manner.

To summarize: Medical information is essential and very valuable in the adjustment of claims, and if properly obtained and used is an influential lever in effecting compromises up to the doors of the court room.

In the court room the less it is used, the better. When used it should be simple, direct and well planned in advance.

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Accounting and Taxation of the Transportation Line*

Development of Electric Railway Practice from the Inception of the Accountants' Association in 1898 Is Sketched—Appointment of Committee to Act with the Congressional Committee on Internal Revenue Taxation Is Urged

By **Albert F. Elkins**
Manager Peat, Marwick, Mitchell & Company

WITHIN the brief span of 25 years the progress of the electric railroad, and especially the interurban, has been the marvel of the age. Towns, villages and hamlets have been linked together and production and distribution brought to the doors of our great cities of commerce and industry. Truly, the electric railway is an essential factor in our commercial life today, for without transportation facilities there would be no commerce. I have faith in the future of this industry, notwithstanding the recent development of the motor bus, and I predict that the electric railroad will increase and improve with the needs of commerce. We acclaimed the electric railway in the building, and although its natural growth has been hampered, and precautions which would have avoided many difficulties omitted, no modern community would welcome a return to the old order, or be content with limited transportation facilities.

A. F. ELKINS

It has been my privilege to witness the advancement of the accounting department of the electric railroad, which, in the old days, was looked upon as an unproductive and unnecessary adjunct of the business. However, the business executive soon displaced the old-time operator, and the transportation system entered the modern stage of business through the adoption in 1908 of a uniform classification of operating expenses, operating revenues and expenditures for road and equipment.

The first Street Railway Accountants' Association was organized at Cleveland, in March, 1897, and at that time the question of the adoption of a standard system of accounts was considered. At the second convention of the association, in 1898, a standard classification of operating expense accounts was adopted, which called for 39 such accounts in all. That classification, with some minor changes, remained the standard up to 1908.

The first classification was designed for use by street railways primarily, but with the advent of the interurban road it was considered desirable to have a classification which would meet the requirements of all classes of electric roads. Under the able leadership of W. F. Ham, chairman, the second classification was adopted at the Atlantic City convention in 1908. The Uniform System of Accounts for Electric Railways, prescribed by the Interstate Commerce Commission in 1914, superseded the tentative classification of Jan. 1, 1909, and is in effect at the present time. Like the classification for steam roads, prescribed by the commission at the same time, it has stood the test for twelve years, under rapidly changing conditions, and reflects the best thought not only of the accounting officers, but also the executive and operating officials, as well as the state commissions.

In the old days before public regulation, there was, as you know, practically no standard accounting system, and the auditor's position frequently depended on his ability to maintain pleasant relations with the operating department. The published balance sheet and profit and loss statement of the railroad were unknown quantities in those days, but that condition has changed and the confidence of the general public in our public service corporations has been strengthened. Much of the credit for this condition is due the auditor, who is required to keep his accounts in strict accordance with existing laws and regulations, and who

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is held responsible for results in this connection. Ability of the highest type is now required, and the successful auditor necessarily must remain true to conscientious standards under the most trying conditions.

The railroad differs from the ordinary industrial enterprise, in that it has but one product to sell, that of transportation, though it may be, and frequently is, engaged in other lines of activity. Its accounting system is prescribed by the Interstate Commerce Commission and the various state commissions, and uniformity is its keynote. While no system of accounting can be classified as perfect and as representing the last word in accounting detail, it is my opinion that public service accounting combines as nearly as possible all of the elements necessary to a complete system under existing laws and regulations.

The primary object in the mind of the railway accounting officer, of course, has always been to keep his accounts in such a way that the management might profit by this information, but the public nature of the enterprise has demanded publicity.

New Taxes Revolutionized Accounting System

We had only the corporation excise tax law in 1909, which was in effect an income tax, but we were beginning to forecast breakers ahead and lay our lines accordingly. Some of you may recall the so-called "Langdon tax law" of Ohio, a device for obtaining additional revenue, which necessitated a segregation of the accounts of railways as between state and interstate, in order correctly to apply the earnings. The Langdon law really presented the first accounting question of any importance so far as I know, until the enactment of the income tax law of 1913, following the constitutional amendment. This law imposed a tax of 1 per cent on corporations, and removed the $5,000 exemption provided for in the 1909 act.

There followed in quick succession the normal tax law of 1916, which was amended by the act of Oct. 3, 1917, and on the same date the war excess profits tax act was passed. This law, together with the war profits and excess profits tax law of 1918, actually revolutionized the accounting systems of corporations, and in order to meet the requirements of a statute that even experts had difficulty in interpreting, it became necessary to change accounting systems, radically in some instances, to reflect properly the true taxable income. Complexities multiplied, however, in the literal application of the statute to existing conditions, especially with respect to consolidated returns.

In those cases, especially among the railroads and public utility corporations, characterized by frequent changes in corporate ownership, accompanied with more or less complicated financial transactions, involved in organization or reorganization, the problem respecting the determination of invested capital became a real issue, magnified over and over again as other issues came to the front, such as affiliation, natural resources, good will, depreciation and amortization.

The revenue act of 1926, and regulations relating thereto, provide that when the taxpayer has had his "day in court" within the income tax unit, and the commissioner of internal revenue determines there is a deficiency in taxes, a notice of such deficiency is sent to the taxpayer by registered mail. Within 60 days after such notice is mailed the taxpayer may file a petition with the board of tax appeals for a redetermination of such deficiency. Except in those cases where the commissioner is authorized to make jeopardy assessments, the deficiency cannot be assessed within the 60-day period, nor, if the taxpayer has filed a petition with the board, before the decision of the board has become final.

Since the enactment of the sixteenth amendment to the Constitution, authorizing Congress to impose an income tax upon all incomes irrespective of the source from which derived, we have witnessed the enactment of several income tax laws, and with the expenses and obligations of the war, it is not unreasonable to believe that we will have this system of taxation with us for many years, graduated of course with the necessities and economies of the government. Secretary Mellon's argument that reduced rates of taxation would produce more revenue carries much weight in the light of results since the enactment of the revenue act of 1926, and a continuation of prosperous business as a whole will doubtless bring further tax reductions.

A very interesting feature of the revenue act of 1926 is the provision for a joint congressional committee on internal revenue taxation. This committee will, among other things, investigate measures and methods for the simplification of taxes, particularly the income tax. All of our tax laws have been more or less complicated, and every new act will contain many problemes of interpretation and application, but it is recognized that a simple system cannot be devised under present conditions. It is obvious that many difficulties will be encountered in the literal interpretation of the statutes, and I am quite sure this committee will welcome all constructive suggestions, especially from those who must bear the burden of taxation. To this end I recommend for your consideration the appointment of a special committee of this association to co-operate with the joint congressional committee, and suggest ways and means of not only tax simplification but a special form of return suitable for railways.

In closing I want to leave with you this thought: that the chief accounting officer of the railway occupies a more important position of trust than ever before, and that the public service corporation today more nearly approaches the ideal than at any time in American history. Today the progressive manager recognizes that the people have rights that should be respected, and he values the confidence of the people more than he does a franchise. It is up to you, therefore to maintain the highest standards of your profession, to the end that your company may merit the respect and confidence of the public you serve.

S. E. Emmons Misquoted

REMARKS of S. E. Emmons, assistant general manager of the United Railways & Electric Company of Baltimore, before the recent T. & T. meeting at Cleveland were misleading as reported in the Oct. 9 issue of the JOURNAL. On page 622, Mr. Emmons states that 30 new cars were added in Baltimore, which was erroneously reported 130.

The purpose of presenting these figures was to show that there had been a large retirement of the older type of cars, thereby effecting a large operating saving, while at the same time there had been an increase in service (seat-miles) more than meeting the increase in riding.

Retirement of single-truck equipment has been confined to those cars used with two men. Some single-truck cars are still used in one-man operation.

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Building Company Esprit de Corps*

No Effective Public Relations Work Can Be Done Unless All Departments Function as a Team—The Purchasing and Storeroom Forces Are of Great Importance Due to Their Contacts

By W. E. Wood
Vice-President Virginia Electric & Power Company, Richmond, Va.

PRIMARILY, employees are working for the success of their company and quite incidentally they are working for the success of their particular department. But whenever, in their desire to obtain departmental efficiency, their enthusiasm leads them to somewhat forget the rest of the company, the company's interest, the thing of prime importance, is not well served.

Happily, in a well synchronized organization, serving the company's interests and perfecting departmental efficiency do not conflict.

W. E. WOOD

The perfect electric railway employee must measure up to the following requirements: (1) He must understand generally the policies and theory of operation of his company; (2) he must possess a detailed knowledge of that particular department with which he is connected; (3) he must earnestly desire to carry out the policies of his superiors; (4) he must stimulate a sincere co-operation between all departments.

Let us discuss briefly in order these four requisites of the perfect employee.

1. Every employee should understand generally the policies and theory on which the operation of his company is based. Unfortunately, far too often the general policies and theories of the company, as a whole, are not made known to the individuals of the purchasing department. And the point I want to emphasize is that in this event, regardless of the fact that the individuals of your department might be the most ingenious, efficient and scientific buyers, storers and distributors of supplies, yet your department, broadly speaking, cannot be rendering the most useful service to your company.

Does every employee thoroughly appreciate and understand that no street railway can continue to succeed unless it can obtain the confidence and good will of the public? If they do, they must recognize that their every contact with the public will have a bearing on the public's attitude toward their company. And, furthermore, if they do not have confidence in, respect for, and sincere good will toward their company and all its other departments, surely they cannot expect these things from the general public.

The only successful public relations department of any transportation company must be composed of the entire personnel of that company. Every member of each department has friends and acquaintances not connected with the company. Company and departmental affairs will almost unconsciously be discussed at times with these individuals. The tone of these discussions has an important bearing on the attitude of these individuals toward the company. If the employee does not understand and believe in the policies and theory of his company, it is obvious what harm is done. A department technically efficient cannot outweigh this harm.

2. Possess a detailed knowledge of that particular department with which he is connected. I need not discuss the necessity for this, as it is the object of the endeavors of your committee. We all know that a purchasing agent does not necessarily have to know how to wind an armature, nor an armature winder how to obtain quotations on armature coils, although both should understand that the company is obliged to render the best possible service at the very lowest consistent cost. Obviously to perform your part of the work, your department must know its part of the business. It is intricate and involved and requires constant thought and study. The saving you can effect by this knowledge can be so great as to reflect itself in our rate of fare, or enhance the possibility of being able to earn a fair return. Intelligence as regards our needs and promptness of delivery reflects itself in the perfection of the service we render.

3. Earnestly desire to carry out the policies and wishes of his superiors. This implies, of course, that the superior officers have plans in operation for keeping the employees informed as to these policies. Too

*Abstract of a paper presented at the annual convention of the American Electric Railway Engineering Association, Cleveland, Ohio, Oct. 4-8, 1926.

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often in the past this has not been the case. Where an employee does not know the policies of his company, especially as to the generalities of its daily operation, such as those pertaining to the development of public good will, the use of publicity, the handling of complaints, activity in civic affairs, service extension and expansion, he does not acquire that intimacy with his company which really makes him feel a part of it. The purchasing department employee, with his many contacts, has a wide field for service to his company by putting into practice, and giving expression to, its policies, which, in short, are the morals of the organization and need no further explanation.

4. Stimulate a sincere co-operation between all departments. Some call this *esprit de corps*, but Kipling came down to the level of the average man and gave it a human and understandable term, namely, "the everlasting teamwork of every bloomin' soul." There always is a strong tendency for each department to keep the teamwork within that department and to overlook the importance of synchronizing its work with that of the other departments. To illustrate: where a patron of the railway service meets with discourtesy or is passed up at the corner, the picture that comes to his mind is that of a company with a "don't-give-a-damn" policy. He imagines that the attitude of that one employee in that one department of the company is the spirit of the whole organization. It works the other way also. The impression made by a kind, courteous and "on-the-job" employee reflects favorably on the whole company and not on any particular department.

The purchasing department can be most helpful in the satisfactory operation of a transportation system both by assisting in its economic operation and by assisting the operating departments in doing good work and avoiding delays by keeping available well-balanced supplies of whatever they may want. You say the operating departments fail to foresee their requirements and insinuate responsibility for delays in your department. You will be best serving your company when your department is able to absorb such insinuations without resentment and counter-attack by winning their confidence and co-operation.

There can be no doubt that a well-devised rigid system is necessary for the best operation of your department, yet one with too little flexibility is frequently the cause of ill feeling on the part of the other departments and of those of the public with whom you have to deal. Any system to be devised must contain, as an essential element, what we will call an "understandingly sympathetic flexibility" which those of discernment can readily distinguish from "unwarranted or haphazard flexibility."

The merchants and supply men of any city are by nature interested in the purchasing departments. Do they and all of their employees have a respect for the efficiency, loyalty and fairness of the personnel of your department? Can we count on their unselfish co-operation, which has been induced by this respect of personnel? And are you and your employees so conversant with the company's affairs, needs and aims that you can convince them, who are invariably useful citizens, of the justness of the company's needs? What a wonderful help you can be towards the main objective of the company if by virtue of being in the purchasing and stores department you can contribute so greatly to the company's public good will and success.

Care in Ordering Is Essential*

By **Henry S. Day**
Manager Transportation Division, Westinghouse Electric & Manufacturing Company, Boston, Mass.

HENRY S. DAY

Failure to List Complete Catalog Data in Placing Orders for Parts or Materials Wastes Both Time and Money—Obsolete Catalogs Should Be Destroyed

IT IS a fairly safe statement to make that almost the first inquiry that comes up between the salesman and the purchaser in the average negotiation is, "What is your best delivery?" and very frequently the success of the sale depends on how quick the purchase can be delivered.

If the product being purchased is a stock item, there is no good reason why the interval of time between the closing of the sale and the delivery should be great if the necessary paper work is properly executed, first by the purchaser, and second by the manufacturer.

The same applies to non-stock or special items, with the difference that parts or material that must be manufactured after receipt of the order require more time, and the actual order passes through many more hands.

*Abstract of a paper presented at the annual convention of the American Electric Railway Engineering Association, Cleveland, Ohio, Oct. 4-8, 1926.

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It is, of course, assumed that the manufacturer carries a good stock of standard parts and material, and is equipped to manufacture and ship non-stock and special items just as soon as he knows accurately exactly what the purchaser wants, but until the order, correctly written, reaches the warehouse or shop, production or shipment cannot proceed.

Naturally, there are many orders that meet with delay, for which incorrect preparation is not responsible, but there are too many where the delivery would satisfactorily meet requirements if someone along the line had not made an error. With the necessarily complex organization of the average purchaser and manufacturer the path the order follows is long and involves many individuals, and a small mistake in paper work is very often responsible for long and costly delays.

Manufacturers expend large sums each year in trying to supply accurate and up-to-date ordering information, and are constantly issuing new and revised catalogs and descriptive matter. When these are carefully followed, an order is quickly and easily interpreted and generally gets through without unnecessary loss of time. Manufacturers also spend much time and money in the organization of an order department, whose business it is not only to receive and enter orders, but to check all information for possible errors.

When it is considered that a large manufacturer handles a great diversity of parts and material that run into many thousands numerically, it can be readily understood that too much care cannot be exercised at the first point in the line in seeing that the proper catalog is used and that the correct description, type and catalog designation—whether it be style or catalog number—is given. Mistakes that result in delays are usually easily avoided and, therefore, unnecessary. The wrong type used or the type omitted, transposition or omission of digits in style or catalog numbers, and lack of full and complete description—all of these are essential. Probably more orders go wrong when ordering parts for apparatus than when ordering material.

In ordering parts, the type of the apparatus the part is to be used with, the style or catalog number, and the complete catalog description are all equally essential because types change and styles or catalogs are superseded. If, in writing up the order, one of these three has been given incorrectly, the other two will furnish enough information for reference and check in a catalog, and generally result in the customer's order being corrected at the time of receipt. On the other hand, if one of the three is omitted and there is a mistake in either of the other two, the case is generally hopeless, and the order stands still until the customer can be reached and the item checked.

Very often orders are received that from their wording indicate that the purchaser may be rather uncertain as to exactly what he wants, but feels that the manufacturer's order clerks are familiar enough with the apparatus for which the part is required, to correctly interpret the order, and therefore allows it to come through in a more or less incomplete state. As a matter of fact, the order department of a large manufacturer is handling many thousands of orders each month, and the clerical force of which the order department is composed is very likely not to be any more familiar with the technical terms and designations than is the purchaser's order department.

There is no hard and fast rule for eliminating errors in ordering that will meet all circumstances, but some of the very essential points to bear in mind are to:

Always use catalog specifications, drawing numbers and complete description when available.

Destroy all old catalogs as soon as new and later or revised copies are received. When catalogs, drawings or specifications are not available, give nameplate data in full, with a complete description of parts required, dimensions, what it is for and how it functions, and when practical send a sample.

Keep catalogs up to date, but keep all old catalogs which have not been superseded, for obsolete equipment which may be in service, as old catalogs may be out of print and difficult to obtain.

Regarding the last, it is unquestionably the manufacturer's job to keep the purchaser fully supplied with the latest ordering information and it is certainly to his interest to do so. On the other hand, if he fails, as he sometimes does, it is just as much to the interest of the purchaser to obtain and use the proper catalogs, as his interests are directly served by any reduction in time of delivery of orders.

The average catalog is so arranged as to make ordering information easily accessible and plainly interpreted, but it not infrequently occurs among mechanics and operators that there is a reluctance on their part to use catalogs correctly. Here again it is to the manufacturer's interest to see that those in the purchaser's organization who are responsible for the ordering of material, even though indirectly, are not only thoroughly supplied with catalogs, but are thoroughly posted in their use. If again the manufacturer's representatives fail, a little attention by the purchaser to the men in his own organization along these lines will produce far-reaching results.

Manufacturers are coming more and more to unit quantity packages and, particularly in small items, shipments will usually be made more quickly and with less liability of error if ordered in this manner.

Prompt shipment of orders received, without error is a subject that is foremost before the manufacturer, and always will be and, to a considerable extent, the degree of success attained will be the measuring stick used to gage his service to his customer. The cause for the many mistakes and delays lies on both sides, but by close attention to details and hearty co-operation, a great deal of time—and therefore money—can be saved.

MANUFACTURERS expend large sums each year in trying to supply accurate and up-to-date ordering information, and are constantly issuing new and revised catalogs and descriptive matter. When these are carefully followed, an order is quickly and easily interpreted and generally gets through without unnecessary loss of time. Manufacturers also spend much time and money in the organization of an order department, whose business it is not only to receive and enter orders but to check all information for possible errors.

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Traffic Congestion

The Fundamental Approach*

Traffic Problems Becoming Rapidly More Acute with Growth of Cities—Selective Transportation the Nearest Approach to an Answer—Speed Restrictions, Street Signal Control, Parking and Day Storage Problems Considered

By **J. Rowland Bibbins**
Transportation Engineer, Washington, D. C.

THE so-called "traffic problem," formerly everybody's business, is now graduated to a higher plane of engineering analysis and transportation practice, where it always belonged. This is the place assigned to it by the committee on metropolitan development in the Washington Conference report. The time for unskilled experiment has passed and that for technical leadership, much of it embraced in this association, has arrived.

Population density lies at the bottom of our trouble. The drift to our cities is a matter of concern. In 1890, 35 per cent was urban, in 1900, 40 per cent; 1910, 46 per cent, and 1920, 51 per cent. During the last census decade our cities grew half as much as in their entire history up to 1890. While million class cities are slowing down, unfortunately the half-million near-big cities are accelerating. They are catching the fever of greatness but not adequately planning ahead for it. By 1950 the physical problem of transportation and traffic will at least double in magnitude. One large city doubled in population in five years, four in seven years, 228 in 30 years.

Metropolitan economic growth also follows mathematical laws. When city population doubles, land value, the basis of all taxation, revenue and public works, trebles or quadruples; city passenger transport, rail and rubber, probably quadruples; railroad tonnage increases nearly seven times, passenger traffic about eight times, or as the cube of the population; Detroit building permits and high building floorage nearly as the cube. These rates, however, pale into insignificance in comparison with automobile registration, which increased as the twentieth power of the population, 1905 to 1920, perceptibly declining thereafter in rate, though not in total.

Our urban dwellers own nearly over 70 per cent of the nation's motor cars. The approach of so-called "saturation," so widely heralded, has become a delusion. My estimate of 30,000,000 motors, made two years ago on the basis of the California unit density of one motor per family for the whole United States in 1940, it appears from present indications, will be exceeded. This city registration doubled within four years and with about the same rate in both large and small cities.

There is only one escape from this traffic concentration, with its appalling problems of capital expenditures for transportation, traffic facilities and thoroughfares; that is decentralization, both for the city and the nation. Until downtown business men stop building skyward, city budgets will grow with appalling speed. In spite of billions invested in rapid transit, street and sidewalk capacity has become the acute problem, which finds no solution where half a city's working population is dumped into the mile circle each day. Peak-load factors, both in transportation and traffic, are the crucial economic points in service and investment.

Selective transportation seems to be our nearest approach to an answer: (1) De luxe bus, long haul; (2) local and transfer bus, short haul; (3) street railways, long and short haul; (4) subways, elevated and suburban railroad, long haul; (5) taxicabs and private autos. This system, with its differential fares and differential speeds, will alone meet the need of our expanding metropolises, with a real and practical zone system not otherwise obtainable. The 30-minute time zone seems to define generally our transportation necessities and calls for express streets, buses and rails, as the basic requirement to secure the increased scheduled speed we so greatly need. We have now imported from European practice the limited "Car Full" regulation in bus operation, hitherto an impossibility in America. This means that the railways alone must still be relied upon to meet the balance of the peak-load demands of mass transportation in large centers. Until we change our habits of travel and of business by staggered hours mass transportation must stay on rails.

Capital investment in city highways and paving, so large a proportion of the traffic problem, seems to receive little consideration. The average in 290 cities is nearly 1,000 miles per million inhabitants, four cities ranging from 1,100 to 2,000 miles. The present shifting from rail to rubber of both passenger and freight movement emphasizes this great problem of 60,000,000 inhabitants, 60,000 miles of pavement and $3,000,000,000-odd investment. No one knows yet how to distribute the huge maintenance cost between public and private carrier, but it must be apparent that as the paving budgets grow local transportation will automatically be called upon for a larger share, which must be reflected in the fare, and in the end bring about the thing we want, decentralization.

City debt limit and taxation are the final factors limiting traffic and transportation development. With

*Abstract of a discussion before the annual convention of the American Electric Railway Transportation & Traffic Association, Cleveland, Ohio, Oct. 4-8, 1926.

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basic land values increasing only as the square of the population or less and city construction budgets as the cube, as in New York, some one must make up the difference. The Detroit debt limit is now increasing over the fourth power of the population, likewise Chicago. Private contributions to city building may hardly be expected. The next step is local district benefit assessment. Already advocated for rapid transit, it is now talked of for traffic and city improvements also. The principle is right, applying a little of the unearned increment to offset the greater benefit derived from these improvements, although it means more capital load upon the land, higher cost of doing business at the center, but in the end, decentralization. The same principle has got to be applied in allocating traffic improvement costs as between city, county and state.

Car routing improvements are needed in many cities and would seem to be one of the best ways to meet private automobile competition, along with improved service and running time. In a city of 350,000 inhabitants I found automobiles to be carrying practically as many people in and out of the central district as street cars, even during the maximum rush period, largely due to a fixed loop terminal system of routing, pay transfers at the center, and lack of logical through routes and adequate by-pass traffic routes. In another city of 500,000 autos carried 60 per cent more people than street cars into the 2-mile circle. Loop car mileage runs into astonishing high figures, and in one important case I found loop time to be more than the running time of the average passenger to his rush-hour home destination.

Transportation lies at the bottom. It has always seemed to me that in so-called "planning," both city and traffic, the planning has been entirely too sketchy and indefinite. We must think in terms of city building, not planning; traffic program, not ordinances; transportation, not individual or corporate facilities. This clearly requires unification to develop street and track capacity for both passenger and freight traffic, however carried. To grant multitudinous franchises today is repeating the economic fallacy of multiple franchises it has taken 30 years to eradicate in transit. It is a hopeful tendency that the "unification for profit" in the past is being replaced by "unification for service."

Finally, a few definite comments on the traffic conference report:

1. Traffic speed restrictions are too low. With street cars geared to 20 to 25 m.p.h. maximum speed and usually reaching 18 or more, I see no reason why traffic should not be encouraged to keep ahead of and out of the way of street cars rather than trail them, so as to use up the clear headway spacing ahead. Street cars and buses should have the right of way at crossings over traffic, and traffic over pedestrians. Running through or over safety zones is a moot point. Detroit permits it, Washington does not. I see no logic in pre-empting four out of six lanes of a roadway on a five-minute headway car line street. Perhaps a good compromise would be to divert traffic by arrows around the station under one-minute headways and everywhere during rush hours.

2. More efficient signal control must be worked out—by engineers rather than by policemen. The fixed synchronous block signal is poorly adapted indeed to transit or speed traffic. In Philadelphia this added from 1½ to two minutes running time per trip to all cars in the downtown delivery district on Walnut and Chestnut Streets, already running 22 seconds headway. My analysis in Lancaster indicates manual control handled traffic with 50 per cent greater efficiency. The use of this "stop and run" signal on heavy traffic clearing streets, especially retail streets, is exceedingly dubious. The progressive synchronous or speed control is plainly the best system for heavy traffic arteries with the shortest possible time interval. This interval is extremely important and on street car trunks should be adjusted primarily from the typical speed-time curve and varied throughout the day according to traffic pressure as nearly for individual crossings as possible. Even with this system, manual sub-control will probably be necessary to clear traffic jams.

3. The parking problem has not been approached fairly. There is no economic logic in the prevailing lack of enforcement of existing regulations. Moderate regulations enforced should produce far better results. This requires a selected and technically trained patrol with the aid of the general police also instructed for emergencies. My surveys indicate an average parking time in the central district around 30 minutes and well within the hour. This emphasizes the wisdom and practicability of graded parking time, properly enforced, and this time should gradually be reduced until sufficient parking gaps along the curb are provided for convenient loading and unloading.

4. Day storage is imperative. I believe it fair, in the case of such a national family utility as the automobile, to see that day storage is provided, either by private or public means, before rigid exclusion laws and regulations are passed. Low monthly rates are the key to success if off-street garaging is to become of any importance. It may have to become a city cost-of-service enterprise. Nothing is heard in traffic discussions of commercial vehicles as a congestion factor except double parking. Yet I have found them responsible for half as much traffic as private automobiles downtown, and at many important intersection districts as much as 100 per cent.

In conclusion, the recommendations of the traffic conference report will clearly have to be modified to suit local needs in many particulars, but it is a start, and, in my judgment, the contribution of the Metropolitan Traffic Development Committee, though small in volume, is outstanding in principle. "Traffic," so called, is not the major factor. The real problem is transportation, economics, engineering and horse sense.

WE must think in terms of city building, not planning; traffic program, not ordinances; transportation, not individual or corporate facilities. This clearly requires unification to develop street and track capacity for both passenger and freight traffic, however carried. To grant multitudinous franchises today is repeating the economic fallacy of multiple franchises it has taken 30 years to eradicate in transit.

—J. ROWLAND BIBBINS.

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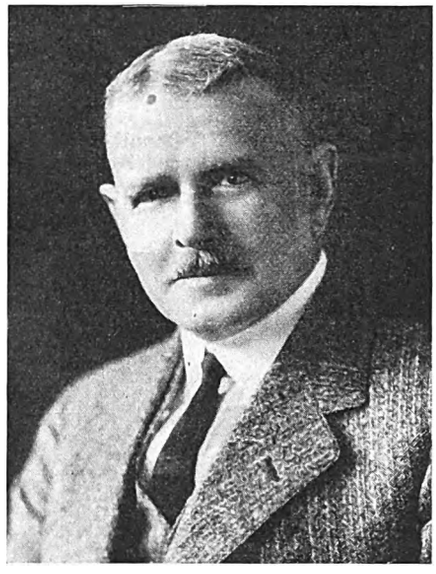
Accountants' Committees Standardize Practice

Fare Collections, Standard Classification of Accounts, Bus Accounting and a Review of the Work of the Association Since Its Formation Are Subjects Treated During the Year Just Closed

FROM its inception the activity of the Accountants' Association has centered in the standard classification of accounts. The work of this committee has been augmented for the past two years by that of the committee on bus accounting. The latter committee presented a complete classification of accounts for bus operators last year, and this year made a condensed classification for those companies having such small revenues that the greater subdivision is not justified. These and other committee reports are abstracted below.



JOHN J. DUCK
President Accountants' Association, 1925-1926

Fare Collections

OF MANY new problems of fare collection the two most important developments are one-man operation, and the motor coach or bus.

One-man operation undoubtedly presents the greater problems. This presents serious difficulty to the system that has a multiple coin fare, but where a single coin or token is, or can be made the medium of payment, the saving in expense which the one-man car offers is worthy of most earnest consideration. In a general way fare collection methods on buses need not differ greatly from those used on one-man street cars.

E. A. TUSON
Chairman

The following propositions are submitted for fare collection on street cars and buses operated by one man.

1. *Single Zone Lines, Street Cars and Buses.*—Pay-enter. In the case of automatic registering fare boxes a separate overhead register should be provided for the registration of tickets and other paper. When non-automatic boxes are used an overhead register should be provided for the registering of all fares.

2. *Two-Zone Lines, Street Cars and Buses.*—Zone 1—Pay-enter. Zone 2—Pay-leave. Registration as for one-zone lines.

3. *Three-Zone Lines — Street Cars and Buses.*—Zone 1—Pay-enter. Zone 2—Pay-leave. Zone 3—Pay-enter with identification check—pay-leave. Registration as for one-zone lines.

4a. *Line of Four or More Zones—Street Cars Only.*—Zone 1—Pay-enter. Zone 2—Pay-leave. Inside collection. Zone 3—Pay-enter. Zone 4—Pay-leave. Registration as for one-zone lines, but in addition thereto a register should be provided for inside collections. At the end of Zone 2, an inspector boards, counts the load, and then operates the car while the regular operator goes through to collect two fares from each passenger, registering these on the inside collection register. This done, the inspector verifies the registration from his count and leaves the car. The operator continues through Zones 3 and 4 on pay-enter and pay-leave respectively and, where the line is more than four zones long, the inside collection is repeated at the end of Zone 4, and so on to the end of the line. Where desirable, the operator may perform the inside collection, holding the car at the zone point.

4b. *Line of Four or More Zones—Buses.*—Zone 1—Pay-enter. Zone 2—Pay-leave. Zone 3 and all succeeding zones — pay-enter with identification check—pay-leave. Registration as for one-zone lines. On very long lines, the non-automatic box is perhaps preferable, because of its capacity to take coins of larger denomination. In zone 3, and succeeding zones, each passenger boarding pays one fare as he enters and receives an identification check which establishes his point of origin and which he holds until he leaves. There are several elements of safety and convenience which make this scheme preferable for buses to that outlined for street cars under 4a.

The recommendations offered under items 1, 2 and 3 above are felt to be entirely satisfactory and workable under practically all conditions of operation, Plan 4a is also reasonably satisfactory except in its application to lines of two or more zones operating on a half-hour headway or longer, where its interference with running time might be a factor. Plan 4b is the least satisfactory of all in that it does comparatively little toward abolishing the ever-troublesome paper.

As alternative to these latter two plans may be suggested the use of the overhead classified register which handles the problem in a fairly satisfactory manner, especially where there is a complicated ticket situation, but there is now under development by at least two of our prominent manufacturers what is, in effect, a fare cash register, which issues a ticket showing thereon the points of origin and destination, the date of issue, the kind of fare paid, whether cash or ticket, and the amount paid, these amounts being accumulated in a totalizing register. The success

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of this machine may solve our difficulties under plans 4a and 4b.

In conclusion the committee emphasized the great value of one-man operation in net earnings. Its success is a vital thing to many companies. To insure this success, the operator must be given all the help possible in the way of simplified fare collection, reduction of manual and clerical duties, in which the automatic registering fare box greatly assists, and the elimination of paper tickets wherever possible.

These fare collection methods were recommended to those whose enthusiasm for conversion to one-man operation has been tempered by fears on the score of proper handling and protection of revenue.

The report was signed by J. D. Evans, A. G. Neal, W. G. Nicholson and E. A. Tuson, chairman.

Committee to Review the Proceedings of the Accountants' Association

COMPARATIVELY small individual membership in the Accountants' Association at the present time is believed to be caused by a lack of in-

J. E. HEBERLE
Chairman

formation as to benefits to be gained by such membership rather than a lack of interest. The records are eloquent in this respect. The high point in membership seems to have been reached in 1907 with 246 members. The individual members at present number 65.

The committee recommends that a membership committee be appointed to bring into the Accountants' Association as individual members representatives from all companies affiliated with the parent association and believes that successful achievement of this committee's function will greatly stimulate interest in the Accountants' Association work and will result in corresponding benefits to member companies.

It was the sense of the committee that the subject of fixed capital records has not been given the attention this important matter deserves, and should be made the object of committee study.

The committee believed that one of the most important questions affecting the industry at large at the present time is that of bus accounting, in its broader aspects, and urged that careful study be given to the accounting features involved in the co-relation of bus operations with street railway operations in the general field of our industry —that of furnishing transportation. It was also recommended that a committee be formed to study and report on the subject of bus depreciation, including the basis and methods and the experiences of member companies.

The subject of forms for condensed operating reports, with operating statistics, and the use of graphs in connection therewith, is one that might be usefully developed.

It was suggested that the best methods to be followed in ascertaining and recording the cost of projects or units or property should be the subject of study, and that such a study might well be combined with that of the application of cost accounting to our industry.

It was urged that measures be taken to stimulate interest in the association magazine, *Area* and in the accountants' section of the "Question Box."

The committee incorporated in its report the following quotation from the address of President Budd at the 1924 convention:

"The accountant in addition to all his multitude of work in the handling of figures, reports, etc., also is the officer, more than any other, who safeguards the business principles and the business methods; that should be his function and it shouldn't stop merely at the compilation of figures. He should be the officer who is the warning signal for slipshod, wasteful, inefficient or unbusinesslike practices. Therefore, the accountant and accounting officers exert a very great influence on an organization.

"Also, the accountant in later years has become more and more of an important factor in connection with our valuation and rates and the compilation of figures and the analysis of them. The statistical information that is now absolutely essential to any executive in order to get correct information is almost a profession in itself, not only to compile these statistics, but to analyze them and show what they mean and what tendencies they disclose."

The report was signed by O. H. Bernd, F. J. Gannon, L. A. Lovell, and J. E. Heberle, chairman.

Standard Classification of Accounts

DURING the past year the committee has received several inquiries relative to interpretations of the classification of accounts and has handled these requests by correspondence.

At the request of Alexander Wylie, director bureau of accounts, Interstate Commerce Commission, the committee held a meeting in Washington, D. C., in connection with the proposed revision of the classification of accounts for electric railways and will keep in close touch with the bureau in connection with this subject.

During the past year W. F. Ham, a member of the classification committee since the organization of the Accountants' Association in 1897, resigned from the committee on account of the press of other duties and I. A. May, comptroller of the Connecticut Company, New Haven, Conn., was appointed to fill the vacancy.

The report was signed by I. A. May, C. S. Mitchell, H. L. Wilson, P. S. Young and M. W. Glover, chairman.

Bus Accounting

THE classification of bus accounts presented by the committee at the 1925 convention was adopted by the association with certain amendments. These amendments were incorporated in the classification, and the association published the classification as amended.

During the year several questions relating to interpretations of the classification were presented to the committee by companies, and replies to these questions were given by the committee.

The committee received many calls for a condensed classification from companies whose revenues amounted to less than $100,000 per year, and issued in May, 1926, a condensed classification of accounts suitable for such companies.

The condensed classification, as published in May, 1926, was presented to the association for adoption. The committee suggests that if any changes in the classification of bus accounts are considered desirable, that such changes

M. W. GLOVER
Chairman

be referred to the committee for investigation and consideration, the committee to report back to the association with recommendations as to the desirability of the proposed changes.

The committee has been unable to get a complete list of all companies which have adopted the classification, but it appears to have been found satisfactory both for the use of independent companies as well as for electric railways operating motor buses in connection with other rail operations. The classification was devised with this end in view and no difficulty has been experienced in subdividing the classification of accounts prescribed for electric railways to include motor bus operations as a subdivision of the accounts affected.

The classification is now being used in the District of Columbia, and in the states of West Virginia, Connecticut, New Jersey, Pennsylvania, New York and Ohio, and possibly in other states, which have so far not issued an official classification for motor bus operations.

The report was signed by P. R. Jacques, H. C. Kimball, C. R. Mahan, C. W. Stocks, N. E. Stubbs, E. A. Tuson and M. W. Glover, chairman.

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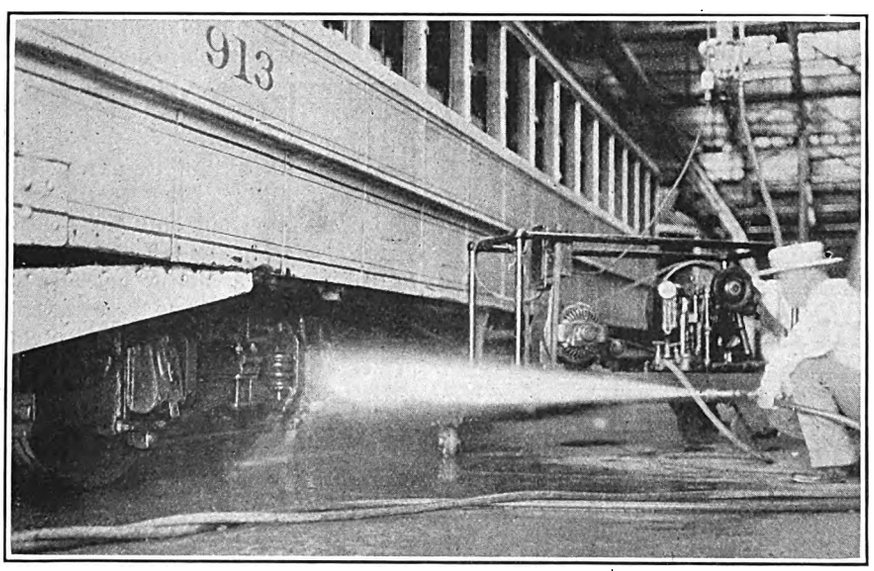
Maintenance Notes

High-Pressure Water for Truck Cleaning

WATER at high pressure is used in the Cleveland Railway shop to clean trucks before going to the paint shop, as it easily removes accumulated mud and grease with surprising ease. The pressure is obtained by use of a portable motor-driven pump. The equipment, manufactured by the Ralph L. Fuller Associates, Cleveland, Ohio, is mounted on a portable truck that may be moved to any position. As shown, permanent connections are run to several overhead points that supply water and electricity for the equipment, thus avoiding the need for long lengths of either hose or conductor cable.



High Pressure Water Is Used to Clean Trucks in Cleveland. Ralph W. Emerson, General Manager of the Cleveland Railway, Is Illustrating the Use of This Equipment

Emergency Calls Greatest Between 9 A.M. and 5 P.M.

BY G. H. MCKELWAY
Engineer of Distribution, Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y.

ONCE it was the custom on a certain electric railway to work the same number of emergency line crews at night as during the day. As the crews were used for little aside from emergency service, and as the number of calls received during the night was much less than during the day, the night crews had a much easier time of it than those that were working during the day.

Any dissatisfaction of the men was avoided by having the crews change shifts every two weeks, but the company executives were not satisfied because it was evident that the night men were, as a rule, doing much less than they could do and that some of them might be taken off of emergency duty and put on other work.

In order to find out just how the calls were coming in and to learn what crews could be spared best, the records of the preceding year were gone over in detail, and the average number of calls each hour of the day received by each crew, and in each month of the year was found.

After studying the results carefully, it was decided that one-third of the night crews could be done away with without danger to the service, so this cut was made.

RELATIVE NUMBERS OF EMERGENCY LINE CALLS BY HOURS AVERAGED FOR A YEAR

A.M. Hour	Per Cent of Total Calls	P.M. Hour	Per Cent of Calls
12-1	0.91	12-1	5.88
1-2	1.09	1-2	5.04
2-3	0.57	2-3	7.40
3-4	0.61	3-4	8.96
4-5	0.81	4-5	7.93
5-6	2.01	5-6	4.02
6-7	2.97	6-7	4.26
7-8	3.20	7-8	4.58
8-9	5.36	8-9	2.57
9-10	9.30	9-10	2.19
10-11	8.96	10-11	1.21
11-12	8.64	11-12	1.53

The detailed figures would not apply to other systems but the average per cent of the total calls on the system, as received each hour, should be interesting, and they were found to be as shown in the table.

During the year that was analyzed as given above, the calls to the emergency crews on this system, for all purposes, averaged approximately 1,000 per month.

Time Basis Used for Inspection of Los Angeles Cars

IMPROVED appearance of cars and equipment and the reduction of noise to a minimum have been stressed particularly in the maintenance of cars operated by the Los Angeles Railway, Los Angeles, Cal. This company is very exacting in its requirements as to the mechanical perfection of the equipment. Each car in regular service is given a safety inspection every night. This includes the inspection of brake shoes, brake rigging, wheel flanges, gear cases and truck bolts. Each car is also swept and dusted every night. Cars that are used for morning tripper service and are due for regular inspection during the day are cleaned during the daytime and are washed when necessary.

The regular inspection of cars is divided into three classes, A, B and C, which differ in the amount of detail work done. Cars with "K" type control are given the A inspection every 80 hours, the B inspection every 960 hours and the C inspection every 1,920 hours. Cars with multiple-unit type control are given the A inspection every 120 hours, the B inspection every 960 hours and the C inspection every 1,920 hours. All cars are sent to the shop for a general overhauling every eighteen months.

Switch and Mate Rebuilt by Welding

THERMIT welding was recently used with entire success by the Union Street Railway, New Bedford, Mass., to rebuild a track switch and mate that had broken apart from their original castings. Upon ex-

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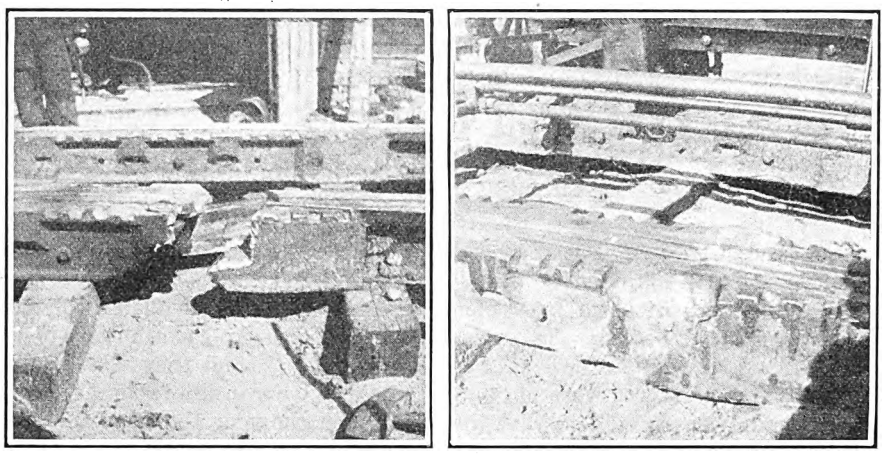


At Left, Broken Mate Casting Before Welding. At Right, Same Casting After Welding

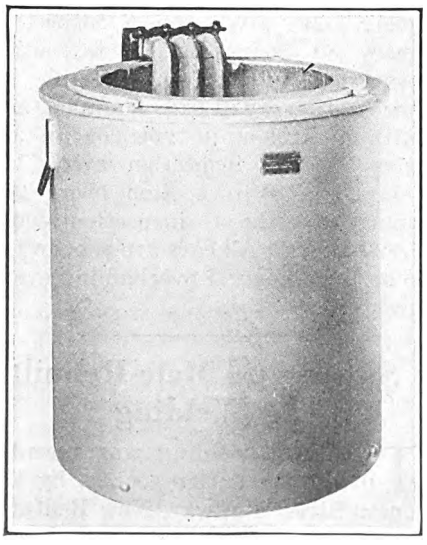
amination it was found that the switch and mate were in excellent condition, but the castings were broken. It was thought that if these were recast they would probably render good service for some time to come.

The pieces were taken out of their positions and brought to the side of the road, where they were relined and thermit welded. After being replaced they were surfaced with an electric grinder. It is the belief of the company that they will give several more years of satisfactory service. The cost of the work was about 25 per cent less than the cost of new pieces of trackwork.

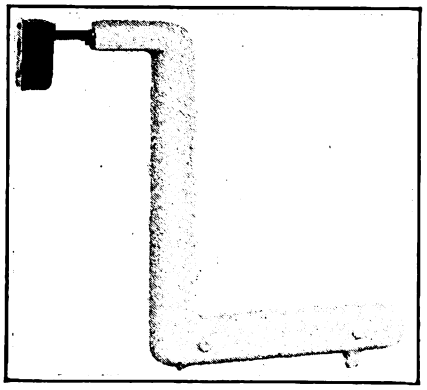
New Equipment Available

Larger Metal Melting Pot Is Developed

A NEW metal melting pot, with a capacity of approximately 1,000 lb., has been added to the General Electric line and is now on the market. This pot, utilizing the electric heating principle, is practically the same as other standard General Electric melting pots except that three cast-in, sheath-wire immersion heating units are used instead of two.



This Metal Melting Pot Has a Capacity of 1,000 Lb.



Heating Unit Used with the New Melting Pot

Each heating unit is rated at 5 kw. The pot may be operated either on 110 or 220-volt a.c. or d.c. circuits and the use of three heating units will also permit balanced three-phase operation.

The pot itself consists of a sheet steel cylindrical casing in which is supported a cast-iron crucible of the following dimensions: inside, 18 in. diameter and 15 in. depth; outside, 29 in. diameter and 31 in. depth. The space between the casing and the crucible, measuring about 3 in., is efficiently insulated with a compact heat insulator. The leads of the heating units are brought over the top of the pot into a connection box fixed to the unit itself.

Melting pots of this type are designed for melting lead, babbitt, tin, solder and similar alloys or metals, except spelter or zinc, at temperatures not exceeding 850 deg.

Full-automatic control is recommended, consisting of a standard automatic control panel and a temperature control instrument equipped with a special bulb for metal immersion. Separate heating units may be installed in existing installations of melting pots where dimensions permit and where temperatures do not exceed 850 deg. F.

Combined Heating and Ventilating System

HEATING and ventilating of buses are combined in a system announced by the Consolidated Car Heating Company Albany, N. Y. This has been developed in conjunction with Thompson Research, Inc., Cleveland, Ohio. New features include provision not only for heating and ventilating buses mechanically by the use of a blower but also for removing all odor and poisons from the exhaust gases. The system comprises an air intake communicating with the exhaust pipe from the engine, an air mixing chamber in which the exhaust gases are automatically mixed with the proper proportion of outside air to form an ignitable mixture, and a combustion chamber in which this mixture is ignited and burned, the latter serving as a most effective muffler.

Surrounding the exhaust pipe leading from the combustion chamber is a heat-insulated housing or air heater which communicates by means of a sheet metal duct with the front and also with the rear of the bus body. A blower mechanically driven by the engine forces air through this heater into the front of the bus. The air supplied to the heater may be taken either from the inside of the bus at the rear or from the outside, as desired. By means of dampers operated from the dashboard outside air can be mixed in various proportions with the air from the bus, or the entire supply can be taken from the outside. When no heat is needed air is drawn from the bus through the heater and discharged to the atmosphere.

The system is extremely flexible and is said to provide ample heating and ventilating capacity for the most severe weather, or it may be used entirely for ventilating purposes. The burning of the exhaust

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gas mixed with air in the combustion chamber results not only in the complete elimination of all odors and poisonous gases from the exhaust, but also generates an immense amount of heat, which is utilized in the air heater. In designing the equipment it has been the aim to keep the exhaust outside the bus body at all times and to destroy the odor and poisons in it before utilizing it as a source of heat. The air within the bus is therefore clean, pure and odorless, as are the gases discharged from the exhaust pipe.

Truck Dumps at Either Side or Rear

DESIGNED particularly to meet electric railway needs, the Differential Steel Car Company, Findlay, Ohio, has just brought out a new dumping body for motor trucks. An outstanding feature of this new dumping body is its arrangement so that it can dump to either side or to the rear. In electric railway track construction it is frequently of particular importance to deposit material in the track area. The side-dumping feature meets this condition. When depositing material in a trench or at the dump, time and labor are saved by driving alongside of the excavated area and then depositing the load where required. The end dumping feature is of advantage in working on crowded streets where material must be deposited alongside the work.

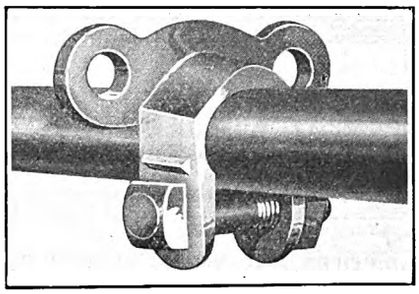
The body is constructed entirely of steel and is designed to give great strength without excessive weight. The side doors are hinged at the bottom and in dumping the door of the low side automatically pulls down into the same plane as the floor. The door on the other side remains closed. This arrangement gives a clear opening so that material of any size may be dumped and the door forms an extension to the floor, which deposits the load clear of the roadway so as not to interfere with the movement of the truck itself. A simple system of levers governs the opening and closing of the doors automatically.

The hoist consists of a telescoping screw which is driven by a set of bevel gears. When this screw is driven in a clockwise direction it extends itself, thereby imparting the motion to the body for dumping. At both top and bottom of this screw are ball and socket joints which allow for extreme flexibility.

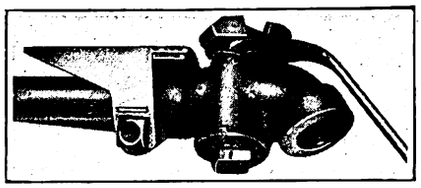
Angle Cock Holder and Pipe Clamp

FOR the purpose of holding angle cocks securely in their proper position, Mudge & Company, Chicago, Ill., have just placed a new pipe clamp and angle cock holder on the market. It is made of forged steel. The angle cock holder can be used with any shape of steel bracket which the construction of the car requires. No special keys or forgings are needed as the ordinary bolts produce a clamping effect.

The manufacturer states that ample bearing surface on the bolts and clamps secures positive anchorage of the brake pipe and prevents vibration and longitudinal movement. The projecting lip on the



Forged Steel Pipe Clamp

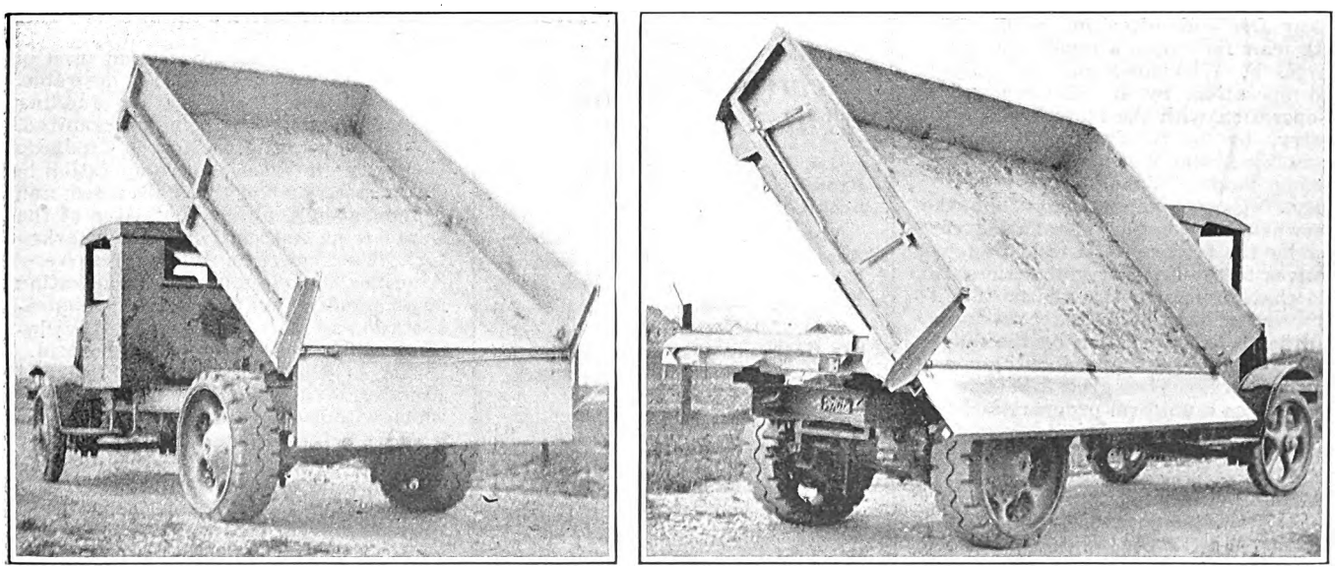


Angle Cock Holder for Use with Varying Steel Brackets

angle cock holder fits over the hex on the angle cock and prevents the latter from turning or becoming disordered.

The holes in the clamp through which the bolt passes are elongated so as to allow necessary movement of the bolt in the clamp. When the bolt is tightened up the two legs of the clamp are drawn in, and as this action takes place the bolt is forced up against the pipe. A few turns of the nut cause the bolt to bite into the pipe, thereby clamping the latter effectively.

The bolt is practically self-locking because of the lug provided on one of the clamp legs and the angularity of the clamp legs when in the clamping position. Double nuts or lock nuts are not essential unless the standard practice of the railway requires their use under such conditions.



At Left, the End-Dumping Construction Is of Particular Advantage in Crowded Sections. At Right, Position of Body When Dumping at the Side

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American Association News

American Executive Committee Meets

PRESIDENTS of all sectional associations in the United States and of the Canadian Electric Railway Association, Canada, were invited to attend the meeting of the American Electric Railway Association executive committee held at the Hollenden Hotel, Sunday night.

Reports of standing committees and presidents of affiliated associations were made. There were also short addresses by some of the presidents of sectional associations.

For the Cleveland convention committee, J. H. Alexander reported that 119,007 sq.ft. of inclosed exhibit space has been purchased. When the space for working track exhibits under the canopy, and the outdoor car exhibits are included, the total space taken is much greater than at any previous convention of the American Association. He reported a total of 271 exhibitors. The car exhibit, which includes 41 different units, is the largest ever held in the history of the industry.

S. J. Cotsworth outlined the work of the entertainment committee. Transportation arrangements made for the convention were discussed by E. C. Faber.

Reports of other committees included that on policy by W. H. Sawyer; subjects and meetings by J. P. Barnes; publicity by Barron Collier; membership by J. H. Hanna; finance by R. P. Stevens and publications by E. C. Faber.

C. H. Harte reported for the Engineering Association, G. H. Clifford for the Transportation & Traffic Association, J. J. Duck for the Accountants' Association, and J. H. Handlon for the Claims Association.

For the committee on co-operation with manufacturers, a report was made by E. F. Wickwire; on management and operation, by R. F. Carbutt; on co-operation with the motor vehicle industry, by L. S. Storrs; on special taxes, by Leslie Vickers and on insurance by Paul E. Wilson.

Mr. Vickers pointed out that the overwhelming burden of taxation carried by the industry is awakening executives to the necessity for action. He said that at present there is no intelligent and scientific basis for taxation, and that collective action by the industry is needed to bring about general improvement. The gross-net tax is proposed as a uniform program and the committee has expanded its organization to give representation in each state.

At the invitation of President Coates, W. R. Robertson, president Canadian Electric Railway Association, outlined briefly the electric railway situation in Canada. Despite the automobile, bus and truck competition, electric railway business has grown from $17,000,000 in 1910 to $50,000,000 in 1925, Mr. Robertson said. The Canadian Association is making a study of bus and truck operating costs in comparison with those of electric railways and has a fact-finding committee going into the details of this situation.

A meeting of the new executive committee was held on Thursday afternoon with President W. H. Sawyer in the chair. The new presidents of the affiliated associations were presented to the executive committee. Mr. Sawyer announced that appointments would be made early in the year for committees on revision of the constitution and on location of next year's convention. Nov. 19 was selected as the date for the next meeting of the executive committee.

Old Engineering Executive Committee

SUNDAY evening the executive committee of the Engineering Association held a dinner meeting at the Hollenden Hotel. Those present were President Charles Rufus Harte, Vice-Presidents Daniel Durie and R. H. Dalgleish, Past-Presidents C. H. Clark and H. A. Johnson and G. H. Hecker, A. W. Baker and Morris Buck. The meeting was taken up largely with reports of action on various matters which have been pending for some time. It was decided to reorganize the equipment committee along the same lines as those adopted for way and structures a year ago. The standards committee will be reorganized accordingly.

COMING MEETINGS OF *Electric Railway and Allied Associations*

***Oct. 25-29*—Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.**

***Nov. 5*—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.**

***Nov. 16-18*—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

***Nov. 17-18*—Iowa Electric Railway Association, operating and maintenance section, annual convention, Fontanelle Hotel, Omaha, Neb.**

***Nov. 16-19*—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.**

New Engineering Executive Committee Meets

SUBJECTS were assigned and committee personnel considered at the first meeting of the new executive committee of the Engineering Association held at the Hollenden Hotel, Cleveland, on Thursday evening, Oct. 7. Those present were President Daniel Durie, Past-Presidents H. H. Adams, Harley A. Johnson and Charles Rufus Harte; members L. D. Bale, R. H. Dalgleish, C. H. Jones, F. H. Miller and Pierre V. C. See, and guests A. W. Baker, A. T. Clark, H. H. George, G. C. Hecker and Clarence W. Squier.

It was agreed that the minutes of the last meeting together with those of the present meeting should be written up and sent to the various members of the executive committee for approval by letter ballot. The subjects committee assignments were reviewed and discussed. Some changes and additions were made. The report was then approved.

The personnel of the new engineering committee is nearly complete and an early start of the work is expected. Appointment of a representative on the National Fire Protection Association's committee on garages was discussed and it was considered that this might be a matter for work under American Engineering Standards Committee procedure.

The organization of a committee to revise the rules for procedure in approving standards was approved. This is needed properly to care for the changes necessitated by the reorganization of the way and structures committee, which was effected last year, and the equipment committee which is now being undertaken.

The organization and work done during the past year by the way and structures committee was discussed and some changes in procedure from that used in the past was considered desirable. These will also apply to other standing committees which are being reorganized.

American Engineering Standards Committee international co-operation in standardization work was discussed, and comments by the representatives of the Engineering Association are to be asked for. The American Wood Preservers' Association contemplates organization of a committee on pole service. Representation of the Engineering Association on this committee was authorized.

The American Institute of Electrical Engineers is organizing a committee which will develop standards for switchboards for power and light. Further information regarding the work of this committee is to be asked for.

The sponsors for some committees were approved and C. R. Harte was authorized to follow up recommendations of the heavy electric traction committee regarding the publishing of a bibliography.

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Accountants Executive

MEETING in the English Room of the Hotel Hollenden on Sunday afternoon, the executive committee of the Accountants' Association approved the presentation at the convention of the reports of the various committees. It was decided to recommend the continuation of the same committee for next year. Members present were L. E. Lippitt, T. B. Kilfoyle, T. B. MacRae, E. A. Tuson, J. E. Heberle, E. H. Reed, C. E. Yost and J. J. Duck, president.

Claims Executive

DISCUSSION of the convention program and future policies was held by the executive committee of the Claims Association on Oct. 3 at the Hollenden Hotel, Cleveland. The subjects discussed included the work of the various committees of the association this year, topics to be referred to the consideration of the incoming executive committee and the appointment of a committee to consider conditions for a safety contest for the Anthony N. Brady medal. This medal was offered annually for a number of years before the war to the electric railway company making the best safety record. This award was discontinued during the war, but announcement has recently been made by executors of the Brady Estate that it will again be available. Those present were J. H. Handlon, president; C. B. Proctor and J. S. Kubu, vice-presidents; S. J. Herrell, Knoxville, H. O. Allison, New Brighton, and G. T. Hellmuth, Chicago, members of the executive committee; W. F. Weh, Cleveland, past-president, and G. C. Hecker of the association staff. Mr. Hellmuth acted as secretary.

Old T. & T. Executive

TRANSPORTATION and Traffic executive committee members met in the Hollenden Hotel, Cleveland, on Sunday evening, Oct. 3, to discuss plans for the coming year. The suggested program for next year's topic developed by the subject committee in the meeting in the afternoon of that day were tentatively adopted.

Those present at the meeting were: George H. Clifford, president; T. C. Cherry, John Colton, Samuel Riddle, E. M. Walker, J. V. Sullivan, G. B. Anderson, and Melvin W. Bridges.

New T. & T. Executive

TOPICS for next year's committee considerations were mapped out at the Transportation & Traffic executive committee meeting held on Oct. 6, in the Hollenden Hotel. Three committees of this association will perform the work done by four committees the past year.

Bus operation will be under the sponsorship of Paul E. Wilson and A. R. Myers. General subjects suggested for this committee were: fare collections methods; bus rules; operation of buses in competition with railways, and size of buses for different classes of service.

Traffic and safety will be under the sponsorship of Samuel Riddle, W. H. Boyce and E. M. Walker. Part of the work of this committee will be done jointly with the Claims Association and the plan was suggested of having a joint session at the next annual convention.

"Service betterments" will be the title of the committee previously functioning as "merchandising transportation." This committee will be sponsored by Edward Dana and G. B. Anderson. Topics suggested for this committee's consideration were all matters pertaining to the furnishing of a superior service to the public such as more comfortable seating, use of signs, simpler fare and transfer collections, courtesy of employees and other allied matters.

W. H. Sawyer, president-elect of the American Electric Railway Association, looked in on the meeting. He offered many valuable suggestions and assured the executives of the Transportation and Traffic group of the continued support of the parent association. Mr. Sawyer spoke of the co-operation desired on the part of the new traffic and safety committee in connection with working out certain details of the American committee on the Hoover Conference. The meeting was attended by J. V. Sullivan, president-elect, G. B. Anderson, E. M. Walker, A. R. Myers, Samuel Riddle, E. J. Murphy of the association headquarters, W. H. Boyce and John Dewhurst.

T. & T. Subjects

CONSIDERABLE thought and discussion were given by the subjects committee of the T. & T. Association at its meeting at Cleveland on Oct. 3 to the value of continuing four subjects —used during the last two years for transportation and traffic committee investigations. The subjects committee of this association considers that it would be valuable to adopt different subjects for the coming year. After careful consideration, it was decided that three general topics would be adopted for committee work. They are: Bus operation; service improvement; traffic and safety. Each of these three general subjects will be expanded into a number of topics, which will ultimately be assigned to sub-committees of each of the three main committees.

Those in attendance at the meeting were George H. Clifford, chairman; J. N. Sullivan, John Colton, W. H. Boyce, J. W. Welsh and John A. Dewhurst.

Exhibit

PRIOR to its scheduled meeting held in Cleveland on Oct. 3 the exhibit committee examined all of the displays between 10 and 11:30 Sunday morning and held one of the shortest meetings on record. There was nothing left to be done except to register a vote of thanks to Director Fred C. J. Dell and the Cleveland convention committee for their excellent accomplishment in assembling the splendid array of transportation equipment, supplies and accessories.

Mr. Dell reported 119,007 sq.ft. of inside space sold to 271 exhibitors. In addition about 1,900 lineal feet of track space or 50,000 sq.ft. is used by the most pretentious car show ever held by the association. Forty-one cars of modern type were on display, as well as many pieces of service equipment. The total actual exhibit space including the cars and open track is over 180,000 sq.ft. The bus, truck and allied accessories space is 23.8 per cent of this total.

Joseph H. Alexander, chairman, conducted the inspection trip. The meeting was attended by L. D. Bale, Fred B. Bullock, Frank W. Campbell, C. H. Clark, S. J. Cotsworth, H. Fort Flowers, B. A. Hegeman, Jr., R. R. Holden, C. E. Morgan, A. Frank Paul, A. M. Robinson, L. W. Shugg, and Fred C. J. Dell.

Taxation Plans Discussed at Special Meeting

INFORMAL discussion took place on the general subject of taxation with particular reference to the recommendation by Leslie Vickers, economist of the American Electric Railway Association, at the taxation meeting Thursday morning. Copies of a recent article defining the gross-net tax principle were available and an abstract of an analysis of public utility taxation systems in the various states was presented by Mr. Vickers.

The meeting, which was called as a special sessions of the taxation committee, was augmented by the recently appointed advisory members. Since no members of the taxation committee were present F. W. Doolittle, vice-president North American Company presided. After a brief talk on the gross-net tax by Mr. Vickers, all of the fourteen delegates in attendance, most of whom were advisory members of the committee, were called upon for remarks.

The consensus of opinion was that any plans involving general tax revision would have to be considered co-jointly with other utility representatives; if not, representatives of industries. The general principle of a sane and uniform taxation basis was approved and no objections were presented to the gross-net tax plan suggested.

International Road Congress

FIFTEEN HUNDRED delegates from 50 nations met at the Fifth International Road Congress held in Milan and Rome, Italy, from Sept. 6 to Sept. 15, to discuss city traffic and adaptation of successful methods to suit local conditions. The United States which has been an onlooker for several years became an active member, and the next world congress to be held in 1928 will meet in Washington, D. C.

T. H. MacDonald, chief of the Bureau of Public Roads, was the chief spokesman of this country. He explained the relationship between highways and civilization.

Iowa Operating and Maintenance Men to Meet Nov. 17-18

OPERATING and maintenance men of the Iowa Electric Railway Association will hold the annual convention of their sections on Nov. 17-18 at the Fontenelle Hotel, Omaha, Neb.

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The News of the Industry

Philadelphia Lease Signed by Mayor

Despite popular disapproval Mayor Kendrick of Philadelphia, Pa., on Oct. 13 signed the ordinance providing a 30-year extension of the Frankford elevated agreement with the Philadelphia Rapid Transit Company. His signature was affixed to the document following a meeting with members of the transit commission, four of whom were opposed to the negotiation of the lease. The Mayor said that he "about understood the various sentiments of the commission members" and would not call for a vote on the question.

Alva B. Johnson, who represented the chamber of commerce on the commission, filed a report declaring his objections to the lease negotiations at this time. He recommended that the ordinance should not be signed and should be returned to the Mayor by the Council with the request that it be included in a new agreement to cover the entire transit properties. Charles B. Hall, president of the City Council and sponsor of the elevated agreement, declared that the funds released by the new agreement probably would not be used to meet the Sesqui expenses. It was charged that the lease had been amended to make available $5,000,000 for payment of the Sesqui deficit.

Under this new agreement the Philadelphia Rapid Transit Company will make an average annual return of $780,000.

Many Moves in New York Fare Referendum Action

The legality of the submission to the voters of the 5-cent fare referendum in New York city was upheld on Oct. 13 by the Appellate Division without written opinions. The views of the Supreme Court Justices, from whose decisions appeal was taken, were supported by the higher court. The referendums will appear on the ballot at election day unless the Court of Appeals reverses all the previous decisions.

Charles L. Craig, former comptroller and author of the bill which would allow a popular vote on whether transit fares could be raised without submitting the matter to the people, successfully argued that the referendum was legal under the City Home Rule Law and the Home Rule Amendment. Modification of subway contracts or franchises in other particulars than fares could still be effected, he said.

The 5-cent-fare referendum was attacked again on Oct. 14 from a new angle, when two transit companies filed suits in the Supreme Court to enjoin the Board of Elections from submitting the question to the voters in the coming elections. It was expected that Justice John M. Tierney would hear argument on Oct. 15 on the application for an injunction pending trial.

Unlike the previous action, the suits filed on Oct. 14 will be pressed by the transit lines themselves, on the principal ground that they will be deprived of property if the referendum results in approval of the proposition that fares may not be raised without a favorable vote of the majority of the city electors. The attorneys for the companies hope to get a definite ruling from the Appellate Division on all the points involved. The previous suit was a taxpayers action.

Counsel for the transit companies declared that his clients wanted a ruling by the Appellate Division on the constitutionality of the referendum. He said:

> The affirmation of Justice Valente's decision by the Appellate Division left this point undecided. We believe the law to be unconstitutional and harmful. In starting the new actions we may be able to save taxpayers the expense of holding a referendum on a law that later may be found unconstitutional.
>
> Justice Valente dismissed the first petition on three grounds: that the taxpayer was not a party to the action, that the legislation should be completed by the holding of the referendum before the court passed upon it, and that the law was constitutional. The Appellate Division in affirming Justice Valente's dismissal of the petition did not state how many of these points had been sustained. By establishing the petitioners in the present case as parties to the action, we hope to obtain a ruling on the two other points, including the constitutionality of the law.

Opposition Develops to Toledo Grant

Board of Control Outlines Objections to Modification of Present Milner Grant—Ordinance About to Go to Public for Ratification—Terms of Grant Reviewed

OPPOSITION to the submission to the electors of the proposed railway franchise to replace the Milner ordinance now in effect in Toledo was voiced by the Street Railway Board of Control in an opinion rendered to the committee of the Council which now has the ordinance under consideration.

The ordinance was drafted by Frank M. Dotson, city law director, and Attorney Dewey C. Bailey, representing Henry L. Doherty & Company, and approved in its legal and engineering details by Newton D. Baker, Cleveland attorney, and Prof. Henry E. Riggs of University of Michigan, experts hired on behalf of the city of Toledo.

The board in its analysis of the ordinance sees no prospect for lower fares within five years, that better service is only implied and not guaranteed, and that big burdens are transferred from the company to the city—paving obligations mostly—without corresponding benefits to the car riders.

It is also pointed out that the grant is monopolistic and by its terms practically perpetual with inadequate provisions for forfeiture in case of violation of the ordinance.

Defects in the Milner plan are conceded, but it is pointed out that many things the city would do under the new plan could voluntarily be assumed under the present ordinance.

In the communication of the board, signed by its three members—David H. Goodwillie, chairman; Henry Truesdall, banker, and William W. Knight, wholesale hardware merchant — failure of both the city and company to carry out important provisions and the spirit of the Milner ordinance is cited as partial cause for the present condition of railway service in Toledo. More extensive use of private motor cars is also presented as one of the big obstacles to the successful working out of the Milner plan not contemplated when it was put into effect six years ago.

Failure of the city to eliminate wildcat bus competition has also hampered the company. The city, too, failed to take advantage of the requirement for securing added new capital under the Milner plan.

The board desires all defects in the Milner ordinance to be cured and some adjustment made in capital value. Professor Riggs in his original report indicated some such step was necessary, but no provision for it was made in the ordinance. The board says:

> This new ordinance proposes to make a new 25-year grant. Why not then correct all the unwieldy and objectionable features of the Milner ordinance, and if we are to grant monopoly of service, let us have capital values reduced to an amount commensurate with earnings and take into account the railway situation of today and not that of 1920!

By continuing under the Milner ordinance until a more equitable plan is found the board members feel that the city would be free to negotiate other franchises.

Toledo's new ordinance embodies within its text changes in the city charter which will permit the company to have a complete monopoly of railway and bus transportation within the city for 25 years. The present city charter prohibits any exclusive monopoly of any public service.

The ordinance contemplates a five-year reconstruction program in which the Doherty interests would furnish $1,051,600 of new capital to go for the purchase of buses, replacement of tracks and other improvements. Failure to provide the necessary capital would forfeit the exclusive grant.

Control of the city transportation is

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vested in the board of street railway control rather than in the City Council as at present. The board is composed of three members named by the Mayor for terms of six years each. The present board would continue under the new ordinance.

No maximum nor minimum fare is named in the ordinance but full power is vested in the board of control to fix a sliding scale that will meet requirements of the stabilizing fund, and various other operating and sinking fund requirements. Bus fares are set at 10 cents to begin with, but railway fares remain as at present—10 cents cash, three tickets for 25 cents, and 1-cent transfer.

The ordinance relieves the Community Traction Company of an old paving obligation of $182,421 owing to the city and provides also that the company will not have to pay for paving or repairing of pavement between tracks nor for the foundations for new tracks when new pavements are laid.

In the interests of economy of operation there is a provision that wages shall not be in excess of those paid for similar service in similar lines of business in cities of the same relative size and importance.

The ordinance makes it mandatory for the Community Traction Company to purchase power from the Toledo Edison Company, but if the rate is not satisfactory to the board of control it is to be fixed by the Ohio Public Utilities Commission.

The city purchase plan of the Milner ordinance by which the city now has become the owner of $1,261,000 of common stock is eliminated, but a similar amount is to be set aside for the depreciation fund to pay for replacements of equipment and some betterments.

Provision is made for sale of weekly pass, lease of the lines by the city, and lease by the city of land in the downtown district for a car storage yard. Arbitration of differences between company and board of control is also provided.

In the Riggs report the need is suggested of scaling down the capital.

Plans for fifteen bus routes—some feeders and some through lines—as outlined in the Riggs' recommendations are carried in the ordinance.

Fares in Pasadena Fixed by Commission

The Pacific Electric Railway has been authorized by the Railroad Commission to establish the following schedule of fares for motor coach and railway service in Pasadena, Cal.: One-way cash fare (one zone) 7 cents; one-way cash fare (between zones) Pasadena-Altadena, Pasadena-Country Club, Pasadena-East Washington Street, 12 cents; book tickets (good within either zone 1 or zone 2) eight for 50 cents.

Modified Lisman Plan Presented

Conditions Recapitulated Under Which Eastern Bankers Would Undertake Chicago Unification Program—Aldermen Still Frown Upon Proposal

A NEW draft of an ordinance embracing the plan proposed by Frederick J. Lisman of Lisman & Company, New York bankers, for the solution of Chicago's traction problems differing considerably from the original proposal made on Sept. 17 was submitted Oct. 2 to the City Council committee on local transportation.

In compliance with Alderman A. F. Albert's objection that the railways should not be paid for doing their own extension construction, the initial proposals of the Eastern bankers for the payment of 10 per cent interest to construction companies building extensions to street car lines were abandoned in the revised ordinance.

Briefly, the new draft contemplates the following steps:

Holders of $95,000,000 of first mortgage bonds of the Chicago Surface Lines, due Feb. 1, 1927, would receive new first mortgage bonds payable in twenty years.

New capital to the extent of $250,000,000 would be invested in extensions, subway construction and other improvements. Of this sum, the new company will make available immediately $45,000,000 in cash for extensions. An additional $50,000,000 would be invested "during the twenty-year term of the franchise." If the Legislature and the city grant an indeterminate permit, $150,000,000 more would be spent. If such a franchise is not eventually granted, the $150,000,000 would be spent at the rate of $50,000,000 during each ten-year extension of the twenty-year franchise.

The company will advance immediately some $6,500,000 as half the cost of building a subway for surface cars, extending from the West Washington and Van Buren Streets tunnels under the Chicago River and running "U" shape under Washington, Michigan and Van Bureau Streets. The other half of the cost would be raised by levying charges on property owners whose holdings abut on subway platforms and at entrances.

In connection with the proposed $24,000,000 subway under State Street between Eighteenth Street and Chicago Avenue, the Lisman syndicate would contribute $8,000,000 if the city contributed a like sum from the present traction fund and property owners raised the balance through special assessments. The company's share would be applied on the rental for the use of the subway, which is to be leased to the company for twenty years.

The elevated lines would either be purchased by the syndicate or it would enter into an operating agreement for the interchange of transfers between surface, elevated, subway and bus lines.

The present 7-cent fare on the surface cars would be maintained for the time being and a 1-cent charge made for transfers between surface and elevated lines on the buses. The ordinance provides, however, for service at cost and the creation of a stabilization fund. Instead of being made up from the proceeds of bond sales, this fund would simply be taken out of the city traction fund.

Under the financial terms proposed default in principal on more than $165,000,000 of bonds maturing early next year will be avoided and the security holders protected. Old and new first mortgage bonds are both to be paid off within twenty years.

At the end of 30 years the city will obtain without cost and free of all debt the transportation system to be created under the new ordinance.

Opposition to the Lisman proposal still persists in meetings of the City Council sub-committee.

The questionable part of the plan, according to Major R. F. Kelker, committee engineer, hinges on the amortization of $50,000,000 of new money in first mortgage bonds out of 2 per cent of the gross receipts, or just one-fourth of the amount heretofore set apart in the renewal and depreciation funds.

"If any part of these funds is taken out without provision to return them soon," said Major Kelker, "the fare may have to go up to pay for rehabilitation."

Leonard A. Busby, president of the Chicago City Railway, estimated that the total payments to the amortization fund would run to more than $8,000,000 a year.

"This would mean," he said. "a 1-cent, 1½-cent, or possibly even 2-cent increase in each fare. If anybody thinks you can amortize $145,000,000 (the $50.000,000 in new money plus $95,000,000 bonds to be exchanged for present first mortgage bonds) in twenty years without going into the car riders' pockets, he has another guess coming. It can't be done."

Sub-Committee Asks Approval in Naming Committee of Citizens

After a series of prolonged and heated debates, the local transportation committee, which is charged with evolving a suitable traction ordinance before the present Surface Lines franchises expire four months hence, decided on Oct. 8 to ask the Chicago City Council to approve the naming of an advisory committee of private citizens at its next meeting, early in November.

The citizens finally agreed upon for membership on the commission are James Simpson, president of Marshall Field & Company; Stuyvesant Peabody, president of the Peabody Coal Company; William R. Dawes, banker and president of the Chicago Association of Commerce; W. A. Wieboldt of W. A. Wieboldt & Company; M. E. Greenbaum of Greenbaum & Sons, bankers; Patrick A. Nash, contractor; George Woodruff, banker; John Hayes, hotel proprietor; Richard Bland and a Chicago Real Estate Board representative. The City Council will be asked to select seven from this group.

This board of citizens was pictured by its advocates as a means of permanently solving the entire local transportation problem. Alderman Joseph McDonough, the committee's chairman, pointed out that as the Surface Lines grant expires next February "We must act fast, and I think it is

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time the public knew we are not playing politics. Selection of a citizens' committee is the way to prove it."

Others, however, declared that the group will be only an advisory body and that practical business men will not relish the idea of indulging in the oratorical sessions of half a score subcommittees.

The plan for a citizens' advisory committee was approved by the local transportation committee last June, but its execution has been delayed in the hope that progress could be made between the Aldermen and traction officials without resorting to outside aid.

If appointed, the advisory committee will sit with the traction sub-committee in its dealings with the local traction executives and baskers.

Help Needed by Denver Tramway

Committee of Chamber of Commerce Sees Situation as Serious Unless Income Can Be Increased or Expense Be Cut—An Economic and Civic Problem Is Before City

IT APPEARS to a committee of the Chamber of Commerce of Denver, Cal., of which Judge W. Freeman is chairman, that the present operation of the Denver Tramway presents a very discouraging and alarming economic prospect for the future of the institution as a going concern in the city of Denver. As the committee sees it, there is no hope for the permanency of the operation of the company unless its income can be substantially increased, or its cost of operation can be substantially reduced.

The committee appointed to look into the economic situation surrounding the operation of the railway gave a good deal of time to the matter and had Ernest Stenger, president of the tramway, present at two of its sessions. At the request of the committee Mr. Stenger filed with it a copy of the communication which the Tramway company filed with the City Council of the City and County of Denver, together with the data attached thereto.

Mr. Stenger assured the committee that every economy was being adopted and that the prospect of further substantial reductions in operating costs could be considered negligible.

After going into the matter quite fully the committee believes that an improvement can come only from one of two sources, or a combination of two sources:

(a) That the fare be increased; (b) that the patronage on the present rate be substantially increased.

Doubt is expressed as to whether a very substantial increase in fare would not automatically reduce the patronage to a degree that would probably more or less defeat the objective.

Suggestion was made that if certain improvements in service could be had it would unquestionably result in a larger patronage in certain sections of the city, but the committee says that this would involve a cross-city service —broadly, between Washington Park and the Stockyards area. Whether this is practical or not the committee expresses no opinion in view of the fact that it would involve certain new construction and also raise the question of franchise over new streets, which could only be given by special election, and would be expensive and the result doubtful.

The committee says that the most practical suggestion it has discussed is a program of education pointing out the desirability of an increased patronage of the tramway by people who are so largely using automobiles for transportation between home and the downtown district in the ordinary course of the day. The committee was assured that if 10 per cent additional fares could be had on the present rate the economic situation of the tramway would be bearable. It was practically convinced that this was the most desirable solution of the whole question and one that would be of benefit to the individual, to the tramway, and to the community at large. The committee was not sure as to the method that would be most effective in this respect. The means to the end must be purely educational and must be based upon some appeal other than that of direct benefit to the tramway as a privately-owned enterprise.

The committee was persuaded that a community of the size of Denver cannot do without the service of a tramway and that, equally, the tramway cannot operate except on the basis which will take care not only of the current expense and upkeep but also a reasonable, if modest, income to the owners. The committee sees the matter as a community problem wholly apart from the fortune or misfortune involved in the ownership of the tramway.

The committee expresses no opinion and makes no recommendation as to whether or not the Chamber of Commerce should initiate a program to bring about a larger patronage of the street car. Its opinion merely is that from a community point of view something must be done to prevent great inconvenience to the community at large.

In conclusion the committee said:

> Your committee believes that with this report its functions should terminate and that if the Chamber, in light of the information herein transmitted, feels that it has a legitimate and promising field in which to function in the matter, the Chamber should itself determine the further ways and means for carrying out any procedure which, after full discussion in light of this report, the Chamber feels it should take.

Mayor Loath to Lose White Plains Trolley Lines

The proposal of the Third Avenue Railroad, New York, to substitute buses for trolleys on the Mamaroneck, Scarsdale and Silver Lake lines and to keep trolley cars running on the Tarrytown line at a 10-cent fare was rejected recently by Mayor Frederick C. McLaughlin and the Common Council. Instead, the city will seek to require the company to operate cars in White Plains for a 5-cent fare, as provided in the franchise of the Westchester Street Railway, which the Third Avenue interests purchased a few weeks ago at auction for $70,000.

Trolley cars have been running with a 5-cent fare since June 1, when Leverett S. Miller, then receiver, planned to discontinue them for buses. Prior to that time the fare had been 10 cents in zones. The Mayor is reported to have said:

> We are not by any means sold on the desirability of buses. It has not been fully demonstrated that they are preferable to trolleys. It might be a great mistake for White Plains to lose its trolley system at the present time.

Work Begun on Kansas City Rehabilitation

The Kansas City Public Service Company, Kansas City, Mo., following the approval of a twelve-year extension to the local city franchise, began on Oct. 11 to carry out several promised improvements and repairs. The actual beginning of the promised work was called to public attention through a double-page announcement carried in both morning and evening papers. The work under way is a portion of an outlay of about $6,600,000 to be made in rehabilitating the system.

Frank L. Conrad, vice-president of the company, said that crews will be put to work as quickly as they may be organized and that, granted open weather until late in the coming winter, the company expected to have much of the proposed work finished by the beginning of the snowy season.

Plans are also being formulated for the construction of two new substations, each to cost approximately $250,000, and a new carhouse to cost about $300,000. A new garage is also contemplated, and plans are now being drawn for an ornamental viaduct to be constructed at 43d Street and Millcreek Parkway, replacing the present unsightly trestle at that location.

Notice of intention to circulate petitions for a popular referendum on the twelve-year extension of the local franchise was being prepared early during the week ended Oct. 16 by Herman M. Longworthy. Such a notice, to be legally effective, must be filed not later than Oct. 15. If filed by that date, the notice will automatically delay the effectiveness of the franchise extension ordinance 30 days. About 15,000 persons must sign the petitions before a referendum may be taken.

A meeting of the special franchise committee of the City Council was announced for Oct. 14 to confer with officials of the railway about a complete new franchise. It is said that the old franchise will be considered, section by section. President Woolfolk has expressed his willingness to work with the city, or its Council committee, at any time, to formulate a new franchise which would be satisfactory to the public, the city officials and the company. The idea is to have the new grant supersede the present franchise and its twelve-year extension, voted by the City Council two weeks ago.

The special committee was appointed on Oct. 11 at the suggestion of Mr. Woolfolk.

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Chicago Extensions in Effect

Officials of Rapid Transit Lines and Aurora & Elgin Announce Details of Operation

The Chicago Rapid Transit Company, Chicago, Ill., has extended service westward to Maywood, Bellwood and Westchester. This new "L" service now places the new model suburban residential community of Westchester within 42 minutes of the Loop.

Rapid Transit trains are operated direct from the Loop to Maywood, Bellwood and Westchester over the Garfield Park branch of the Metropolitan division. A 24-hour-a-day service is being maintained, with express service at twelve-minute intervals throughout the day. Eight-car trains are now operated between the new Westchester terminal and the Loop in the rush-hour periods. This means an extension of "L" service westward from the present terminus at Des Plaines Avenue, Forest Park, over the tracks of the Chicago, Aurora & Elgin Railroad. Rapid Transit trains now operate southward from Bellwood to Roosevelt Road, Westchester, over the new tracks just recently completed.

This new Rapid Transit service has replaced the Chicago, Aurora & Elgin local service to and from Chicago. However, the Aurora and Elgin is continuing to maintain stations at Fifth Avenue, Maywood, and at Bellwood, where passengers are received and discharged to and from all points west of Bellwood. For this same purpose the present stations also are maintained at Marshfield Avenue and Laramie Avenue, Chicago; Oak Park Avenue, Oak Park, and Forest Park.

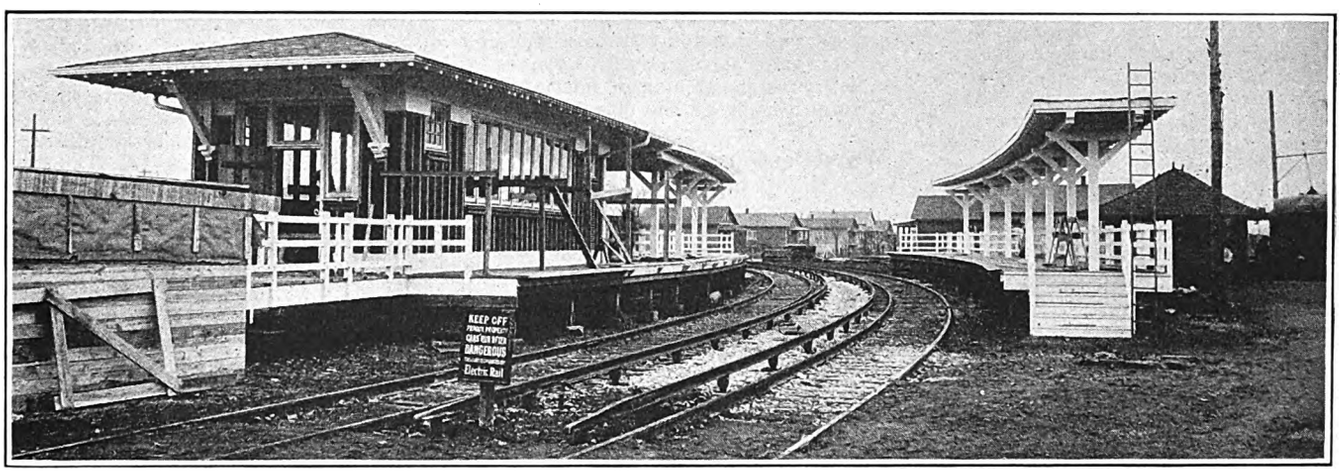
Through this operating arrangement greater transportation facilities are offered both within and beyond the Chicago Metropolitan District. Extension of Rapid Transit service means improved service for Maywood and Bellwood. The release of Aurora and Elgin equipment from this local service likewise will mean improved service for Elmhurst, Lombard, Glen Ellyn, Wheaton and communities further west.

Rapid Transit trains to and from Westchester are operating around the Loop and free transfer privileges enable one to transfer without additional charge to and from "L" trains reaching all other sections of Chicago.

Further improvement of facilities for the proposed extension of the service of the two railway companies westward will be made in the near future with construction of the new Wells Street terminal, to be used jointly by the "L" and Chicago, Aurora & Elgin lines.

Improvements on Elgin Line

Increased service, adjustment of train schedules for the greater convenience of passengers, a new midnight flyer to Fox River Valley points and an additional limited train at 11 p.m. were recently announced by Col. E. J. Blair, general manager of the Chicago, Aurora & Elgin Railroad, Chicago, Ill. The changes were effective Oct. 1. At the same time Colonel Blair announced that contracts had been let for the new Chicago loop terminal at Wells Street, and that right-of-way had been improved with runs around the track at Forest Park and Oak Park. This will permit of faster operation. Construction work on the new station will be commenced as soon as possible. In addition the right-of-way east of Wheaton has been improved by laying 2,100 tons of 100-lb. rail. Colonel Blair believes that the taking over of the local service to Maywood and Bellwood by the Chicago Rapid Transit Company will materially aid the value of the service of the Aurora-Elgin Line.



Commodious Station at Bellwood on New Chicago Rapid Transit Line

New Line Projected in Milwaukee

The Milwaukee Electric Railway & Light Company has applied to the Wisconsin Railroad Commission for permission to construct a new electric railway south of the city of Milwaukee. The new line will be located in the towns of Lake and Oak Creek, connecting with the present southern terminus of the Vliet-Howell Avenue line, where it will be joined to the freight line to be built west from the Lakeside power plant to the Chicago, Milwaukee & St. Paul Railroad tracks. The proposed line would form a connection between the Howell Avenue line and the proposed cut-off west of Cudahy and South Milwaukee. It will provide a rapid transit service similar to the Waukesha rapid transit line, connecting Milwaukee, Racine and Kenosha.

Eight Cents in Duluth

The Duluth Street Railway, Duluth, Minn., will collect a cash fare of 8 cents or will sell tokens at the rate of five for 35 cents, beginning Oct. 15, in accordance with an order made on Oct. 4 by the Minnesota Railroad and Warehouse Commission, with one of three commissioners dissenting. The order followed hearings on the application by the company several months ago and is based on the theory of allowing the company a return of 7½ per cent on its property valuation, the same as in the Twin City Rapid Transit cases of last year. The found valuation is $5,291,710, as of Dec. 31, 1925. Passengers carried that year totaled 25,149,212, to date in 1926 24,193,209, and the company's estimate for 1927 is 23,273,867. The application which has just been acted upon by the commission was filed July 31, 1925. The commission also indicated that the rate of 8 cents cash and six rides for 40 cents established in the Twin Cities would be comparable to a 10-cent cash fare in Duluth, with six tokens for 40 cents.

An appeal was taken from the commission's ruling of July 13, 1922, ordering a rate of 6 cents cash and five rides for 25 cents to the U. S. District Court. Following the order of the court establishing this rate another application was made. The valuation as of December, 1921, was found to be $4,599,978. The return was set at 7½ per cent and the 6-cent rate made effective Aug. 1, 1922. The city appealed to the district court and the railway applied to the federal court for an injunction on the ground that the rate was confiscatory. The injunction restrained the commission from interfering with the collection of not more than 6 cents cash. On Jan. 24, 1925, the federal court permanently enjoined the commission from enforcing its order of July 13, 1922, until such time as the commission would establish a just and reasonable rate of fare. This decision was appealed to the United States Supreme Court.

The dissenting commissioner, O. P. B. Jacobson, said action should be withheld until a ruling has been rendered on the appeal taken to the U. S. Supreme Court from the district court.

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Half Pay Pensions for New Jersey Employees

Changes in the welfare plan of the Public Service Railway, Newark, N. J., which provide what is practically half pay pensions for employees upon retirement, were announced recently by President McCarter. He said the new provisions were voted by the boards of directors "as a further recognition of the faithful and loyal service rendered by Public Service staff."

The new provisions are retroactive and apply to the 192 former employees now receiving pensions as well as to all other eligible employees. Employees upon retirement will receive a pension computed upon the average yearly wage or salary received during the five years next preceding the date of retirement. For each year in the company's employ they will receive 2 per cent of such average pay, this allowance being double that which was formerly made. The maximum pension payable after 25 years service will be half pay, but no pension will be less than $500 a year. For exceptionally long employment additional provision is made. For men retirement is optional between 65 and 70 years of age and compulsory at 70 years; for women, optional between 60 and 65 and compulsory at 65 years.

The Public Service welfare plan was established Jan. 1, 1911.

Baseball Crowds in St. Louis Handled Expeditiously

The United Railways, St. Louis, Mo., handled effectively on Oct. 5 one of the city's greatest transportation problems. In the afternoon the opening St. Louis game of the World Championship Baseball Series was played at Sportsman's Park, Grand Boulevard, while that same evening the annual parade of the Veiled Prophet was held.

To handle the 40,000 fans who managed to get into the baseball park and many additional thousands the railway maintained special service on nine lines running to or near the ball park. When the baseball game was over the company had cars available on all of the lines sufficient to handle the fans with a minimum of delay.

Petition of Gloversville Road Heard

The Public Service Commission recently heard the petition of the Fonda, Johnstown & Gloversville Railroad for permission to increase passenger fares on its New York electric division in the cities of Gloversville, Johnstown, Schenectady and Amsterdam and the villages of Fonda, Fort Johnson, Hagaman and intervening stations. The company proposes to increase fares from 3 to 3½ cents per mile on interurban lines and to 8⅓ cents in municipalities, with a maximum charge of 10 cents for individual rides. It proposes to issue six tickets for 50 cents and school tickets in coupon books of 100 for $5.30. "Workmen's tickets," so called, would also be issued at the rate of three for 25 cents. In its petition the company states that the gross revenues derived from the operation of its electric division for some years past have been so seriously impaired by the use of automobiles that the proposed increase in fare is immediately needed.

Program of Improvements Fast Being Completed in Hamilton

Answering questions as to what progress is being made with the various improvements to the railway system provided in the agreement reached between the city and the company last spring, George E. Waller, general manager of the Dominion Power & Transmission Company, stated that there were now ten buses in operation on the Cannon Street and Main Street routes and that orders for 24 new street cars would be placed within 30 days. Work of relaying the tracks on King Street, East, has just been completed and the work on Barton Street between Ottawa Street and Kenilworth Avenue will be finished soon. The company has purchased all the land necessary for the erection of the new carhouse and all that is holding up the spending of approximately $300,000 upon these buildings is the closing of part of King William Street by the city.

Wages Adjusted to Living Costs in Salt Lake City

A reduction of 1 cent an hour in the wages of the platform employees of the Utah Light & Traction Company, Salt Lake City, Utah, has been made in accordance with a contract between the company and the employees by which the wage scale is to fluctuate with the cost of living in Salt Lake City. The living costs are taken from the United States bureau of labor statistics. This month the bureau reported a reduction in the cost of living of 3.1 points for the first six months of this year.

The reduction went into effect on Oct. 1.

Strike Off in Asheville

Striking employees of the Carolina Power & Light Company, operating in Asheville, N. C., returned to work on Sept. 29 under exactly the same conditions and same wages as prevailed prior to the strike. These conditions and rates of pay were covered by a contract to run two years.

The strike in Asheville was occasioned on Sept. 25 when the men quit work after the company refused to accede to demands for an increase in pay of 10 cents an hour, a six-day week, pay for time off for lunch and the execution of an agreement whereby the same working conditions would extend to the bus operators. In the past the company has been unable and unwilling, for operating reasons, to make it an inflexible rule that men should have one day off a week. However, the company has been allowing the men, when they so requested, one day off each week and many of the men have been availing themselves of this privilege. Other men have desired to work seven days a week, and this has also been permitted. Under normal conditions all platform men who so desire will have a day off each week as heretofore.

News Notes

Educational Courses in Milwaukee.—What it purposes to accomplish for the educational advancement of its employees is outlined by the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., in a 36-page pamphlet entitled E. M. B. A. Educational Program. Under the slogan "The Trained Man Wins" many and varied courses are herein described, advice given to members of the Employees' Mutual Benefit Association on elective subjects and general information on class hours, home work and books. Many courses are offered on utility operation, each one dealing "with some particular phase of our service or the operation of our system." All educational work is supervised by the staff of the educational department.

Utility Courses Will Not Conflict with Students' Employment. — The Northwestern University School of Commerce, Evanston, Ill., will begin its afternoon and evening courses in public utilities in Wieboldt Hall, Chicago Avenue, Chicago, on Oct. 14. The first semester will terminate Feb. 12. The second semester starts Feb. 21 and concludes June 13. These courses emphasize the economic, financial, legal and managerial principles underlying effective operation and management and the problems arising out of public regulation and control. Many of the courses are offered in hours which will not conflict with a student's regular employment. These courses are offered by members of the regular faculty, or members of the staff of the Institute for Research in Land Economics and Public Utilities, which has recently become affiliated with Northwestern University.

Utility Courses at Indiana U.—Indiana University, Bloomington, Ind., through its School of Commerce and Finance, is again offering a course in the principles of public utility operation. The co-operation of the Indiana Public Utilities Association has been obtained to give the practical information to students. Executives of the association's member companies will deliver addresses on some phases of the utility industry, to supplement the classroom and textbook work. Dean William A. Rawles, in announcing the course, explained that it was not intended to be a professional course for the training of future utility executives, but a course in general information on utilities for young men planning to enter the business world.

More One-Man Cars at Montreal.—The Montreal Tramways, Montreal, Que., has selected four routes on which to start the new one-man cars. They are: Guy-beaver Hall, St. Antonie, Amherst and Notre Dame East. Oct. 12 was set as the tentative date for the starting of the new service. On that day the regular two-man cars were to be withdrawn on the four routes and only one-man cars run. J. E. Hutcheson, vice-president and general manager of the company, said that the

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change to one-man cars would mean a more frequent service. All of the 50 cars ordered some time ago from the Canadian Car & Foundry Company have been delivered. The employees are now undergoing a course of training qualifying them to serve as motormen and conductors combined.

Foreign News

Berlin Officials Visit American Cities

F. Lademann, in charge of traffic of the Berlin Street Railway, Berlin, Germany; F. Lange and H. Amberg, members of the advisory board of the city of Berlin, are on a tour of the United States to study traffic and transportation conditions. They were in New York on Oct. 2. They plan to visit Boston, Cleveland, Chicago, Detroit, St. Louis, Pittsburgh, Washington and Philadelphia. The party expects to be back in New York on Nov. 1.

New Electric Railroads in Germany

Two sections of the Berlin Town, Circle & Suburban Railroad have so far been electrified, that between the Stettiner station and Bernau, 15 miles, and that between the same station and Oranienburg, 17½ miles. Work is now in hand on the electrification of the section between the Tegel section and Velten. On the two completed lines 29 "half-trains" are in use, these consisting of two motor coaches and two non-motor coaches, each train having accommodation for 800 passengers. Owing to the greater acceleration and speed of the electric trains over the old steam system the time for the journey between Berlin and Bernau, including stops at intermediary stations, has been reduced from 48 to 36 minutes.

One-Man Operation in Switzerland

An electric motor car designed for one-man operation has recently been put in service on the Berne-Worb Railway in Switzerland. The car was built by the Swiss Industry Company of Neuhausen and the electrical equipment supplied by the Ateliers de Secheron of Geneva. This is designed to operate on 750 volts d.c. and to haul three trail coaches of a total weight of 30 tons at an average speed of 15½ m.p.h. The line is 6 miles in length and has an average gradient of 1.6 per cent, the maximum being 3.6 per cent.

Two electric motors of the four-pole type are provided, each with an hourly capacity at the wheel rims of 75 hp. The ratio of the gearing is 5.42 to 1. The coach measures 43 ft. 4 in. over all, with a wheelbase of 26 ft. 2 in. It has a capacity for 36 seated and sixteen standing passengers. The electrical equipment weighs 7,600 lb. and the body and mechanical equipment 30,400, or a total weight of 19 tons.

Recent Bus Developments

Police Guard Riderless Buses in Buffalo

Railway and City Cold Toward Roseate Dream to Spend $8,000,000 on Mayor's Experiment

Buffalo newspapers are having quite a bit of fun at the expense of Mayor Frank X. Schwab, whose latest roseate dream for the solution of Buffalo's transportation problem is a municipal fund of $8,000,000 with which to finance the purchase and operation of 800 buses, together with garages, service stations and all the paraphernalia that is needed for a successful transportation system in competition with the International Railway and its subsidiary, the International Bus Corporation.

The latest idea of Mayor Schwab does not fall with soothing effect on the ears of the other four statesmen in the City Council. They have been trying unsuccessfully for the last three or four weeks to find out what has become of the $10,000 they appropriated for municipal buses. There has been talk that a taxpayers' action might be started against members of the Council, individually and personally, to collect the funds out of their own respective pockets and place them back in the city treasury. This has made their nights uneasy and their days dreaded for fear of process servers.

So it came to pass that Commissioner John J. Love hastened to the City Hall and announced that he will vote against any further appropriations to continue Mayor Schwab's experimental bus lines and that he will vote against any contracts for the purchase of additional buses.

Commissioner James P. Moore says he will stand by his friend Love in the Council and Commissioner Schwartz is practically certain to join the group. Mr. Love wants it made clear that he is basing his action on an opinion given by the City Law Department to the effect that the courts have held that a municipality cannot legally operate bus lines. The Mayor, however, is emphatic that he is going ahead with his plans even if it might cost the taxpayers the $8,000,000. Says the Mayor:

> Besides placing the control of the transportation system in the hands of the city, where it should be, the bus routes will reduce the number of traffic accidents, because riders will get on and off at the curb instead of being forced to walk to car tracks.
>
> The present two bus lines will be augmented as fast as possible. The International Railway threatened to get an injunction out against me within two days after I started the bus lines, but the lines have been running two months and the railway officials haven't one yet. There are plenty of parallel streets between Buffalo parks, and if they enjoin us from running on one street, we'll move over to the next street.
>
> I am in this fight to a finish. Winter is coming on and I am not going to see the people standing around in slush and zero weather waiting for street cars that don't come. I'm going to provide adequate transportation.

While all this talk is going on the International Railway is watching the municipal buses run up and down the city streets with practically no passengers, but well guarded and protected by city police. This has continued for several months and taxpayers are beginning to wonder what the Mayor's experiment is costing them.

B. J. Yungbluth, president of the railway, says that the minute the City Council approves applications pigeonholed for more than a year additional bus routes will be established to meet the needs of rapidly growing sections of the city. Several new cross-town bus lines are said to be essential.

Co-ordinated Service Extended in Hammond

A new motor coach line, demonstrating the benefit the public receives when motor coach and electric railway service is co-ordinated, was established on Sept. 27 by the Calumet Motor Coach Company in Hammond, Ind.

The service was started to bring the station of the Chicago, South Shore & South Bend Railroad, an allied company in the control of the Midland Utilities Company, closer to the business district of that city.

The schedule has been so arranged that all east and west bound South Shore trains are met by the coaches. The line is about 1 mile long. The fare is 10 cents, but transfers are issued to all other city lines of the Calumet Motor Coach Company.

The South Shore Line is growing increasingly popular with the residents of Hammond and the demand has been insistent for dependable service to and from the local station.

More Bus Lines for Milwaukee

The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has applied to the city for permission to install auxiliary bus service on the south side. This line would extend from National Avenue and Twenty-second Avenue south to Forest Home Avenue.

Other Angles to Detroit Jitney Case

The fight against jitney operators in Detroit, Mich., has been renewed by the city's legal department. In answer to a motion filed with the State Supreme Court, asking the dismissal of the stay of proceedings under which the jitneys are now operating, the jitney operators received a ten-day respite.

An opinion of the State Supreme Court, handed down last spring, held that the ordinance barring jitneys was constitutional. Later Judge Bird restored the original injunction issued by Judge Hunt in 1923, which permitted the jitneys to continue. It was argued by the corporation counsel that Justice Bird's order was improperly issued, and

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it is considered by other justices that the chief question is the right of Justice Bird to issue such an order during the vacation period and without consulting the other members of the court. Justice Bird's order remains in effect while the briefs are being prepared by the attorneys for the two sides.

The corporation counsel argued that the writ issued by the United States Supreme Court was simply an expression of willingness to review the case. Barnard claimed that Justice Bird was within his rights, and contended that the restraining order against the city acts only to keep the issue alive until it is settled in Washington by the United States Supreme Court. It was his further claim that if the order is withdrawn, the jitney organization will be out of existance by the time the United States Court has issued a decree.

In his motion asking dismissal of the stay of proceedings, the assistant corporation counsel pointed out that the primary election on Sept. 14, when the people voted against an amendment to allow jitneys to operate, shows that most voters wish to pursue the course outlined in the city charter and bring all the city transportation agencies under municipal ownership as soon as possible.

It is further cited in the bill that since the original injunction was issued, the city has not been able to exercise even precautionary measures of regulation over the jitneys. The jitneys, it is cited, have obtained a revenue of approximately $1,500,000 from the free use of the streets since 1922 and that the operation of the jitneys has caused a net loss of revenue of about $1,000.000 to the municipal railway. The bill reads:

> If an exclusive franchise were given to a private corporation under the laws and ruling of the court, its rights and property would and must be protected by the court. The city of Detroit, which has invested its taxpayers' money in a transportation system, giving it an exclusive franchise, is entitled to the same protection and even more so, because the money of the public and taxpayers is invested not for pecuniary profit but to serve themselves and the public at large at a cost of operation fare.

The corporation counsel asks that the stay of proceedings be dissolved or that a bond of $1,000,000 be issued to protect the city against any loss by reason of the issuance of the stay, pending the settlement of the case by the United States Supreme Court.

More Puget Sound Bus Lines Purchased

The Park Auto Transportation Company, Tacoma, Wash., a Stone & Webster concern operating bus lines in connection with the interurban electric line between Seattle and Tacoma, has purchased holdings and property of the Northwest Transportation Company, Olympia, which give it bus lines for the continuous trip between Seattle and Portland and from Tacoma to Tenino.

In addition the Puget Sound Electric Railway, also a Stone & Webster concern, has purchased the stage lines of the Northwest Transportation Company between Olympia and Kelso.

Holyoke Bus Argument Reassigned

The Interstate Buses Corporation, filed a brief in the Supreme Court on Oct 4 in its appealed case against the Holyoke Street Railway, Holyoke, Mass., and the case has been reassigned for argument on Oct. 25 before the United States Supreme Court. The bus company, a Connecticut corporation, seeks to have an injunction removed which prevents the operation of its bus line between Hartford, Conn., and Greenfield, Mass., via Springfield, Holyoke, Amherst and smaller towns.

The Holyoke Street Railway alleged illegal operation and declared that the bus company was competing unfairly with the railway in Holyoke. At the same time it stated that passengers were being transported over a route in Massachusetts without the required certificate and licenses.

The bus company applied to the federal court for the District of Massachusetts without success to have subsequent suits of the railway restrained. Meanwhile the court enjoined the Interstate from operating without the necessary licenses. Now the Interstate has appealed to the Circuit Court.

Pasadena-Tierra Alta Line Authorized

A certificate has been granted by the Railroad Commission to Pacific Electric Railway for the operation of motor coaches between Pasadena and Tierra Alta, Cal., over the following lines, North Los Robles Avenue line, North Orange Grove Avenue-Center Street line, North Elmoreno Avenue line, North Hill Avenue line, North Stevenson Avenue line, North Lake Avenue-East Orange Grove Avenue line, California Stret-South Robles-South Raymond Avenue line, South Marengo Avenue-Glen Arm Street line.

Buses to Be Used by Willapa Railway

Buses eventually will be substituted for street cars for the Raymond-South Bend run by the Willapa Electric Company, Raymond, Wash. That is the decision of the State Department of Public Works. Some time ago the company asked for permission to substitute bus service for the railway between Raymond and South Bend. The Ocean Beach Transportation Company had filed a petition for a similar franchise. The Willapa Electric Company replied by asking for a franchise from South Bend to Pt. Ellis in competition with the Ocean Beach Transportation Company. By mutual agreement, it is arranged that the electric company have the South Bend-Raymond franchise and the Ocean Beach Company exclusive right to the South Bend-Pt. Ellis run, with permission to take through passengers to Raymond.

Another Bus Line in Tulsa.—The Oklahoma Union Railway has added a new bus line to its service in Tulsa. The new line starts at 21st Street and Harvard Avenue and extends to Waverly and to Admiral Boulevard.

Will Vote on Five-Cent Bus Line.—Citizens of Forest Hill, Ont., are to have a chance to vote on Oct. 30 on the proposal to make an agreement with the Toronto Transportation Commission, for a bus service through the village. At a special meeting of the Village Council it was decided to put the plan before the electors. The proposal is to have a fifteen-minute service supplied by one bus, at a 5-cent fare, the deficit to be met by the municipality. D. W. Harvey, general manager of the commission, estimates that the deficit may be between $2,500 and $3,500. The round trip could be made in half an hour, it is estimated.

Skip-Stops on Bus Lines.—The Los Angeles Motor Bus Company, a subsidiary of the Los Angeles Railway, Los Angeles, Cal., has received authority to reduce the number of stops on its bus and railway lines. Bus stop signs will be erected on all of the lines and then buses will stop only at such marked stops. Under the new scheme there will be from six to eight stops to the mile. The bus stop signs are triangular in shape, of enameled iron, and read "Bus Stop" in black letters on a yellow background, both sides of the sign being alike. Those used by the Los Angeles Railway read in addition "LARY."

Taxable Bus Operation Filed.—The Connecticut Company recently filed a tax list under protest at Hartford, Conn., to cover 26 buses it operates in that city. This was done by the company to avoid the 10 per cent addition for failure to file the tax. George D. Watrous, general counsel for the company, has stated that in his opinion the company is not subject to taxation of its buses by municipalities. The Hartford board, however, differs and informed the company that should the tax statement not be filed the company would be subject to the usual 10 per cent addition. This is the first year Hartford has included buses in its grand list. The city of Hartford bases the course it has taken on an act approved by the Legislature in 1925.

Bus Service Started in Vandergrift.—Two modern type Yellow coaches were operated recently in Vandergrift by the West Penn Railways, Pittsburgh, Pa. One of these vehicles is to be operated regularly between Vandergrift and North Vandergrift and the other to be kept in reserve to guarantee uninterrupted service and to provide additional capacity when needed. Each bus can accommodate 21 passengers. The service is operated under the name of the "Penn Bus Lines." Buses connect with the Leechburg and Apollo electric cars at North Vandergrift.

Railway Loses on Bus Issue.—The Public Service Commission on Sept. 27 denied the application of the International Railway, Buffalo, N. Y., for a rehearing on the petition of Zenos H. Hill for the transfer of his certificate to the Buffalo Valley Bus Lines, Inc., for the operation of a bus line from the hamlet of North Java to the city of Buffalo. No proof was offered at the hearing upon any question involved in the application which was not already covered by the company in the original petition.

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Financial and Corporate

Constructive Decision at Salt Lake

Utah Commission Decries Operation at Continual Loss to Company and Car Rider—Buses Substituted

The Utah Public Utilities Commission recently approved an application of the Utah Light & Traction Company which permits the company to abandon service between Centerville and Salt Lake City and to remove its trackage and other appurtenances. In lieu of the street car service the company is required to substitute buses. The company is planning to furnish a combined service consisting of the street cars to the city limits, which is also a fare limit, and to operate buses from this point to Centerville, 7½ miles from the north limits of Salt Lake.

The Centerville line, extending from the north city limits of Salt Lake City to Centerville, with a terminal in Davis County, parallels the state road or paved highway leading through Davis County to Ogden City, Weber County, Utah. The line was constructed in the year 1912.

The commission ruled that the operating revenues of the line for more than five years past have been insufficient to meet the operating expenses; that for the year 1925 its gross operating receipts were but $21,276, while its operating expenses amounted to $30,688; that the annual average rate of return for five years, from Jan. 1, 1921, to Dec. 31, 1925, based upon the valuation of the applicant's entire railroad system, as fixed by the commission in its order of Jan. 15, 1920, at $8,468,279, was only 2.82 per cent, and that the inventory value of the applicant's Centerville line, as found by the commission, was $180,178. The commission found that the revenue fares carried for 1925 were 347,764, against 324,495 in 1924 and 405,902 in 1923. That the total revenue fares carried on the applicant's entire street car system for the year 1925 was 30.245,423, of which the Centerville line carried 347,764.

It was the belief of the commission that from the salient facts found it was apparent that the Centerville line could no longer continue to operate under existing conditions and circumstances without incurring a loss of approximately $10,000 a year. Further, this loss must be sustained by the applicant, or it must be borne by the car riders of the entire railway system. The commission was convinced from the evidence that the territory served by the Centerville line had been, in a great measure, built up and improved by residents who had faith that the street car line under consideration would remain and serve them as a public utility.

Although counsel for protestants, the commission said, seemed to question the power of the commission to permit the applicant to withdraw its rail service in view of the franchise rights granted to it by Davis County and the city of Bountiful, not yet expired, such right has been repeatedly upheld by the courts of highest authority, both federal and state, when the continuance of a rail service would entail either heavy financial loss on the part of the applicant or else cause a great burden to be borne by the car riders on the entire railway system.

The commission felt, however, that the Utah Light & Traction Company owed something to the communities that had grown up and had developed in faith that the street car line would remain as a permanent convenience to meet their transportation needs. Accordingly the commission felt that the applicant should be permitted to discontinue its Centerville line on the condition that it, either by itself or through some subsidiary corporation, provide automobile bus service over the public paved highways between North Salt Lake and Centerville, including intermediate points, of equal frequency and at the same fares as were now being charged by rail lines. Provision should also be made for auxiliary or supplemental service in the morning and evening to the Val Verda district, as necessity may require. The commission reserved jurisdiction as to the adequacy, frequency and continued necessity of this service pending the trial of schedules offered by the railway.

The commission, however, did not assume to say what the cost of rendering bus service would be, but expected that it would be rendered safe, commodious and efficient, and at the same time would prove reasonably adequate to preclude, in a very large measure, the losses now incurred by rail service.

In conclusion the commission stated that "the conditions herein imposed upon and consented to by applicant are not to be regarded as merely temporary, but to remain permanent to meet the requirements of the communities affected and as the best interests of the general public shall demand." The application of the company was submitted on May 26, 1926.

$5,000,000 Preferred Issue to New Jersey Customers

The Public Service Corporation of New Jersey has announced plans for an offering to customers of $5,000,000 of 6 per cent cumulative preferred stock. Fifty thousand shares of $100 par value will be marketed on Oct. 1, at which time the company will open another customer ownership campaign by selling securities on installments.

The stock will be offered at par and accrued dividends, for cash or at the rate of $10 a share monthly. Interest at the rate of 6 per cent annually will be paid on installments and the purchaser will receive the accrued dividends when he completes his payments. Adjustments for interest will be made when the stock is delivered.

The company in previous campaigns has sold 7 and 8 per cent preferred shares to customers.

Details of Large Merger in Arkansas Practically Complete

The Arkansas Power & Light Company has been incorporated under the laws of Arkansas, with an authorized capital of 1,300,000 shares of common stock, 150,000 shares of $7 preferred stock and 100,000 shares of $6 preferred stock, all without par value. The new corporation is the largest public utility company ever incorporated in Arkansas. It is the intention to merge into this company the present Arkansas Light & Power Company, Arkansas Central Power Company, the Pine Bluff Company and East Arkansas Power & Light Company and other miscellaneous properties. These companies are now controlled by the Electric Power & Light Corporation and the latter company will control the new Arkansas Power & Light Company. The new company, in addition to supplying electric power and light service to a large area of Arkansas, will also supply electric railway service in Pine Bluff and Little Rock.

Stockholders of Arkansas Light & Power Company, Arkansas Central Power Company and the Pine Bluff Company will vote upon the merger at special meetings which it is planned to call soon. Providing the merger is voted upon favorably, holders of the present $7 preferred stock of the Arkansas Light & Power Company, Arkansas Central Power Company and the Pine Bluff Company will have the opportunity to exchange their stock, share for share, for the $7 preferred stock of the new Arkansas Power & Light Company.

Economy Program for Seattle Municipal Railway

Present prospects are that the proposed program of economy for the Seattle Municipal Railway, Seattle, Wash., outlined in the recent report of Clark R. Jackson, superintendent of public utilities, will be put into effect. The citizen's advisory committee, recently appointed by Mayor Bertha K. Landes, has declared its belief that the plan should be tried, and members of the City Council also favor the plan. Mayor Landes, however, said she would take no action until the return of D. W. Henderson, superintendent of railways, who is expected back from the East on Oct. 15.

Mayor Landes says that it will cost not more than $10,000 to make the necessary track changes to put the loop system into effect, whereas the estimated saving is placed at $50,000 a month. It is also estimated that $200,000 more can be saved by a reduction in the power rate and curtailment of services in a number of instances.

Mr. Jackson points out that the railway lost $27,215 on the five bus lines operated in 1924, exclusive of depreciation and interest; $44,012.39 on eight lines in 1923, two of which were oper-

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ated only a few days, and during the first six months of this year lost $44,012. He said:

> We will soon be operating 33 buses on eleven routes. We own the buses, and it, therefore, seems necessary to operate them. I suggest, however, that a moratorium be declared on further extensions and that the system be adjusted in an attempt to reduce losses on the lines already in operation.

Under the new system it is planned to turn back at Pike Street all cars from the north and east which traverse the retail business district. All cars from the south also would be turned back at that point.

$784,000,000 for Rapid Transit in New York

Investment by the city of New York in rapid transit lines, in round figures, now amounts to more than $320,000,000 The grand total of investment by the city and the railways, including the investments of the latter for equipment and their contribution to the city's cost of construction, amounts to $615,540,000.

This does not include the investments made in the company-owned railroads—the old elevated lines—prior to the signing of the dual contracts on March 19, 1913. These elevated railroads, on the basis of the companies' books, represent original expenditures amounting in round figures to $169,000,000, thus making the cost of the whole rapid transit system of New York about $784,000,000.

The Interborough system of subways and elevated extensions of subways extends from the Bronx, through Manhattan and into Brooklyn and Queens. The Brooklyn company's system extends through Brooklyn, a part of Queens, into Manhattan and again in Queens, where use is shared with the Interborough of two lines in that borough. This dual system for the first time brought both companies into and through the community center of Manhattan, linking up four of the five boroughs of the city, and providing a maximum ride of nearly 17 miles at a 5-cent fare.

The dual contracts involve a number of financial arrangements other than those which relate merely to construction. The New York Transit Commission is charged with the duty of administering these contracts with the operating companies on behalf of the city. The commission is, in effect, the warden of the city's investment in the company-operated subway lines.

The accompanying tabulation shows the approximate expenditures to June 30, 1925, made by the city and the companies in connection with rapid transit lines. The amounts stated under contracts Nos. 3 and 4 and the related certificates are tentative and subject to the determination of the chief engineer.

CONTRACTS NOS. 1, 2, 3, 4 AND CERTIFICATES RELATED TO CONTRACTS NOS. 3 AND 4

City's and Companies' Investment—June 30, 1925		
City's Investment:		
Contracts Nos. 1 and 2	(a)	$61,000,000
Contract No. 3		103,250,000
Contract No. 4		156,500,000
Total, city (Rounded)		$320,750,000
Companies' Investments:		
Interborough Rapid Transit Company:		
Contracts Nos. 1 and 2	(b)	$46,000,000
Contract No. 3:		
Construction $57,821,100		
Equipment 48,487,000		
Additions to construction 221,000		
Additional equipment 10,061,000		
Total, contract No. 3		116,590,000
Certificates for company lines		44,158,00
Total, I.R.T. Company (Rounded)		$206,748,000
New York Rapid Transit Corporation:		
Contract No. 4 (City lines):		
Construction $14,191,000		
Equipment 31,184,000		
Additional equipment 2,771,000		
Total, contract No. 4 (city lines)		$48,146,000
CoWpany lines, contract No. 4, and related certificates		39,896,000
Total, New York Rapid Transit Corporation (Rounded)		$88,042,000
Grand total	(c)	$615,540,000

Notes:—The above figures in city investment include expenditures from proceeds of both corporate stock and revenue bonds:

(a) Does not include $5,500,000 for city's superintendence.

(b) Includes $9,000,000 excess construction cost of contract No. 2.

(c) Does not include any investment in company owned railroads prior to March 19, 1913.

Merger Reports at Lincoln

Gossip in financial circles in Lincoln, Neb., points to a possibility of a merger of the Lincoln Traction Company property with that of the Omaha, Lincoln & Beatrice Interurban, but the local officials insist they have no knowledge of any negotiations. The United Light & Power owns the railway system and the Robinson-Musser rubber interests in Akron hold the interurban, which operates between Lincoln and University Place and Lincoln and Bethany, both suburbs, 6 miles distant. The two corporations have got along amicably for years, the interurban buying its current from the other and leasing a portion of its tracks for traction use. The recent application of the interurban for permission to run buses that would tap the downtown district from which the traction company gets the cream of its traffic brought a protest from the latter. This collision of interests is believed to be responsible for the story that the compromise negotiations include a possibility of sale and purchase.

Purchaser Wanted for Ohio Road

Charles W. Eliff, attorney for the receivers of the Dayton, Covington & Piqua Traction Company, West Milton, Ohio, has announced that the line will be discontinued on Nov. 6. Judge Smith Hickenlooper has approved the petition of the receivers to discontinue service if there is not a purchaser before Nov. 6.

Permission to abandon the line was originally granted to receivers by the Ohio Public Utilities Commission on Nov. 28, 1925, but the line was kept in operation in the hope of finding a purchaser for it as a going concern. A sale was advertised to be held Feb. 13, 1926, but there was no bidder for the property. Moreover, there has been no organized response to attempts to interest groups of people served by the line in the purchase of the property. The company operates more than 30 miles of line.

More Passengers in Baltimore.—For the first eight months of this year the United Railways & Electric Company, Baltimore, Md., carried 148,870,529 passengers, against 148,298,370 for the similar period last year. For the first six months of 1926 and 1925 the passenger figures were 113,715,254 and 112,761,063 respectively.

Revenues Increase.—Total revenue of the Community Traction Company, Toledo, Ohio, in September was $258,919, compared with $255,550 for a similar month last year. The increase is in spite of open weather and is credited in part to improvements in service and the popularity of chartered bus service started Sept. 1.

Would Reduce Service.—The Cincinnati Street Railway, Cincinnati, Ohio, has petitioned the State Public Utilities Commission for permission to abandon the operation of the Bond Hill line during the major portion of the day. The company in its application proposed that four cars only be operated during morning and evening rush hours. The reason given for the application was that the line had been operated at a loss during the day; that Bond Hill was served by a bus line operated by the company, and that the car line did not actually reach the suburb. E. D. Gilman, Director of Public Utilities, will take the application under advisement.

Fights Higher Assessment. — The Washington, Baltimore & Annapolis Electric Railroad, with headquarters in Baltimore, Md., has filed a protest with the Appeal Tax Court of the city against an increase of more than $150,000 in the assessment against the company's property. In 1926 the assessment was $253,745, covering rights-of-way, tracks and bridges in the city. The assessors have proposed that the assessment for 1927 be $413,620.

Hearing on Petition Postponed.—The Public Service Commission recently announced that the hearing scheduled for Oct. 19 on the petition of the Hudson Valley Railway, Glens Falls, N. Y., for approval of the abandonment of its Lake George-Warrensburg line had been further postponed to Oct. 26 at Albany. At the same time the commission will hear the petition for abandonment of the company's Thomson-Greenwich line.

Service Discontinued.—The Depew & Lancaster Railway Corporation, Buffalo, N. Y., which operates between Buffalo city line at East Genesee Street and the villages of Depew and Lancaster, discontinued service on Sept. 23. R. C. Lenahan of Lenahan & Sons of Buffalo, who purchased the property at a bondholders' foreclosure sale five years ago, says he will scrap the line. The company has operated two cars, but the income was not sufficient to pay operating expenses.

Wind Up Railway's Affairs. — The sum of $7,425 will be distributed to the holders of the $102,323 in bonds of the defunct Phoenixville, Valley Forge & Strafford Electric Railway, Phoenixville, Pa. The filing of the auditor's report shows that there will be a dividend of 0.07256 per cent on all that remains of the line built and operated for the first time in 1911. The road was built by Thomas E. O'Connell, then

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residing in Phoenixville, who also sold most of the bonds. In 1923 only one car was in operation on the line between Phoenixville and Spring City. In the year 1922 receivers were appointed. The line operated 5 miles.

Seeks More Money for Audits.—Increased appropriations will be asked by the Missouri Public Service Commission of the next Legislature which meets in January to finance audits of the accounts and physical properties of various public utilities throughout the State to determine reasonableness of existing and increased rates. The commission will ask for $453,300, compared with $301,200 for 1925 and 1926. The appropriation will be for two years.

Would Refund $844,500 Bonds.—The Interstate Public Service Company, Indianapolis, Ind., has presented to the Indiana Public Service Commission a request for authority to refund $844,500 of bonds of the Indianapolis & Louisville Traction Company. This is the balance of underlying bonds not refunded, it was explained. To care for the refunding, the Interstate seeks to issue the same amount in first mortgage refunding bonds to be sold at not less than 90 per cent of par. The company also seeks to sell $99,300 of its 6 per cent preferred stock.

Route Change Proposed.—The Washington Railway & Electric Company, Washington, D. C., has requested permission to abandon the Portland Street line from Nichols Avenue to the old steel plant in Anacostia. A public hearing will be held on the petition.

Will Vote on Stock Increase. — A special meeting of the stockholders of the Chicago Rapid Transit Company, Chicago, Ill., has been called by the board of directors, to be held on Dec. 9, for the purpose of considering and voting upon the question of increasing the company's capital stock from $25,330,500 to $30,330,500, such increase to be prior preferred stock. Customers of the company and employees are now large holders of this class of stock of the company under the stimulus of a passenger partnership campaign conducted several years ago.

Hears Track Removal Petition.—The Pennsylvania Public Service Commission heard on Sept. 22 the application of the Philadelphia Rapid Transit Company, Philadelphia, for permission to remove tracks on Catherine Street between Eighth and Ninth Streets and a curve at Ninth and Spring Garden Streets. C. C. Schaffer, traffic engineer of the company, said that these tracks have not been in use since 1913, when there was a rerouting of various lines. He said the company would remove the tracks as soon as the city was ready to repave these thoroughfares.

Would Abandon Unprofitable Sections.—The New York & Stamford Railway, Port Chester, N. Y., petitioned the Public Service Commission on Sept. 30 for approval of a declaration of abandonment of that part of its route on Westchester Avenue, South Regent Street and North Regent Street in New Rochelle. The petition alleged that these parts of its system were no longer necessary for the successful operation of the road or the convenience of the public.

Personal Items

Messrs. Knecht and Dubee Advanced

Careers Reviewed of Grand Rapids Railway Officials Recently Promoted Following Retirement of J. C. Madigan

Both John W. Knecht and S. W. Dubee have been promoted recently by the Grand Rapids Railway, Grand Rapids, Mich., as a result of the retirement of J. C. Madigan as superintendent. As noted briefly in the ELECTRIC RAILWAY JOURNAL for Sept. 4 Mr. Knecht succeeds Mr. Madigan and Mr. Dubee succeeds to the post made vacant by the advancement of Mr. Knecht.

J. W. Knecht

Mr. Knecht, new general superintendent, was born in Grand Rapids in 1888. He attended public schools there and was graduated from the Central High School in 1905. His first job was as a cash boy in a dry goods store during summer vacations. He also was messenger boy and news boy during vacations.

After graduating, Mr. Knecht worked for one year for the Pennsylvania Railroad (then the G. R. & I.). He entered Michigan State College in 1906, and was graduated in 1910 with an engineering degree.

S. W. Dubee

During college vacations he worked for the Grand Rapids Railway as draftsman. In 1911 he entered the employ of the company as assistant engineer and remained in this capacity until 1917, when he removed to Washington and entered the Bureau of Construction and Repair, Navy Department, serving under Rear Admiral Taylor. At the close of the war Mr. Knecht returned to the Grand Rapids Railway in the position of chief engineer, a post he held until he was appointed general superintendent.

Mr. Dubee has acted as assistant to Mr. Knecht in his former capacity of chief engineer. Mr. Dubee was born in Grand Haven, Mich., on July 9, 1894. He attended prep school at Beloit Academy in Wisconsin and spent two years in college at the same place. He attended the University of Michigan for three years and was graduated as a civil engineer. He then sold building material for a year.

At Camp Pike, Little Rock, Ark., Mr. Dubee was one of the five division engineers on construction. As a lieutenant in the Ordnance Department, he served a year and a half in the army, at Plant No. 1, Muscle Shoals.

After the war Mr. Dubee became superintendent of construction for the Fairbanks, Morse & Company plant at Beloit, Wis. He next spent a year and a half on public utilities valuation work for the state of Michigan and a year on special development and research work on certain automotive lines. He entered the employ of the Grand Rapids Railway on Nov. 1, 1925.

J. H. Alexander Made President of Cleveland Railway

Joseph H. Alexander was elected president of the Cleveland Railway, Cleveland, Ohio, at a meeting of the board of directors on Friday morning, Oct. 15, to succeed the late John J. Stanley. At the same meeting Ralph W. Emerson was elected vice-president and Paul E. Wilson was made vice-president and secretary. Mr. Alexander was formerly vice-president, Mr. Emerson general manager and Mr. Wilson secretary.

Burt Hamerstrom Heads New San Francisco Department

Working directly under the supervision of Samuel Kahn, executive vice-president of the Market Street Railway, San Francisco, Cal., a commercial department has been established.

Burt Hamerstrom has been appointed manager of the new department and charged with duties attaching to new business effort, public relations and advertising. As an initial step toward establishing closer relations with the

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public, space is being used in the metropolitan newspapers to acquaint the people with the company's service.

Mr. Hamerstrom spent about ten years as a newpaper reporter and feature writer in San Francisco, Chicago and Seattle. For more than ten years he has been associated with public utilities, with the United Gas Improvement Company and Welsbach Company in Philadelphia and with the North American Light & Power Company—Illinois Power & Light Company—in Chicago, where he helped to direct the commercial, customer-ownership, public relations and advertising activities for properties in more than one hundred communities in several states.

William Petersen Made South Shore Traffic Head

William Petersen has been appointed traffic manager of the Chicago, South Shore & South Bend Railroad, Michigan City, Ind. Mr. Petersen has been assistant general passenger agent of the line with offices at Chicago. For several years previous to joining the South Shore Line organization he was general agent in the passenger department of the Chicago, North Shore & Milwaukee Railroad.

The new traffic manager has spent twenty years in various capacities of the railroad business, beginning in 1906 as a relief telegraph operator and later relief ticket agent with the Chicago & Alton Railroad. Later he served as auditor at the Chicago Union Station and also as assistant ticket agent. In 1915 he took charge of the traffic department of the Pullman Car & Manufacturing Corporation, and after serving with that company for four years became a traveling freight and passenger agent with the Southern Pacific Railroad.

John N. Cadby, executive secretary of the Wisconsin Utilities Association, has been named acting secretary of the Wisconsin Motor Coach Association following the resignation of Philip Litman, now connected with the Mohawk Stage Line, Davenport, Iowa. Mr. Cadby will handle the affairs of the association pending the selection of a permanent secretary at the association's annual convention in Madison on Nov. 9 and 10.

William W. O'Toole New Auditor of North Shore Line

William W. O'Toole has been appointed auditor of the Chicago, North Shore & Milwaukee Railroad, the North Shore Line, Chicago, Ill., succeeding Charles R. Mahan, whose promotion to comptroller was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 2, page 597. Mr. O'Toole entered the service of transportation organizations under the management of Samuel Insull and associates on March 1, 1914, when he joined the Chicago Elevated Lines as an employee in the payroll division of the general accounting department. He occupied various positions pertaining to payrolls and later was in charge of all labor distributions. Transferred to the general accounting division, Mr. O'Toole handled the abstracts of the auditor's entries, vouchers, bills and journal entries for the Metropolitan West Side Elevated Railway, the Northwestern Elevated Railroad and the South Side Elevated Railroad. He was later transferred to the voucher division in charge of all vouchers, bills and journal entries, also serving as assistant to the chief clerk.

In April, 1920, T. B. MacRae, auditor of the Elevated Lines, was elected auditor of the Chicago & Interurban Traction Company, and Mr. O'Toole was appointed assistant auditor, serving in this capacity until July 22, 1921, when he was elected auditor. Mr.

W. W. O'Toole

O'Toole remained in this position until Aug. 1, 1924, when he was appointed assistant auditor of the North Shore Line under Mr. Mahan. This position he held until his recent promotion.

Obituary

Simon Bamberger

Simon Bamberger, chairman of the board of the Bamberger Electric Railroad, died at his home in Salt Lake City, Utah, on Oct. 6, after an illness of less than 24 hours. The cause of his death was acute indigestion.

For many years Mr. Bamberger had been a prominent figure in the development of the West. He was born in Darmstadt, Germany, on Feb. 27, 1845. At an early age he came to America, first locating in Cincinnati, where he secured employment as pin boy in a bowling alley. He utilized every available moment to study English through the medium of books and newspapers. In his early manhood he, with his brother, established a small wholesale mercantile business in St. Louis. He later moved westward, engaged in the mining business at various locations, and finally settled in Salt Lake City, where he became interested in hotel ownership and mining.

In the early '90s he founded what was then known as the Great Salt Lake & Hot Springs Railway, a steam road. This road was completed into Ogden in 1908, and two years later was electrified. It is now known as the Bamberger Electric Railroad, a name adopted on Aug. 14, 1917.

In 1916 Mr. Bamberger was elected Governor of Utah, on the Democratic ticket. He served in this capacity for a period of four years. Under the leadership of Governor Bamberger Utah was in the front rank of the states in war work.

Mr. Bamberger was prominently identified with numerous business enterprises in Salt Lake City and the intermountain territory. Among them were the Bamberger Electric Railway, the projected Bamberger lines into the Uintah Basin, the Bamberger Coal Company and the operation of various mining enterprises. Despite his advanced age, he was very active in attending to business affairs almost up to the time of his death.

Z. E. Knapp

Z. E. Knapp, director of construction to the London Underground Electric Railways, died on Oct. 1 at the age of 59. When the great development of these railways was beginning, Mr. Knapp came to London from America in 1901. After being manager of the London United Tramways, he became in 1913 chief engineer of the underground railways. In 1915 he was appointed manager for maintenance and construction. In 1917 and 1918 he was general manager of Associated Equipment Company, the builders of buses for the London General Omnibus Company. At the end of 1918 he resumed his position on the underground railways. Three years later he was appointed director of construction, and was in charge of the extension of the London Electric Railway from Golder's Green to Edgware, the enlargement of the tunnels of the City & South London Railway, and the extension of the line to Morden.

E. W. Bowman, supervisor of insurance of the Philadelphia Rapid Transit Company, Philadelphia, Pa., and associated with Mitten Management properties for more than 30 years, died recently in Philadelphia. Mr. Bowman was 79 years old.

Charles S. Butts, engineer in the Department of Public Utilities for the city of St. Louis, Mo., for fifteen years, died on Sept. 21. In recent years he had been in charge of the railway operated by the City Water Works Department connecting Baden, the chain of Rocks water work stations and the Municipal Bridge and Dock.

Thomas A. Cole, former claim agent for the Los Angeles Railway, Los Angeles, Cal., died on Sept. 25. He first served as a conductor under J. C. Robinson, superintendent. When the cable lines were opened he was made inspector or supervisor and he held this position until 1896, when he was taken into the office as a clerk, where he worked mostly in the claims. After a year or two he was made regular claim investigator and adjuster and until he retired from the company in 1919 he acted as claim agent.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Guests of Lorain Steel

Mysteries of Steel Rail Making Are Mysteries No Longer to Railway Men Who Visited Plant Recently

It was indeed an interesting occasion out at Lorain, Ohio, on Friday afternoon of convention week in Cleveland. About 125 railway men accepted the invitation of the Lorain Steel Company to inspect its rail mill at the plant of the National Tube Company. The visitors were gathered up in special buses down at the convention hall just as the bell sounded the deathknell of the 45th annual convention. Transported to Lorain by means of a special train, the party enjoyed a tasteful buffet luncheon while en route. S. Cotsworth of the Lorain company played the genial host.

Upon reaching Lorain the assemblage detrained and began a walk through the plant, which consumed an hour and fifty minutes of time and showed practically every phase of the highly interesting manufacture of girder rails, and which gave more than a touch of romance to the frequently taken-for-granted trackwork. They saw the iron ore and limestone being unloaded from barges by means of huge hoists and traveling cranes. They saw the blast furnaces charged and, later, tapped. They saw the ladles of molten iron taken to the open hearth furnaces and there transformed to steel. Then came the rolling of the rails, the seemingly interminable back and forth through the rolls, the cooling, the straightening and finally the various orders marked and piled together for shipment. All of these processes and more were witnessed by the guests in the brief period of their walk through the plant.

The trip was possessing of much interest. More than this, it had the unusual feature of being run through on clock-work schedule. The guests of the Lorain company left the public auditorium at the appointed time and they were returned to their hotels at the hour which had been promised. Credit for much of this must go to W. L. Schaeffer of the National Tube Company, who arranged the trip.

$62,500 Improvement Plan in Toledo

Installation of a new grand union at Summit and Cherry Streets, the busiest intersection in Toledo, was started at midnight, Oct. 14, and for a month will be the cause of probably the greatest rerouting and diversion of all kinds of traffic in the history of the city. The corner is at the busiest end of the Cherry Street bridge on the main Cleveland-Buffalo highway, the only crossing of the Maumee River for several interurban lines. Seven city traction and bus lines and seven interurban lines will have to be rerouted for the installation.

The new special work built by the Cleveland Frog & Crossing Company weighs 235,000 lb. and is the largest of its kind ever turned out by the company. It will provide full clearance curves in all directions with standard 8-ft. devil-strip in place of the 8-ft. and 10-ft. combined at that corner at the present time. New track will be laid for one block on Cherry Street while the crossing is being installed. All joints in the new grand union are welded. The work is expected to cost $62,500 complete.

George Westinghouse Memorial Committee Appointed

A committee chosen from among executives of the Westinghouse corporations has been named to represent the enterprises founded by George Westinghouse in the work of erecting a memorial to him in Schenley Park, Pittsburgh, Pa., to perpetuate esteem for his life and work.

The committee consists of A. L. Humphreys, president of the Westinghouse Airbrake Company, chairman; E. M. Herr, president of the Westinghouse Electric & Manufacturing Company; F. A. Merrick, vice-president of the Westinghouse Electric & Manufacturing Company, and John F. Miller of the Westinghouse Airbrake Company, vice-chairman.

A shaded hillside near Panther Hollow in Schenley Park is to be the site for the memorial which will bear witness to the achievements of the man regarded as one of the most unique personalities and typical figures in the industrial life of his time.

General Electric Orders Increase for Third Quarter

Orders received by the General Electric Company for the three months ending Sept. 30, 1926, total $81,587,917, compared with $73,561,483 for the same quarter in 1925, an increase of 11 per cent, Gerard Swope, president, has announced. For the nine months of the present year, orders total $246,993,637, compared with $223,876,711 for the first nine months of 1925, an increase of 10 per cent.

Long Island Railroad Will Place Large Order for Rolling Stock

At a meeting on Oct. 7 of the board of directors of the Long Island Railroad authorization for the purchase of additional equipment for passenger and freight operations to cost approximately $3,300,000 was made.

This expenditure calls in part for the acquisition of 90 passenger coaches to be used in electric train service. Sixty of these will be equipped with motors and the remaining 30 will be of the trailer type. Contracts for the construction of the new cars will be let shortly. When delivered, early next year, the Long Island Railroad will have 1,189 all-steel passenger cars in service, as compared with 157 wooden cars, this being in line with the company's policy to retire gradually from passenger service all cars of wooden construction. The new passenger cars for electric and steam service will provide seats for about 8,000 persons and enable the company to build up to a maximum of eleven cars trains now operating with an overload.

Among the new freight equipment which will be purchased under the authority just given by the directors there will be three oil-electric locomotives. One of these units, similar to the three about to be ordered, has been in service on the Long Island lines since its delivery last December and has quite fulfilled the expectations of the railway officials.

Oil-Electric and Storage Battery Locomotives for C. & N. W.

A second oil-electric locomotive, similar in specifications to one ordered earlier in the year, was placed in service in the switching terminal of the Chicago & Northwestern Railroad at Chicago on Sept. 23. With the use of this locomotive all engine smoke on the north side of the Chicago River east of Wabash Avenue will be eliminated. The first oil-electric engine in this district has supplanted two steam locomotives and the new one just obtained will be substituted for the remaining steam locomotives used.

The railroad is also arranging for a try-out of a storage battery locomotive. Though equipped with an electric battery system, this type can also be used on an overhead trolley system, through the use of a pantograph. Such locomotives will be particularly useful in switching service over sidetracks branching out from tracks provided with overhead trolley and where the latter system does not extend. The storage battery locomotive would be available on the city's lake front in connection with the recently completed Illinois Central Railroad's electrified system.

Thirty Years of Steady Growth in Subdrainage Practice

"An Anniversary of Significance" is the title of a booklet published by the Armco Culvert & Flume Manufacturers Association of Middletown, Ohio, commemorating its 30th year of service in the fields of drainage and irrigation. The invention of the corrugated iron culvert, which was made in a small Middle Western community back in 1896, had a far-reaching influence in the development of culvert construction. The little booklet just issued tells in very interesting fashion of the most important events in the history of the corrugated culvert and the growth of

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this new industry. Of particular importance was the development in 1901 of a metal which would effectively resist corrosion and at the same time stand up under the exacting conditions of service. This metal is well known as Armco ingot iron.

In 1906 the American Rolling Mill Company, which had developed this special iron, joined with the manufacturers of the corrugated culvert and the Armco Culvert & Flume Manufacturers Association came into existence. Formerly the attention of this association was devoted largely to manufacturing problems. Today it is actively engaged in research and educational work.

At the conclusion of the booklet comes a summing up of the various fields into which the use of corrugated culverts has been projected and a description of the most recent developments, including the use of perforated pipe for subdrainage by railways and in other fields.

Builders of Cleveland Exhibit Hall Get New Contract

A contract for the construction of a $160,000 carhouse and office structure for the Williamsport Passenger Railway at Williamsport, Pa., has been awarded to the H. K. Ferguson Company of Cleveland, Ohio, engineers and builders. The Ferguson company has recently attracted nation-wide attention in the electric railway field because of the efficient manner in which it has accomplished erection of the large exhibit hall which was used for the A.E.R.A. convention, Oct. 4 to 8.

The new building for the Williamsport Railway is to be one story, approximately 171 ft. x 261 ft., with a side aisle approximately 31 ft. x 132 ft. The front portion of the structure, 50 ft. x 139 ft., will be two stories in height and will be used for offices. Structural steel frame, concrete floors, with inspection and repair pits, cement tile roof and walls of brick and steel sash are features of the structure. It is said that the building will constitute one of the most attractive buildings of its sort and size in the country.

Rolling Stock

Dominion Power & Transmission Company, Hamilton, Ont., will place orders by Nov. 15 for 24 new cars for the Hamilton Street Railway.

Aronimink Transportation Company, bus operating subsidiary of the Philadelphia & West Chester Traction Company, Upper Darby, Pa., has ordered three six-cylinder street-car type buses from the Fageol Company, Kent, Ohio. These were equipped with Westinghouse air brakes.

Community Traction Company, Toledo, Ohio, will equip its cars with leather-upholstered seats in one of the first big moves toward complete modernization of the equipment, it was announced by James A. Greig, sales manager of the company. At a cost of approximately $50,000 the seats will be provided on 127 cars. Work is already in progress at the Central Avenue shops of the company, but as yet none of the cars has made its appearance on the streets. Possibilities of further additions to equipment may hinge on the reception the public gives to the newly furnished cars.

Seattle Municipal Street Railway will ask for bids from auto body building plants for the contract to construct bus bodies on four chassis recently purchased by the department. It is estimated that the bodies will cost approximately $9,700.

Track and Line

Washington Railway & Electric Company, Washington, D. C., has asked permission of the Public Utilities Commission to lay tracks in B Street between Ninth and Fourteenth Streets, N.W., to be operated by underground conduit.

San Mateo, Cal.—The construction of a car line between San Mateo and Palo Alto to serve as a feeder to its Santa Clara County transit system was suggested to the Southern Pacific Company recently by the Menlo Park Chamber of Commerce. This proposed 13-mile link would give continuous service from San José to San Francisco in connection with the present San Mateo interurban line of the Market Street Railway.

Los Angeles Railway, Los Angeles, Cal., has completed changes in overhead work on Glassell Avenue line. The maintenance-of-way department is now shifting the double tracks from 15 to 11 ft. centers. As soon as this is completed the company will construct concrete curbs along the right-of-way and concrete passenger landings. The company is renewing the special work and curves at the junction of North Broadway and Pasadena Avenue near the east end of the North Broadway bridge.

Worcester Consolidated Street Railway, Worcester, Mass., has completed the reconstruction of 344 ft. of double track on Salisbury Street between Highland Street and Armory Square at a cost of $7,500. The old rail was replaced with new 7-in., 103-lb. girder rail and the old wooden blocks were replaced with granite blocks. The company is relocating and changing the grade of track on Grafton Street between Hyannis Place and the city line in connection with the widening of the street on the part of the city. This work will cost about $25,000.

Metal, Coal and Material Prices

Metals—New York	Oct. 13, 1926
Copper, electrolytic, cents per lb	14.15
Copper wire, cents per lb	16.25
Lead, cents per lb	8.35
Zinc, cents per lb	7.65
Tin, Straits, cents per lb	70.00
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$6.00
Somerset mine run, Boston, net tons	2.00
Pittsburgh mine run, Pittsburgh, net tons	2.075
Franklin, Ill., screenings, Chicago, net tons	1.525
Central, Ill., screenings, Chicago, net tons	1.40
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$5.75
Weatherproof wire base, N. Y., cents per lb	17.75
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb	11.20
White lead in oil (100-lb keg), N. Y., cents per lb	15.25
Turpentine (bbl. lots), N. Y., per gal	$0.925

Power Houses, Shops and Buildings

Petaluma & Santa Rosa Railroad, Petaluma, Cal., is planning the immediate construction of a reinforced concrete passenger station, depot and freight warehouse in Santa Rosa, to cost approximately $35,000. The structure will be of Mission style of architecture with 175 ft. frontage on Fourth Street and 300 ft. on Wilson Street, occupying the entire block between Fourth and Third Streets. It will be of reinforced concrete and steel, replacing the present wooden structure.

Pine Bluff Company, Pine Bluff, Ark., and the Arkansas Light & Power Company, it is rumored, will erect an office building next year. New York architects are said to be drawing plans for the building, which is to be constructed in Pine Bluff. The plan would be to use it as general headquarters for the firm.

Montreal Tramways, Montreal, Que., has started the construction of a new terminal station at Cartierville. The fireproof building is brick exterior and will be heated during the cold weather. The work will be completed about Nov. 1.

Trade Notes

Chicago Pneumatic Tool Company will construct a new plant at Franklin, Ill., for the manufacture of Diesel engines, it is reported. Charles M. Schwab, a director of the Chicago company; H. A. Jackson, president, and W. H. Callan, vice-president, recently visited the site. Several hundred men will be employed in this plant, which is understood to entail an expenditure of approximately half a million dollars.

Walter H. Jones has been appointed engineer of the Auto Body Company of Lansing, Mich. Mr. Jones has had wide experience in the design and construction of bodies, both in this country and in England.

John C. Dolph Company, Newark, N. J., specialists in insulation materials, had treated several motors on the ill-fated submarine S-51 with waterproof varnish. These motors withstood the action of sea water in addition to 58 lb. pressure over a period of 9½ months. After being washed and dried the motors operated normally in every respect, it was stated.

New Advertising Literature

National Safety Council, Chicago, Ill., has published a directory of manufacturers and dealers furnishing equipment, service and supplies for accident and fire prevention, health, sanitation and industrial welfare generally. The title of the booklet is "A Buyer's Guide for the Safety Man."

Ohio Brass Company, Mansfield, Ohio, has issued a leaflet describing the principal features and advantages of O-B trolley catchers and O-B trolley retrievers.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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CHARLES GORDON, *Editor*

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Changes from Conventional Truck Design Are Attracting Increased Attention

DURING recent years many radical experiments in truck developments have taken place in Europe. Both in Germany and France marked changes from conventional practice have been incorporated in new equipment that has gone into service. Articles covering some of these designs have appeared in recent issues of this paper.

There is a growing feeling among equipment engineers in this country that further substantial improvement in car performance cannot be made without undertaking distinctly radical changes in truck and motor suspension design. The conviction is growing that the elimination of noise, improvement of riding qualities and reduction of wear on expensive track and special work are dependent on reducing the excessive unsprung weight in conventional design.

Removal of the motor from its present position on the car axle is a step in this direction. Application of this idea in Europe has been limited largely to single-truck cars. On double-truck equipment this construction offers additional problems, but these seem far from impossible of solution. At the present time there are under consideration in this country several experimental designs of this character. In most cases these go considerably further toward the adoption of automotive type spring suspensions and driving arrangement than do the foreign designs.

Various advantages seem to accrue from this general form of truck arrangement. In addition to the reduction of unsprung weight, which eliminates much pounding on track and special work, there is to be expected a marked reduction in gear noises through the provision of oil-tight housings in which the gears can be maintained in accurate alignment and kept immersed in an oil bath. Reduction of the mechanical strain on motor frames and of vibration, wear, tear and shock, resulting from the removal of the motor from the car axle, permits the use of increased armature speeds and reduced motor weight.

There are, of course, many problems of design to be worked out. Some of these will require heavy expense and considerable time for final solution. It is also probable that any such general change in construction will make running parts less accessible for maintenance, will require a more skillful class of maintenance workmanship and may prove more costly to repair in the event of mechanical failure. On the whole, however, the advantages which seem to be offered appear to outweigh the possible disadvantages.

Simplicity and ease of accessibility have been the principal advantages attaching to the present conventional form of truck construction and motor suspension. But on some properties where track is rigid and service severe, serious difficulties from broken armature shafts and open armature leads have never been successfully overcome. When the present form of single reduction gearing was adopted as the most reliable and simple construction for car propulsion, the general art of gear and bearing design was in a very rudimentary stage. The automobile has brought about a most remarkable development in gearing and anti-friction bearings. These now make possible changes in conventional car practice which would have been inconceivable in the days when the present form of construction was adopted.

Europe is apparently achieving a considerable measure of success with radical changes in truck construction. Some of the experiments in this direction have been in progress for a length of time to warrant more than passing attention on the part of every one in this country who is interested in car improvement. Now that the entire industry has become keenly alive to the advantage of both improved appearance and performance of its cars, it is to be hoped that some of the designs which have been contemplated for some time may soon be constructed and put into service.

Operating Men Have an Important Part in Stimulating Development

IN THIS era when high-class electric railway service is foremost in the thoughts of railway operating officials, it is quite natural and essential that many new developments should be proposed. Manufacturers who originate the improved equipment, of course, are anxious to have it tried so that any weaknesses which may develop can be corrected and so that general sale can be undertaken. The electric railways can help materially by trying out and testing new ideas.

The average electric railway man hesitates to put into service any new device which does not have the stamp of extended operating success. Installation of experimental apparatus often results in annoyance and considerable expense. If real results are to be obtained the trial must be watched carefully. Frequent inspections and adjustments may keep a car from service when it is needed urgently. Failure may also result in damage to another piece of equipment. These, however, are the contributions which electric railways must make to the industry in order to promote active development of many much-needed devices.

The duties of electric railway men should not end with a trial of a device which may result in failure. Further improvements should be suggested by the operators. Sometimes a failure is the only means of showing where weaknesses lie and what changes should be made. Some of our most useful pieces of equipment were only moderately successful at the start. Severe service was required to disclose weaknesses and the

This is the issue in October that is devoted essentially to maintenance and construction subjects

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application of many minds was needed to produce necessary improvements.

Electric railway officials and manufacturers must co-operate to bring about the advances in equipment which are so urgently needed. Imagination is essential. Intelligent merchandising effort demands close study of the desires and preferences of the customer. Railway mechanical men must acquire this modern viewpoint regarding their work. We are living in an age of prosperity and all classes demand luxury. Car riders do not know that special spring combinations are needed to produce easy riding trucks or that certain features of track construction influence the amount of noise produced. When these improvements are effected, however, they must be of a nature to make the passengers sense the increased comfort that comes in their ride. Some suggested improvements may be visionary, but it is important that the railway man do his part in co-operating with the manufacturer by entering into the spirit of experimentation with a full realization that very often progress is made only after many preliminary and costly failures.

Good Will Thrives on Straightforward Human Relationships

TEAMWORK is an attribute which has never proved more valuable nor more practicable than at the present time. Between individuals it is useful. Between companies it is essential. Between railways and the communities which they serve it is utterly indispensable. In the whole field of track and paving work the possibilities of profitable co-operation between city engineering departments and the railways are limitless. Nor are the advantages all on one side, for the city may profit equally with the railway in laying out paving and track-replacement programs so as to avoid duplication of work. Strangely enough, when real co-operation exists between city officials and the transportation company, little is heard about the matter. Let a city and its transportation agencies work together on a smooth basis of mutual accord and few laymen are the wiser, save for a vague feeling that things seem to get along pretty well in their community. But let the municipal authorities, either through indifference or with seeming deliberateness, give no heed to the financial resources or physical abilities of the railway, or let the railway executives fail to lay their cards on the table and play fair with the city, then immediately there is a tumult and uproar in the community, which, sadly enough, usually seems to center over the heads of the electric railway men, regardless of their degree of innocence or of their culpability in the matter.

In communities where thinking along these lines is sound, arrangements have been made to confer on programs for track and paving work some time in advance of the date when operations are actually to be started, so that the two elements may be fitted together as effectively as possible. Under these conditions municipal authorities have shown a readiness to lend an attentive ear to expositions of the railway viewpoint, while the managers of the property have, for their part, overlooked no opportunity to accede to aldermanic requests whenever possible to do so. That the latter course is profitable is evidenced by the fact that municipalities have in several instances volunteered to stand the expense of paving the track strip in return for an evident desire by the railway to plan its track construction so as to tie in with the paving program of the municipality's street department.

Of course, co-operation in any form is largely a matter of human relationships, and it is well worth the effort on the part of railway men to make a careful study of the individuals with whom they must deal. Few men are so immersed in their own ego that they cannot be reached and influenced by a straightforward presentation of facts and a friendly and cordial attitude which does not savor of pandering.

It's Not the First Cost but the Upkeep that Determines

MAINTENANCE of electric locomotives may prove to be a determining factor in the selection of systems. From time to time the industry is apprised of new units of electrified railroads that have been put into operation, but the operating statistics are not so frequently made a matter of public analysis. In this issue, Dr. Neithammer tells of a 284-mile section between Stockholm and Göteborg, Sweden, recently electrified. He submits the statement that the single-phase system does not appear to be materially inferior to the direct current system of electrification.

What the industry needs are facts to determine whether one system or one type of locomotive has points of superiority over others. Unquestionably, the first cost is an important element, but the factor that will gain in weight as time goes on is the cost of maintenance. A study of the maintenance costs per locomotive-mile or per ton-mile for the electrifications in this country varies through astonishing ranges.

The difference in fixed charges between any of the major systems of electrification when reduced to cents per locomotive-mile would be small in comparison to the variation in maintenance costs that can be found between any of the major systems. In short, it is not the first cost but the upkeep that counts, and the sooner such maintenance cost differences are determined and capitalized the sooner opinions will give way to facts.

Kansas City Reorganization Gives a Fresh Start

RESTORATION of the property of the Kansas City Railways to its owners has been made and the receivership has been ended. The successor company is the Kansas City Public Service Company. It starts out under circumstances that seem to be propitious. To some the plan of reorganization appeared to be too drastic in that it wiped out equities which they felt were entitled to more consideration than they received. The scaling down of securities was drastic, but it has had the sanction of the courts.

In handling the property the receivers did well, as did also the operating organization which functioned subject to their direction. During the years of the receivership—and for one reason or another the receivership was a long one, but one not unduly protracted considering all the problems involved—much was done to restore the road to prestige. Much more remains to be done. The successor organization realizes this, and it has already started on a program of improvements based on a knowledge of the needs of the system and founded on the belief that the city is prepared to co-operate. That the municipality is so disposed is shown by the twelve-year extension of the company's franchise, making the term of that grant 30 years. This is a

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period none too long. Meanwhile, the advisability of revising the terms of the grant are being considered so as to bring them more nearly in line with modern thought on grants of this kind.

The new company has at its command all the money turned over to it by the receivers, but this sum will be entirely inadequate to meet the costs of the $6,000,000 reconstruction program which is required. Concessions in fare have already been authorized. But the new company is pledged without reservation. It can do only certain things under the grant as at present extended. It cannot, however, do under these terms all the things that are possible under a modern franchise with provisions designed to give flexibility in meeting the exigencies of modern operating conditions. Lifting of the receivership is a highly desirable accomplishment. It marks, however, the beginning of a new period rather than the ending of an old one. And the course which events take in the future is as much in the hands of the city as in those of the management. The obligation is a mutual one.

Service Equipment, Too, Affects the Public's Opinion

KEEPING an eye on the things which appeal to the man in the street subconsciously rather than consciously is not the least important phase of transportation merchandising. For example, there is the matter of keeping the wrecking cars and trucks in first-class physical condition and fully stocked with all necessary tools and equipment. It cannot be gainsaid that this has a distinctly favorable psychological effect on public and employees alike. Likewise is it essential to have the wrecking crew fully organized and drilled with the precision of a fire department so that no time or motion will be lost in getting to the scene of trouble.

When a street car becomes involved in a street accident, for whatever reason, or succumbs to mechanical ailments, there invariably are native wits on the sidewalks to "wise crack" at its expense. As long as it remains thus exposed to public view the car forms a distinctly adverse object lesson for public observance and it therefore behooves the railway to remove it or repair it at the earliest possible moment.

Appearance of service equipment may at first glance seem secondary to the condition of passenger rolling stock. However, a well-painted, fully stocked wrecking car or truck appearing at the scene of an accident or breakdown cannot fail to impress spectators with the progressive, efficient attitude of the railway. Sometimes when a decrepit, unpainted, broken-down appearing service car clatters along the street, people are inclined to speculate as to which is the savior and which the saved.

Dollars and Sense the Measures of Co-operation

FOR every day use a good hypothesis would be one which states that the maximum of co-operation between maintenance and operating departments will bring a maximum return in dollars and sense. The latter is perhaps a poor pun. However, it at least suggests a corollary for the above hypothesis, namely, that the dictates of common sense should preclude any unnecessary abuse of rolling stock and other railway equipment. It is the job of the maintenance forces to keep cars and buses "up to scratch" in so far as physical condition and efficiency are concerned. It is just as much the job of the transportation department to see that this equipment is not subjected to greater punishment than reasonable service conditions require.

As a "horrible example" there is one electric railway property when the transportation men pride themselves on the fact that no allowances are made in the operation of equipment throughout the most adverse water and snow conditions. Regardless of the depth of water over the tracks the operators are permitted to send their cars through at speeds which literally invite electrical trouble. To no avail has the master mechanic torn his hair and presented report after report to show the very real cost of this foolhardy attitude. There have been times when a large proportion of the company's rolling stock has been waiting its turn in the shops, as a result of failure by the operating department to exercise a little judgment on where and how fast cars might be operated during the temporary existence of water obstacles.

Service maintained in the face of adverse weather conditions is, of course, one of the first principles of satisfactory transportation. It is a laudable ambition on the part of the transportation department to defy the elements in keeping its cars moving. But its responsibility goes further than merely running the cars. It is equally important that the greatest possible diligence be exercised in protecting the equipment by limiting speeds at bad spots, cutting off power when running through water and otherwise helping to prevent electrical trouble. To do otherwise is flirting with inevitable disaster and is not in keeping with the modern spirit of team work between departments. A little headwork at the proper time will save a lot of back work later, and, incidentally, many dollars.

Greater Interest Can Be Enlisted in Engineering Association Work

A GOOD start was made during the past year to bring about greater co-operation between the American Electric Railway Association and the various state and sectional associations throughout the country. This is undoubtedly a step in the right direction, which will tend to knit the industry closer together and to bring about greater co-ordination of effort in handling common problems.

Contact between the engineering association and the equipment, track and electrical men in sectional associations would likewise bring better understanding of common problems and greater unity of action. In the case of engineering association work, one of the greatest difficulties has been that of getting adequate representation of the industry on the various committees, and of bringing about general acceptance of recommendations and standards after they have been adopted.

In most sectional association meetings considerable time is devoted to the discussion of construction and maintenance subjects. Here there is an opportunity to discuss topics that are on the program of American Electric Railway Engineering Association committees. Membership on some of the more important engineering association committees might well be selected with a view toward having representation from the various sectional associations. Thus current subjects that are being studied could be taken up at sectional association meetings, and the assistance enlisted of those in charge of maintenance on many properties that are not directly represented on engineering committees.

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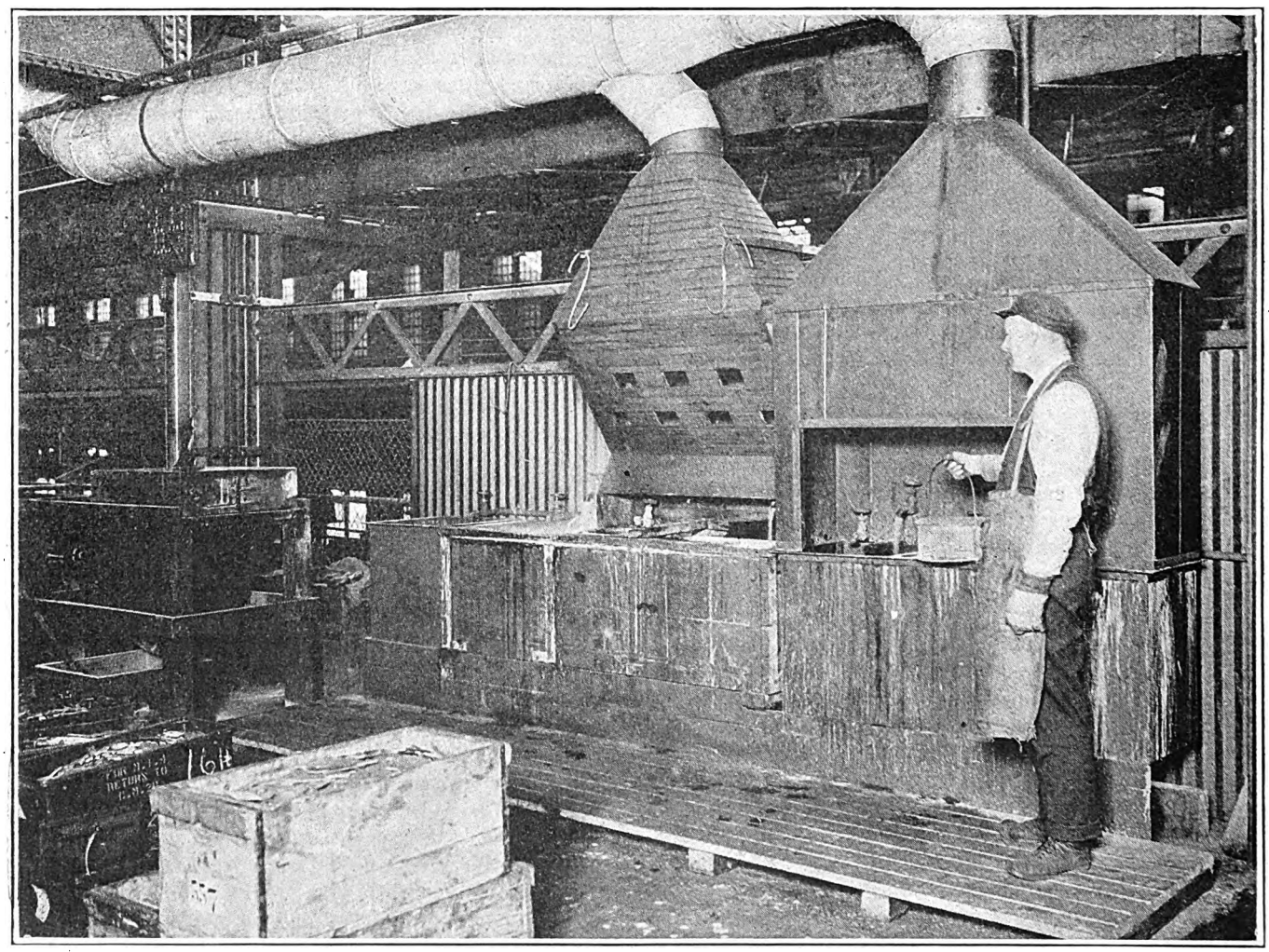
Important Considerations in Replacing Commutator Bars

Pure Hard-Drawn Copper Best for Commutator Bars and Section Should Be Same as Adjacent One—Each Individual Unit Should Be Placed on a Surface Plate to Determine Its Trueness and Be Straightened if Bent

By Jesse M. Zimmerman
Renewal Parts Engineering, Westinghouse Electric & Manufacturing Company



Cleaning Bath in Which Individual Copper Bars Are Dipped to Remove All Dirt and Grease

IN THE course of development of commutating machinery, various metals have been tried for commutator bars. These different metals range from silver, pure copper, both hard and soft, through various alloys and brasses, cast copper of various purities, aluminum, wrought iron and even cast iron. Experience has shown that all of them can be used in commutators if one is willing to pay for the high price of maintenance and unsatisfactory operating characteristics plus a higher first cost. The use of any other metal than pure copper or silver will mean a larger commutator. This in turn will mean an increased size of the machine.

Iron bars were at one time used in a commutator for an electric railway motor. The commutator soon developed high mica, and the commutating surface became blackened and blistered. Sparking gradually increased until commutation reached a state where it was impossible to operate the motor. High mica was not caused by the metal wearing faster than the mica. It was caused by the contact surfaces burning away, leaving high mica.

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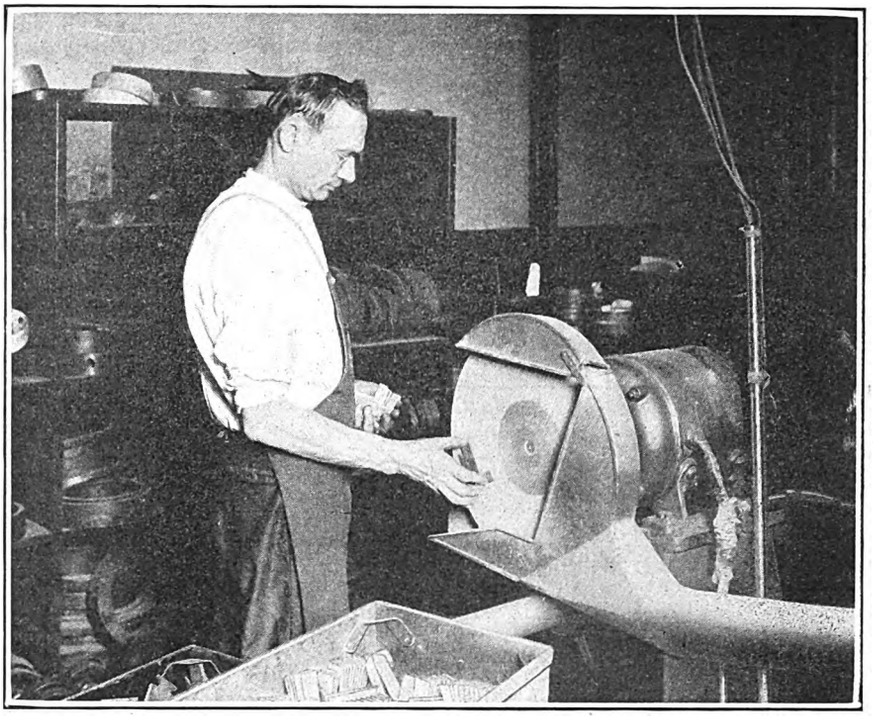
Aluminum was then tried. It worked better than iron, in that burning, blackening and high mica did not appear so quickly. However, like iron, it did not take a polish and soon had a dull appearance, gradually turned black and burned badly. This, no doubt, was due to the high contact resistance of the aluminum oxide which formed on the surface, due to sparking.

Bronze, brass, cast copper and copper alloy were tried for commutator work. While they gave better results than aluminum or iron, the commutator would develop high mica more quickly than ones made of copper hard-drawn from pure ingot metal. This burning action is a function of the contact resistance, current density, non-burning and non-blistering qualities of the metal used in the commutator. Anything which tends to increase the heat-conducting properties of a commutator will tend to decrease the burning action. This has been clearly demonstrated in an elaborate test of carbon brushes on a collector ring, where the question of commutation could not disturb the conclusion. Such tests were made on cast iron, wrought iron, bronze, various alloys, including cast copper alloy, and pure copper. With high current densities, the burning and blistering action appears to depend on the ability of the metal to conduct the heat from the contact surface. The fusion of the metal on good heat-conducting materials will be so small that the polishing action of the brush will keep the surface in a smooth, glossy condition.

The electric conductivities of the metals and their mixtures in alloys bear a fairly close relation to their heat conductivities. Through extensive tests, it has been found that very little impurity in copper will reduce the conductivity to possibly one-third. Most of the alloys of copper have a very low heat conductivity compared with pure copper. Wrought iron or aluminum have a lower heat conductivity than copper alloy. According to this argument, silver should give the best commutation. It does, but is too expensive for this purpose.



Removing the Burrs from Both Sides of the Individual Copper Bars by Grinding

The use of copper alloy, which costs almost as much as hard-drawn copper, does not warrant the increased cost of maintenance and interruption of service. Furthermore, if a motor working at its maximum rating with a commutator made of pure copper has this removed and has substituted a commutator having copper alloy whose conductivity ranges from 50 to 60 per cent, it certainly will be overloaded.

From the foregoing it is evident that bars to be used in renewing a commutator should be of the same material and workmanship as the original copper bars.

The bars should be made from pure hard-drawn copper whose conductivity is not less than 98 per cent, 100 per cent being based on copper having a resistance of 9.59 ohms per mil-foot at 0 deg. C.

The bars should be made of hard-drawn copper having a Brinell hardness number of not less than 75 to 80. They should be able to withstand a fiber strain of 25,000 lb. per square inch in order to overcome the stresses due to centrifugal force and stresses caused by alternate heating and cooling of the commutator while in service.

The Brinell hardness number for cast copper bars which are later "drop forged" or "bumped" is from 50 to 55. Soft copper has a Brinell hardness number of 38 to 40. From this it can be seen that the hard-drawing process will produce better commutator copper.

The die through which the copper is drawn is called a section. The opening in the die conforms with the cross-section of the bar, as shown in an illustration. During the drawing process, samples are taken for analysis which include quality, hardness and gaging of the section. Gaging to see that the size of the bar remains uniform is a frequent operation.

The copper bar must not vary from the specified section to either of the drawn edges by more than plus or minus 0.001 in. The algebraic difference at the two

Copper Bars Being Straightened Before Building into an Assembled Set of Commutator Segments

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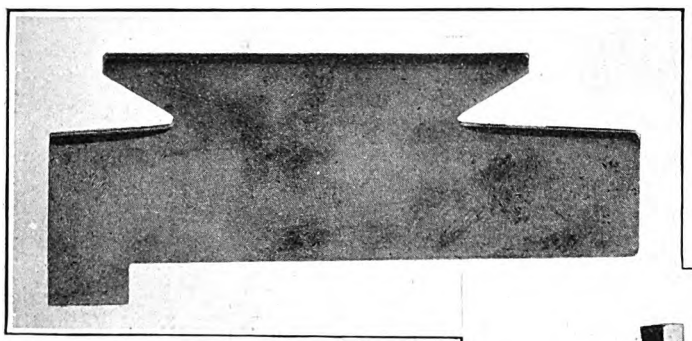
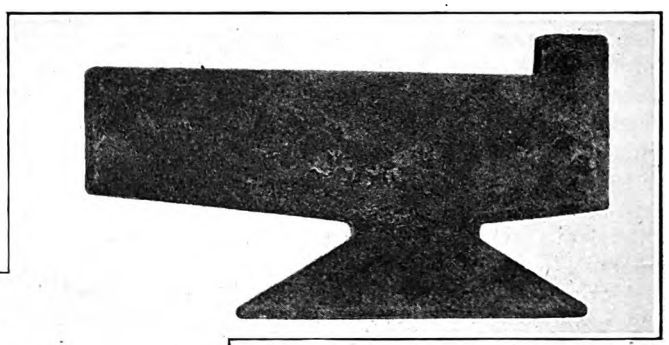
drawn edges must not exceed 1 mil. If this variation is not adhered to the distance from any bar to the corresponding bar under the next pole may vary more than plus or minus $\frac{1}{32}$ in.

The concavity of each surface of a bar must not vary more than 1 mil from the computed thickness, i.e., the gaged thickness at any point must not be more than 0.002 in. less than the computed thickness and the convexity of the surface must not vary more than 0.0005 in.

All bars should have a drawn radius at the bottom chord. When a $\frac{1}{32}$-in. mica extension is allowed in the bore, the combination of the two gives a large creepage between bars. On some motors the space between the bore of the assembled segments and the commutator spider is so small that it is necessary to machine the bore of the assembled segments. In such cases the drawn radius is of no value.

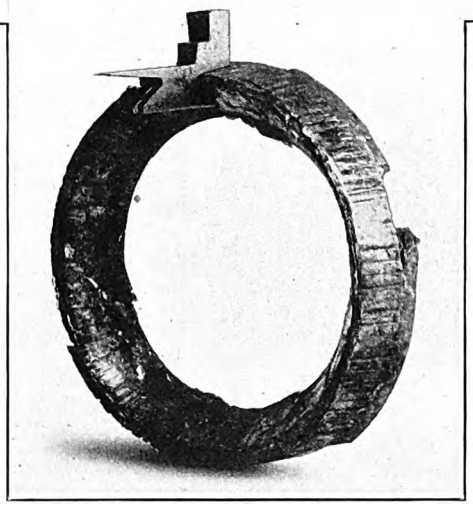


Hard Drawn Copper Bar as It Comes from the Die



Edges and the Sand Holes Remaining Cast Copper Bar, Showing the Rough

All commutator bars should be chemically cleaned to remove all grease and dirt. They should be free from roughness, cracks and laminations. The surface of each bar should be ground to remove the burrs caused by punching and sawing, as well as all foreign particles adhering to the copper. Each individual commutator bar should be placed on a surface plate and straightened by light hammer blows if bent or untrue.



Hard-Drawn Copper Bar After Years of Service

In the old days some of the motors had the commutator bars punched to size. It was thought the bars could be punched and then assembled. This did not work so well, due to the variation in the copper. If the copper ran heavy, the commutator gage diameter would be too large, causing an arch-bound commutator. Sometimes the gage diameter would be so large that the spider V's should not fit the copper V's at all. If the copper bars were thin, the commutator gage diameter would run small. When the commutator was assembled, open places between the bars could be found. After extensive tests, it was found necessary to machine the V's to an accurate gage diameter after the assembled segments were built up and held together by a clamping ring.

Bars for use in repairing commutators are supplied in two forms. They are, bars punched to an unfinished size and rectangular bars. Where a large number of bars are needed, a punching die is used to punch the bars to an unfinished size; that is, the V's are punched leaving $\frac{1}{16}$ in. for finishing. All repair bars for these commutators are supplied in this manner.

The sale of a great many motors is so small that it is cheaper to machine the V's from the rectangular bars after they are assembled than to make a punching die. These bars are sawed into lengths corresponding to the unfinished over-all dimension. These are called rectangular bars. For repair purposes rectangular bars should have the V's rough-sawed, leaving $\frac{1}{8}$-in. material for finishing.

Method Recommended for Replacing Spare Bars

After removing the damaged bar, an undamaged adjacent bar can be used for a pattern and a new mica strip can be cut to the same size as the unfinished bar. The mica strip can be fastened to the copper with a thin coat of heavy pure orange shellac. The unfinished bar should then be clamped in a vise with a pattern bar and trimmed to approximately the outline of the pattern. If the V's have been rough-sawed or punched, the amount of filing necessary may be reduced by taking an extra cut with a hack saw. The unfinished bar and the pattern should then be clamped in a vise with a mica strip between them and the V's of the new bar should be filed to the same size as the pattern bar. The radius in the V's can be finished with a small rat-tail file. The bars are then ready to be placed in the commutator.

When reassembling the commutator, all the bars and the V-rings must be in their proper places, with the commutator nut fairly tight. The commutator should be heated to 125 deg. C. in an oven, and while still hot a pressure of from 20 to 30 tons should be applied to the detachable metal V-ring as the commutator nut is turned home.

A good method of testing for loose bars is to tap on the face of the bars at the front and rear. If a bar is loose it will vibrate. Leads should be soldered in the commutator slots, the face of commutator turned and the mica undercut. Tests should then be made for grounds and short circuits.

The value of having all commutator bars made accurately to size cannot be overemphasized. Investigation of causes for commutator troubles has shown many that result particularly from use of mica V-rings which are scant in thickness or oversized. These have been used to compensate for the inequalities of the bars themselves. Many of the loose bar troubles will be overcome if care is used in selecting bars needed for repairs.

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Remedying Radio Interference in San Diego

Low Pass Filters Are Being Used by the Railway to Eliminate Noises in Local Receiving Sets Caused by Motor Commutation—Exhaustive Series of Tests Was Conducted to Determine All Causes of the Disturbances

By G. W. SHAVER
Superintendent of Equipment San Diego Electric Railway

EIGHT months or more ago official complaints were made to the San Diego Electric Railway that it was producing severe radio interference. A committee composed of representatives of the Department of Commerce, the U. S. Navy Department, the Chamber of Commerce, the power company, the telephone company, the radio club and the railway made an investigation with portable radio receiving sets in an effort to prove whether the electric railway operation was actually causing this interference.

The interference under investigation was generally referred to as the "rock crusher." It is something like heavy static. The interference covers the entire broadcast frequency band, having a maximum at approximately 1,000 kilocycles (300 m.). The noise appears suddenly and lasts for intervals varying from a few seconds to several minutes, at the end of which time it might stop suddenly or die off slowly. It was much less severe after nightfall.

Investigation showed that the interference covered a very wide area. An increase in its intensity was noted as the portable set was moved under any wires, but was much more severe in the vicinity of the trolley wire. All efforts to connect the noise with the movement of individual cars was unsuccessful. It was decided that perhaps the interference noted at a given point was the result of disturbances set up by several cars which might be some distance away. To determine this, tests were made at night when there was only one car on the line.

At that time it was noted that the characteristic noise started and stopped in synchronism with the movement of the car with power on the motors. It was noted that the air compressor motor caused a continuous roar, although of but mild intensity, as long as it was in operation.

COMMUTATION THE MAIN CAUSE

Our investigation leads us to believe that the two principal causes of this interference are the commutation of the motors and sparking at the trolley wheel. These sparks set up highly damped oscillations which are conveyed to the trolley wire, which acts as an antenna and distributing system. Power and telephone wires pick up this interference by induction and reradiate it throughout the city. The reason there is such a reduction of this interference after nightfall is probably due to the increased absorbing effect of the comparatively large lighting load of all of the cars on the line, which forms a non-inductive path between trolley and ground.

Having determined the cause of the interference, the next step in the problem was to find and apply a remedy. Two solutions presented themselves; one, to improve commutation and reduce sparking at the trolley wheel and the other to prevent the disturbances set up by these causes from reaching the trolley wire. Since the commutation was considered very satisfactory from an operating point of view, it was decided that the latter solution would be attempted.

A low pass filter was designed and installed on the roof of a car for test. It consisted of a 300-micro-henry inductor connected in series with the trolley lead and an 8-microfarad electrolytic condenser connected between the car side of the inductor and ground. The theory of its action is to provide a low-impedance path for the direct current between trolley and car and at the same time offer a high impedance to the high-frequency currents between car and trolley and shunt them off to ground through the condenser.

The tests, made on a section of the trolley line which could be isolated from the rest of the system, showed that the filters eliminated about 80 per cent of the interference. It was observed that when a car without a filter entered this section of the line it caused severe disturbance all the time it was operating, although the car was at times more than 1½ miles from the observing point.

In order to facilitate further investigation a car was jacked up in the carhouse so that one pair of motors could be operated. A single-wire antenna about 40 ft. long parallel to the trolley and about 3 ft. from it was connected to a six-tube Atwater-Kent radio receiving set. Operating one motor at a time, it was observed that No. 1 motor caused severe interference when rotating in one direction and practically none in the other. On the other hand, No. 2 motor caused practically no interference when rotated in either direction. On examining the wiring diagram it was noted that the main series field of motor No. 2 was permanently connected between the armature and trolley. The main series field of motor No. 1 was permanently connected between armature and ground, but it was found that the commutating field was connected between armature and trolley when the motor rotated in the direction which caused no interference. As an experiment, the main series field of motor No. 1 was connected between armature and trolley. Under these conditions motor No. 1, and in fact both motors simultaneously, could be rotated in either direction with practically no interference. It is concluded that either the main series field or commutating field will act as a filter which prevents the commutator disturbances from reaching the trolley. It is impossible so to connect motors 1 and 3 with their main series fields between armature and trolley without adding another unit switch because of the system of tapped field control employed.

In preparing for the tests in the carhouse a new filter had been designed and constructed and installed on the car. This new filter was of a type similar to that described except that it had three stages; i.e., three 100-micro-henry inductors in series with the trolley lead and three 2-microfarad condensers connected respectively between the car end of the inductors and ground. The filter was very efficient, eliminating practically all noise from the main motors and from the compressor motor.

In order to make the test more conclusive this filter was installed on another car which was tested under operating conditions when it was the only car on the line. The filter was so installed that its various units could be cut in or out separately, permitting a number of comparative tests in rapid succession. The tests indicated that the more stages employed the more perfect the elimination of the interference produced by the

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motors. It was also found that a large radio-frequency choke (all three inductors in series) without any condensers was quite effective, but not as good as when the condensers were used.

It so happened that the car used on this test had one trolley wheel which produced much greater sparking than did the other. One caused but little interference, but the other, which sparked badly, caused quite a considerable amount. A filter such as that described had practically no effect on the disturbances from this cause. It is believed, however, that if the interference from the motors is eliminated the sparking wheel will cause little or no trouble.

There was one effect noted which has not as yet been clearly explained and that is that there seems to be a certain amount of interference produced when the power is shut off a moving car and the brakes are applied hard, causing rapid retardation. There is little or no interference while coasting. If the trolley pole is pulled down there is no interference, even though the car is rapidly slowed down.

The same type of car was used in all the tests. It is equipped with four Westinghouse 514-A-3 motors with tapped field control. We have a number of two-motor cars which are also producing a considerable amount of noise. An examination of the car wiring diagram shows that the main fields of these motors are permanently connected between armature and ground. Even though it were possible to reconnect all the motors so that the main series fields were connected between armature and trolley, it is believed that better results could be obtained at lower cost by a good filter.

With the proper use of filters it has been found possible to eliminate the major portion of the interference caused by electric street railways. Our trial test was made just a short while ago, consequently we have not as yet installed these filters on our cars. The results of all our tests are now in the hands of G. W. Cattell, radio engineer of the U. S. Navy Department, who has co-operated and assisted us to the fullest possible extent in the investigation and solution of this problem. He is now designing the final form of filter, which will be built and installed on a number of our cars which operate on one line. Careful observations will be made of the results obtained to determine what action will be taken in regard to equipping the rest of the cars.

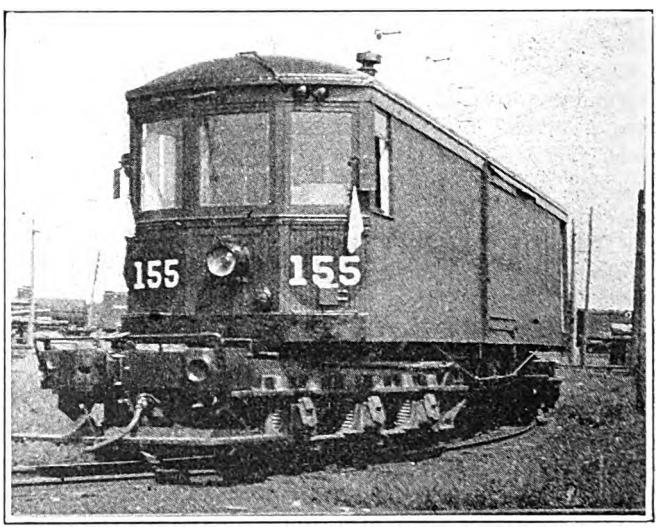
"Traveling Billboard"—Illinois Traction Advertising Medium

THE Illinois Traction System was well represented at the Greater St. Louis Exposition during the recent three weeks exhibit at Forest Park. Its booth was located on a prominent corner, and a background of an illuminated cyclorama showed the Illinois Traction System territory as well as a map indicating the advantage to automobilists of using the McKinley Bridge across the Mississippi River at St. Louis. The booth was in charge of representatives of the traffic department of the Illinois Traction System and of the St. Louis Electric Bridge Company. An odd method of advertising, this attraction was adopted by the Illinois Traction System, with the co-operation of the St. Louis Chamber of Commerce, in sending a special advertising car over the company's lines in Illinois. This car was covered with two 40-ft. signs and traveled more than 600 miles in Illinois. Upon arrival in a city or town the car was heralded by a special type of siren whistle, and the newspapers were informed about the car and its purpose.

Tractive Effort Increased with Three-Motor Truck

By E. B. Gunn

DUE to several heavy grades on the lines of the Western Ohio Railway, running between Piqua and Findlay, Ohio, this railway required heavier equipment than the present four-motor freight cars that are being operated. A new departure in truck building resulted when the Cincinnati Car Company built a truck with three axles so that three motors could be mounted on each truck, or six motors per car. In May of this year the railway started a test with this type of truck by mounting six Westinghouse 56 motors under one of its



Freight Car of the Western Ohio Railway Equipped with Six Motors and Twelve Driving Wheels

cars. These particular motors were available from some of the company's heavy interurban passenger cars.

The use of this six-motor equipment necessitated the design of a new controller with groupings to take care of the six motors. The General Electric Company brought out improvements to its K-64 controller to take care of this condition. A line breaker was added to take care of the increased current and to provide for breaking the circuit outside of the platform controller. A commutating switch was also added to change the grouping from low to high speed.

These equipments were placed in service under one of the company's regular freight bodies and have been working very satisfactorily. Through their use the car can pull two extra trailers over the severe grades. The energy consumption is very low, considering the length of trains that are being hauled, and this type of equipment has been found particularly easy on substations. The truck has been able to operate around short radius curves in an entirely satisfactory manner, and the added tractive effort has proved of great advantage. Couplers are mounted directly on the truck and therefore the center of the coupler is practically in the center of the track at all times. Brakes have been installed on all twelve wheels of the car, which makes for very effective braking.

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Storage, Handling and Protection of Lubricants

Central Oil House Desirable Where Large Volume of Lubricants Is Handled—Proper Construction Makes Danger of Fire Almost Impossible—Location Near Railroad Siding or Street Reduces Handling

By Allen F. Brewer
Mechanical Engineer and Editor "Lubrication," the Texas Company, New York, N. Y.

MAINTENANCE of street cars and motor buses is far more of a problem than maintenance of steam turbines, engines, pumps, etc., in the power plant. With the latter, failure of bearings will, of course, be more costly from a replacement point of view, but attendant labor can be better supervised and more carefully trained to the importance of lubrication. The motorman or chauffeur, on the other hand, is left to himself on the road. If he profits by the teachings of the "chief," fine; if he is careless or negligent, the garage or carhouse mechanic will probably work overtime on bearing replacement, etc., which may send the cost of maintenance soaring, if enough of this occurs.

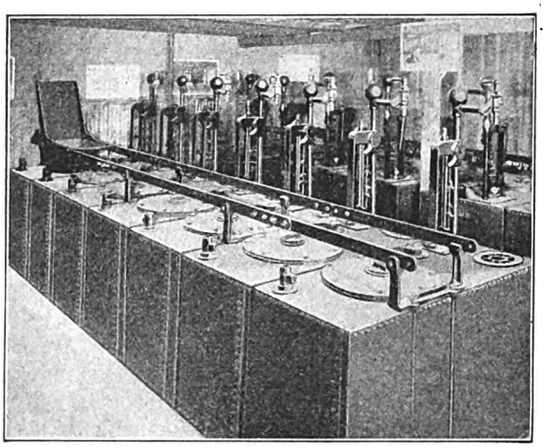
Effective lubrication starts with the methods and means of storage in the carhouse or garage. To direct our efforts toward the selection of the most suitable products, and then allow them to stand in open containers, exposed to perhaps the weather, and almost surely the dust, dirt and moisture conditions of the average shop, will be decidedly poor policy. For lubricants can only be dependable in proportion to their purity. As received from the refinery they are pure, if bought under a dependable trademark. It is, however, up to the consumer to keep them as nearly as possible in this condition, until used, and in certain conditions, during use. Proper storage equipment, well-defined oil-house rules, education of employees, and the use of certain oil purification equipment will be excellent insurance against the carelessness of operators or mechanics, and the possibility of the development of excessive maintenance costs.

Factors Involved in Handling Lubricants

In general, the storage and handling of lubricants will involve a number of factors which must be given consideration, such as: (1) The construction of the oil house or oil room; (2) the storage tanks and their accessory equipment, such as heating coils, etc.; (3) the equipment installed for the handling of the products and shipping containers; (4) the provisions for measuring oils in order to enable a suitable record to be kept; (5) the manner in which the oils are distributed; (6) the extent to which semi-solid lubricants are to be used; (7) the manner in which the oil house is to be managed, and the kind of records kept.

The primary requisite for any electric railway using a considerable volume of lubricants is a central oil storage house, or at least a special room in some part of the garage or carhouse from which lubricating oils and greases can be issued as needed, and in suitable though not excessive quantities. In turn, all new supplies of such oils should be delivered there for storage until required. Whether or not the expense of constructing an independent oil house is justified will depend largely upon the amount of rolling stock involved.

Of course, there will be considerable expense attached to such an installation. For this reason, therefore, many plants which are adjacent to oil supply depots frequently set aside a corner of the garage or carhouse for the storage of lubricants, and keep these latter in



A Battery of Lubricating Oil Storage Tanks with Barrel Truck Along Top and Measuring Pumps in the Rear

the shipping containers until they are empty, when they are forthwith returned to the oil dealer.

The natural objection to storage in this manner is that there will be considerable possibility of contamination of the lubricants. Such localities are often very carelessly hosed or cleaned out, with the result that dirt will be swept into the drip pans and measures. There will also be considerable chance for leakage and wasting of oils in such a room, unless an unusually careful employee has sole and complete charge and keeps it locked and inaccessible to others.

An oil house or oil room should, whenever possible, be of fireproof construction throughout, with brick, tile or concrete walls and floor and a tile, metal or slate roof or ceiling built on steel beams or rafters. The floor should be fitted with drains. The danger of fire in a modern oil storage house will usually be practically negligible; yet constructional features of fireproof nature are the best sort of insurance, and first cost, unless prohibitive, should not be dickered over.

In addition, cleanliness will be more easily maintained in such a building or room than in one where woodwork is used, which would soon become splashed and oil-soaked.

Doors and windows are another factor requiring consideration in oil-house construction. Best practice rec-

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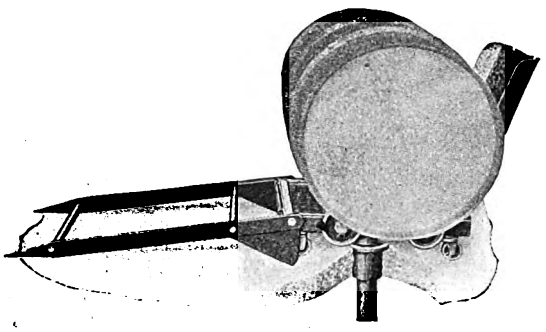
ommends as few of these as possible, and those that are necessary should be of steel frame or roller type, fitted with wireglass and automatic closing devices. Suitable fire-extinguishing equipment should also be installed.

Location of the Oil House

Considerable thought should be given to the location of the oil house or the part of the store-house or garage, etc., which is to be set aside for conversion into an oil room. An appreciable amount of time will always be



This Type of Skid and Barrel Drainer Is of Great Assistance for Emptying Contents of Barrels

lost in the laborious handling of heavy oil containers. There is also considerable possibility that damage will result both to lubricants and containers if the latter are rolled or tumbled about unnecessarily. So our first thought should be to locate the oil room or house as close as possible to the railroad siding, dock or street. Thus the containers will not be subject to any more handling than absolutely necessary in their transference from cars, boat or auto truck to the point of storage.

Where handling of filled containers from one level to another is involved, hoisting is necessary. Hoisting is expensive; in addition, it entails a certain amount of severe handling of the containers which may easily lead to contamination of oils or greases through sprung seams, etc.

Wood barrels especially will suffer, and warped and cracked heads, or the jarring loose of particles of the glue lining, will often occur. Any damage to the container which may break the seal and lead to contamination of the contents through entry of water or foreign substances is a serious matter.

To overcome these objections "one level" handling is advisable. In other words, the platform of the oil house or storage room should, as nearly as possible, be on a level with the car floors or dock, or, where containers are to be delivered by auto truck, on a level with the floor of the average truck.

As a result of such construction, containers can be rolled, trundled on hand trucks, or handled by a portable conveyor, directly from the delivering medium to the filling hatch of the storage tanks, where this is located at the floor level, or to the hoisting device about the tanks if they extend above the floor.

In any system the type, number and size of storage tanks that may be necessary will depend upon the volume and nature of the lubricants that are to be stored. In general, where a new oil house is to be constructed it will usually be practicable to build it with a basement, and provide for location of bulk storage tanks therein; the main floor in such a house would thus serve as the receiving and delivering room, the tops of the tanks projecting above the floor or not, according to the type of house.

The number of tanks required will depend upon the number of different grades of lubricants used. In every case the rate of consumption involved should be considered. Where, for example, only small quantities of certain products are to be stored for any length of time, in the interest of economy of space and expense, it will be best to keep them in the shipping containers over the period of storage, rather than plan to transfer them to more permanent tanks.

There are two general methods by which fluid lubricants can be delivered, and which must be considered when planning for storage tanks. They are: (1) Bulk delivery by tank car, truck or boat, and (2) package delivery in steel drums, barrels or cans.

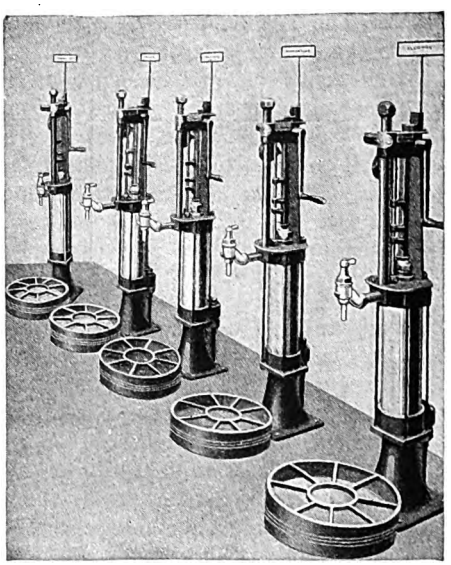
Where bulk delivery is involved, the location of the tanks with respect to the delivery level is naturally important. Usually in such plants the oil is transferred from the tank car or boat through a hose connection. To facilitate matters and reduce expense, gravity flow should be taken advantage of by locating the tank filling hatch below the level of the outlet valve of the tank car.

Care must be taken in the location and operation of valves, when pumping is necessary, inasmuch as where a number of tanks are involved there will be possibility of drawing some cheaper grade of oil into the suction line to contaminate a more highly refined product. Interconnecting valves should be tightly closed before pumping is begun.

Package delivery, as the shipment of lubricants in drums, barrels, or cans is usually termed, will also be facilitated if gravity is utilized to the fullest extent.

Temperature Control Desirable

Certain lubricants can be handled most effectively where absolute control of oil-house and tank temperatures is possible. Therefore, thermal conditions should



Ample Drains from Lubricating Oil Pumps Insure Cleanliness and Prevent Waste

be studied in planning storage-tank location in either an oil house or an oil room.

Wherever heavy, viscous products, such as greases or gear lubricants, are to be stored the oil house or oil room should be equipped with heating coils, especially where climatic temperatures may vary over a wide range. For this reason many storage tanks for lubricants are built similar to fuel oil tanks, with heating

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coils within. In such installations the coils should always be composed of bent pipe, and no pipe junctions or fittings should be present within the tanks owing to the danger of water, or boiler compounds contaminating the lubricants in event of steam leaks at pipe joints, etc.

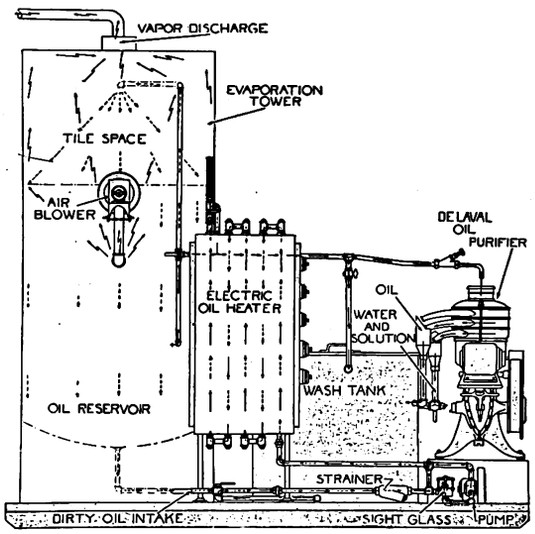
The better practice, however, is to install steam heating coils in the storage room itself or surrounding the tanks. Thus temperatures can be accurately regulated, overheating will not be so apt to cause damage to certain products, and heating can be economically carried out by the use of exhaust steam in many cases.

Horizontal location of all larger tanks will always be advisable. Thus the maximum distribution of load on the foundations will be obtained. The possibility of settling will thereby be decreased, and excessively heavy footings and foundations will not be as necessary to carry a load which is relatively widely distributed. This is assuming that the ground on which they are to be built is solid and not prone to settle.

To insure complete rigidity, the tanks should always be securely anchored to their foundations—never just rested upon the latter. This will be especially essential in localities where floods, earth movements or explosions, etc., are possibilities, the occurrence of which might disturb the location of tanks and cause broken pipe connections, damage to floors, and loss of oil through probable leakage.

In practically every storage room certain accessory equipment will be necessary for the handling of lubricant containers and the lubricants themselves. This will include pumps, meters or other measuring devices, portable elevators for hoisting or lowering drums, etc.

Measuring pumps will save considerable time and labor, will enable the oil-house or oil-room attendants to fill orders promptly, and will insure that the oils are kept free from contamination and in their original state

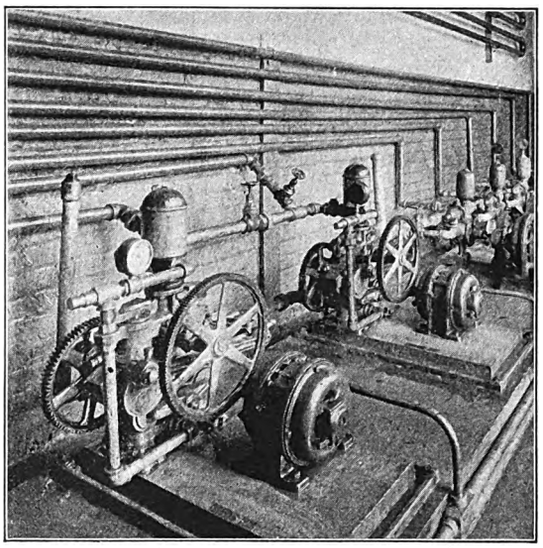


By Careful Heating, Washing, Evaporation and Centrifugal Action Oil Can Be Reconditioned for Reuse

of purity, until drawn into the distributing containers for use on equipment.

The value of orderly oil-house operation, and properly kept records of daily, weekly and monthly oil consumption cannot be underestimated. The effect on the morale of the personnel and the economies in consumption of lubricants that can be attained will be surprising where employees must follow a definite procedure in the obtaining of their necessary oil supplies and where an accurate record is kept of their consumption.

The hoisting of barrels or drums above storage tanks, or to emptying racks for transference of their contents, will render it advisable to install a portable elevator for this purpose, to eliminate handling and probability of damage as much as possible. Modern practice is to



Battery of Power Pumps for Handling Oils in Bulk

extend a suitable track along the tops of all tanks that are to be filled from barrels or drums, at a sufficient height above them to facilitate location of the bungs directly over the filling hatches, and reduce the possibility of waste. Containers can then be hoisted to this track level, rolled into position above the respective tanks to be filled, and emptied of their contents rapidly, completely and with comparatively little labor.

The manner of distribution of lubricants from the oil house or oil room to various parts of the carhouse or garage is important in that it involves the element of lost time on the part of the employees who are to deliver the oils and greases. So this should essentially be studied as a labor-saving problem; although, on the other hand, prevention of contamination must never be overlooked.

Where auxiliary storage in individual departments is to be maintained the type of containers used is important. Preferably they should be of the cabinet or portable filling station type of storage tank, fitted, where advisable, with a suitable hinged cover to afford the utmost protection of the contents. Usually such tanks are equipped with measuring pumps, and so built that any drip from the pump discharge drains right back into the tank.

The extent to which greases and gear compounds are used will be another factor that must be considered in planning the oil-house layout. In electric railway service straight mineral, non-fluid gear compounds will predominate. For the motor bus, on the other hand, greases of varying melting points according to the service required will be in the majority.

In purchasing greases, it should be a rule never to attempt to store any greater amount than actually needed, and to observe every caution to avoid overheating. It must be remembered that oftentimes the oil and soap constituents of certain greases will tend to separate more or less permanently if subjected to

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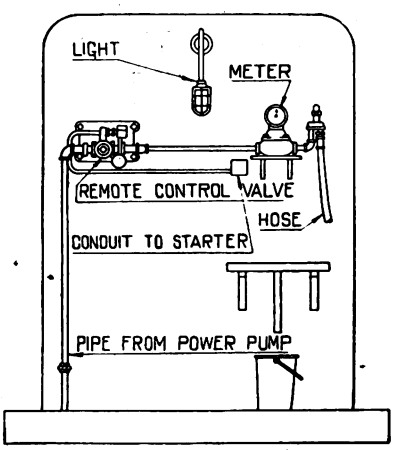
abnormal heat. Of course, this will cause a decided decrease in the subsequent lubricating value of the grease.

Such of these products as can be rendered fluid through reasonable heating can be handled like oils, their storage tanks being built with similar filling hatches, rolling tracks and elevator equipment. Thus, upon receipt of new deliveries in large amounts, steam heat where available can be turned on in the oil room and barrels promptly hoisted for draining of their contents with a minimum of loss into the respective tanks set aside for their storage.

Here again it is well to emphasize the importance of accurate regulation of steam flow and oil-room temperatures, especially at such a time. When such lubricants are to be transferred from shipping containers to storage tanks, whatever the atmospheric temperature, it will be necessary usually to raise their temperature (through



Convenient Arrangement for Lubricating Oil Draw-Off in Storage Room of Electric Railway

indirect heating) often quite considerably in order to enable them to flow readily from the containers.

Certain gear lubricants which may be too heavy to flow with any degree of rapidity under such heating as is available must be stored in the shipping containers. In general they can best be handled by a suitable pump or a clean paddle or spoon, removing only a sufficient amount each time to fill the gear cases or lubricators.

To protect the contents of containers after the heads have been removed, and to prevent drying out of such products as greases a removable cover should always be kept tightly in place over the top. Sheet metal is considered the best material for such a cover and preferable to wood owing to its ability to insure a better seal, its resistance to warping and the ease with which it can be cleaned.

Lubrication Specialist Will Produce Many Economies

Greatest economy and efficiency in the storage, handling and usage of street railway and motor bus lubricants will be attained by placing the entire matter of lubrication under the supervision of a master mechanic or a capable lubrication engineer. Many larger roads have created the latter position in their mechanical engineering departments (though perhaps not in name), realizing that an able, technical petroleum specialist can save his salary many times over by reducing wastes of lubricants, loss of time, and cost of upkeep of rolling stock.

Such a job should include direct charge of the oil house or oil room. When necessary, a capable corps of assistants should be available in order that prompt deliveries and accurate records can be maintained. All lubricants should be issued on requisition only, signed by the foreman in charge of each phase of operation and maintenance, and should never be issued in excessive quantities, since this has been found conducive to waste in application, through careless handling.

Monthly oil records are of decided value and should be prepared by the lubricating staff and submitted regularly to the executives. By showing inventory of stocks on hand, and records of the amount of each lubricant used throughout the system, abnormal usage can be checked up without delay and steps taken, if necessary, to bring about correction.

Care and Handling of Containers

Unnecessary dropping of wood barrels will tend to promote leakage at the seams by springing staves or heads. Hence, it is best practice always to use some form of portable elevator onto which the container can be rolled and then raised to the level of either the storage rack or top of the storage tank.

Storage racks for barrels and drums, if used instead of main storage tanks, should be built of steel and in such a manner that individual containers may be removed independently as desired. Barrels of heavier compounds especially should always be stored in the oil house. Otherwise excessive cold may render emptying a difficult and tedious matter.

Both barrels and drums should be stored on the side or bilge with the bung down. It is usually inadvisable to use wood barrels for lengthy storage of high-grade lubricating oils, on account of the possibility of contamination or loss from leakage or evaporation.

In handling wood barrels it must be remembered that these latter have an appreciable salvage value, and in good condition they are returnable to the oil marketers or are in demand by cooperage firms. Care should therefore be taken to prevent damage while in the hands of the buyer.

Holes should never be bored in the heads for outlet of oil or inlet of air. A bunghole should never be reamed out since this will require the use of an odd-sized bung for the next shipment, thereby decreasing the value of the empty barrel. Likewise, a bung should never be driven entirely into a barrel as this may cause the bung stave to split, and entail the possibility of particles of glue or wood being jarred into the oil to contaminate it and cause serious trouble in subsequent lubrication.

Careful handling of wood barrels will not only result in the highest value from a resale point of view, but will insure that the lubricating oils will be in fit condition to meet requirements. Bungs should, therefore, be removed by a chisel or bung pick, after tapping the bung stave lightly with a wooden mallet or bung starter.

Empty barrels should be given the same consideration as filled barrels, to prevent damage and insure the receipt of the highest price when they are sold. Wood barrels, when empty, will always be subject to warping of the staves and heads if stored on end or if exposed to the weather. This will be prevalent especially if water is allowed to collect on the heads, or where the barrels are exposed alternately to the effects of the sun and excessive dampness. A wood barrel head will split and warp readily in such a case, causing the glue to loosen and necessitating complete reconditioning of the barrel before it can again be used.

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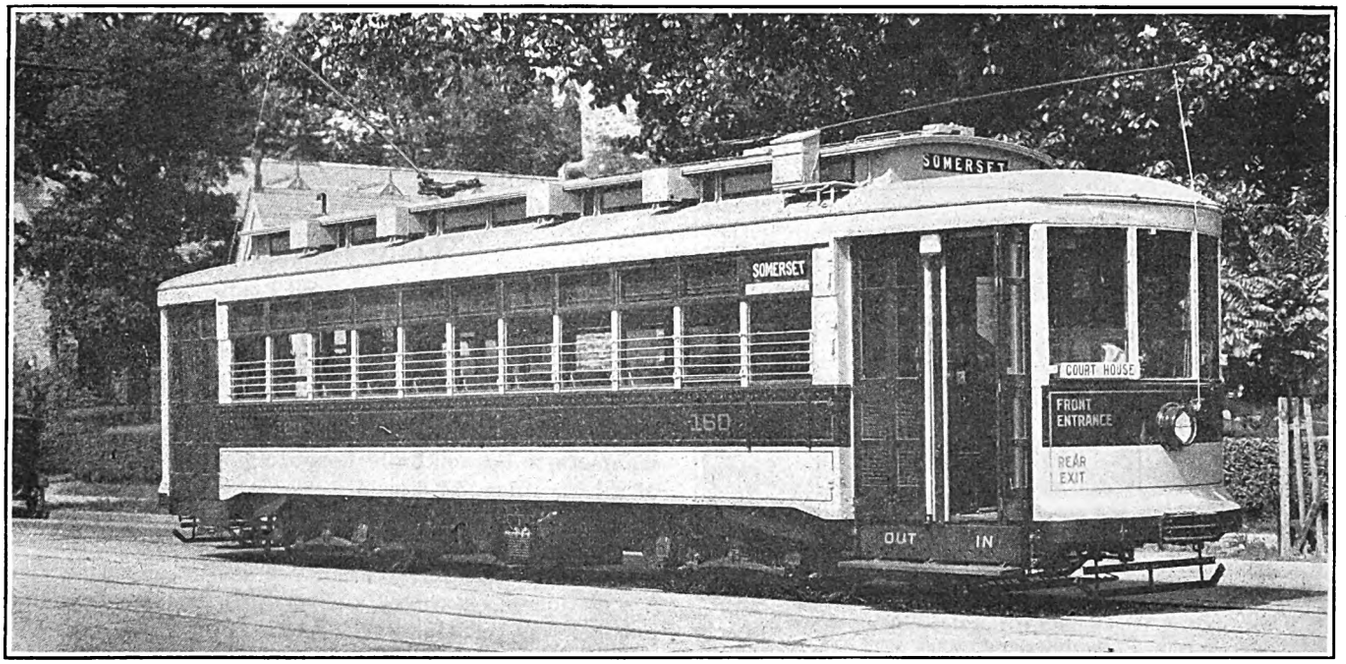
Washington Cars Embody New Color Scheme

Wisconsin Avenue Line Now Has Fifteen de Luxe Cars for One-Man Operation—No Expense Has Been Spared in Making These Units the Last Word in Modern Car Construction



Some Time Ago the Railway Officials Promised to Bring About an Improvement in Service. These New Cars Are Visible Evidence that Their Efforts Have Borne Fruit

FULFILLING a pledge made by W. F. Ham, president of the Washington Railway & Electric Company, to render a "real street railway service" to the citizens in the area served by the Wisconsin Avenue line, fifteen new de luxe street cars have just been placed in service over that route. This has been done in spite of the fact that the Wisconsin Avenue line has never proved to be a profitable one. It is anticipated, however, that the high type of service which the new cars will render will attract increased patronage.

Many attractive features mark the new equipment, not the least of which is the new cream and blue color scheme which has been adopted in decorating the Wisconsin Avenue cars. It is doubtful if any citizen of Washington could be unaware of the passage of one of these new cars down the street, as their cream painting surmounted with an encircling band of royal blue on the exterior makes a very striking sight. In this respect the cars are similar to the Air Line coaches the company is now operating on Rhode Island Avenue.

Built by the J. G. Brill Company of Philadelphia, at a cost of $15,366 each, the cars lack nothing in appearance or in comfort from the standpoint of the passengers. The interiors are finished in natural cherry, with white enamel and Quaker gray trim, and seem to radiate an air of cheery comfort. The broad, deep seats are of genuine leather equipped with cushion springs, providing comfortable riding space for two persons, while the aisle of the car is wide and easy of passage. The floor is covered with attractive rubber tiles in soft browns and reds, presenting a safe and comfortable footing for passengers and of an attractive appearance. The rubber tiling serves the further purpose of deadening truck and body noises and may be cleaned easily.

The cars seat 49 passengers and are equipped with semi-rigid handholds with brown enamel grip, to accommodate additional standing passengers. Ventilation of the cars has had very careful attention by the company engineers. Eight automatic exhaust suction type ventilators furnished by the Railway Utility Company have been installed to insure a full passage of clean air at all times. In winter the cars are heated with individual automatic heaters placed under each seat, and the mean temperature of the interior is regulated by thermostatic control.

Practically every type of safety device has been incorporated in these cars with a view to demonstrating that one-man operation is fully as safe and feasible as two-man operation. In fact, the Washington Railway & Electric Company was confronted with a storm of criticism some time ago directed at its one-man cars which were then in operation in the capital, and at that time the company offered to substitute fifteen of these latest type one-man cars in place of a similar

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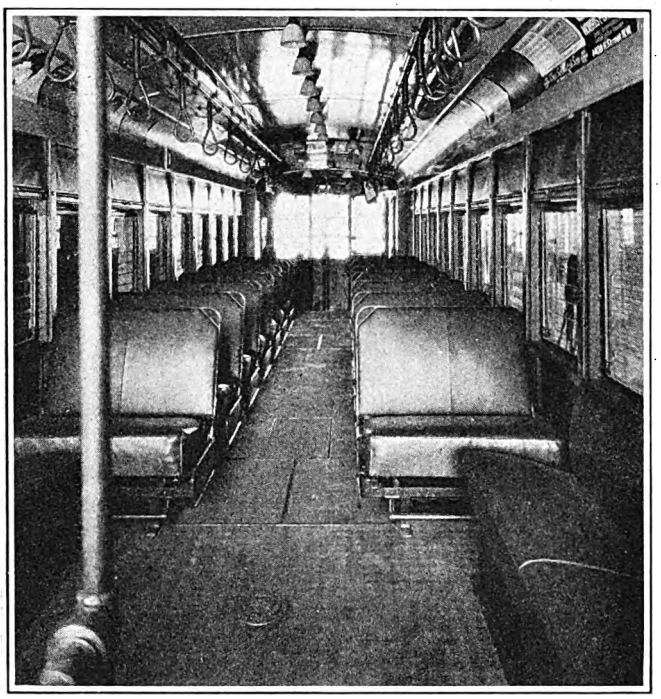
number then in operation. Thoroughly to convince the public of the efficacy of the new equipment, a souvenir leaflet was issued to all persons riding on the cars. This booklet, entitled "The Cream and Blue," thoroughly describes the construction and enumerates the advantages of the new cars and further goes on to emphasize the proper manner to board and leave the cars. It is the belief of the management that antipathy toward one-man cars is largely due to ignorance concerning their advantages and characteristics, and this ignorance the



No Lack of Attention to Detail Occurred in Designing the Interior Fittings

company has attempted to dispel by efficient publicity on the subject.

In addition to dead-man control, which is practically standard on modern one-man cars today, the new Wisconsin Avenue units are equipped with Westinghouse variable load brakes which automatically maintain an even braking effort regardless of the passenger load.

Wide, large doors permit of easy access at the front entrance of the car and provide an exit at the rear end through the operation of the automatic treadle which is used to operate the rear exit. Considerable emphasis has been placed upon the matter of front entrance and rear exit by the company, and it appears that the riding public is gradually becoming educated to this plan. The front doors are automatically controlled from the operator's valve handle.

The cars are provided with brilliant illumination, there being thirteen lamps placed in the interior and on the platforms, the latter providing a well-lighted space when entering and leaving the car, while an additional lamp is placed on the exterior of the cars at the doors to light up the step and additional roadway space when alighting at night. The latter feature is of considerable importance where vehicular traffic is heavy, since the light provides both a warning to passing motor cars and an aid to car riders.

The induction into service of the new cars is made coincident with the completion of the new trackwork on Wisconsin Avenue by the railway. This work covered the complete rehabilitation of the tracks on this avenue and entailed an expenditure totaling $285,000. The new equipment, costing approximately $231,000, added to the track rehabilitation costs represented a total outlay of $516,000.

The principal specifications on the fifteen new cars are shown in the accompanying table.

$12,654,135 in St. Louis Savings & Loan Deposits

REPORTS of the Savings and Loan Association affiliated with the United Railways, St. Louis, Mo., indicate continued activity during the year 1925, encouraging thrift and promoting home owning among the employees of the railway.

Real estate loans to the number of 285 were made to members to buy or build homes, this being at the rate of a loan a day, 5½ days a week.

Cash receipts of the association for the year were $2,476,646, or at the rate of $8,659 a day.

During the eleven years since its organization the association has received and handled deposits from its members aggregating $12,654,135.

It has financed the building or purchase of 1,017 homes by loans, aggregating $5,297,730; 659 of these loans, aggregating $1,664,048, or 31½ per cent of the total, have been paid off (notwithstanding employees are allowed 140 monthly installments or nearly twelve years to pay off, if they desire), leaving 1,258 loans, aggregating $3,633,682, still in process of payment.

The membership is now 5,662 (a net increase of 233 over a year ago); the assets, $3,660,575, with a contingent fund reserve of $156,354.

Dividends of 6 per cent compounded semi-annually amounting to $651,927 have been paid to members since organization, of which $165,413 was paid during the year 1925.

The authorized capital stock of the association is $10,000,000, represented by 50,000 shares at $200 each, of which there were outstanding on Dec. 31, 1925, 48,199 shares of a par value of $9,639,800.

PRINCIPAL SPECIFICATIONS OF WASHINGTON'S NEW CARS

Date order was placed	Feb. 17, 1926
Date of delivery	June 1 to 15, 1926
Seating capacity	49
Weights:	
Trucks	11,500 lb.
Total	40,200 lb.
Bolster centers	19 ft. 0 in.
Length over all	42 ft. 3 in.
Truck wheelbase	4 ft. 10 in.
Width over all	8 ft. 8 in.
Height, rail to trolley base	11 ft. 8½ in.
Body	Semi-steel
Interior trim	Natural cherry
Headlining	Agasote
Roof	Monitor
Air brakes	Westinghouse Traction Brake Co.
Axles	Hammered steel, annealed
Bumpers	Anti-climber, with pull socket
Car signal system	Faraday
Car trimmings	Statuary bronze
Center and side bearings	Brill
Conduits and junction boxes	Cable boxes
Control	K-31
Curtain fixtures	Curtain Supply No. 88
Curtain material	Pantastote, double faced
Destination signs	Keystone
Door mechanism	National Pneumatic
Fare boxes	Cleveland
Fenders	Providence
Hand brakes	Peacock staffless
Heater equipment	Railway Utility
Headlights	Crouse-Hinds WDF
Lightning arresters	General Electric
Motors	GE 265-A, outside hung
Paint	Hildreth
Registers	International
Sanders	Ohio Brass
Sash fixtures	Curtain Supply Co.
Seats	Brill 201-B
Seating material	Brown leather
Springs	Brill
Step treads	Brill
Trucks	Brill 76-E-1
Ventilators	Railway Utility
Wheels	Davis cast steel, 30 in.

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Stockholm-Göteborg Electrification Recently Completed

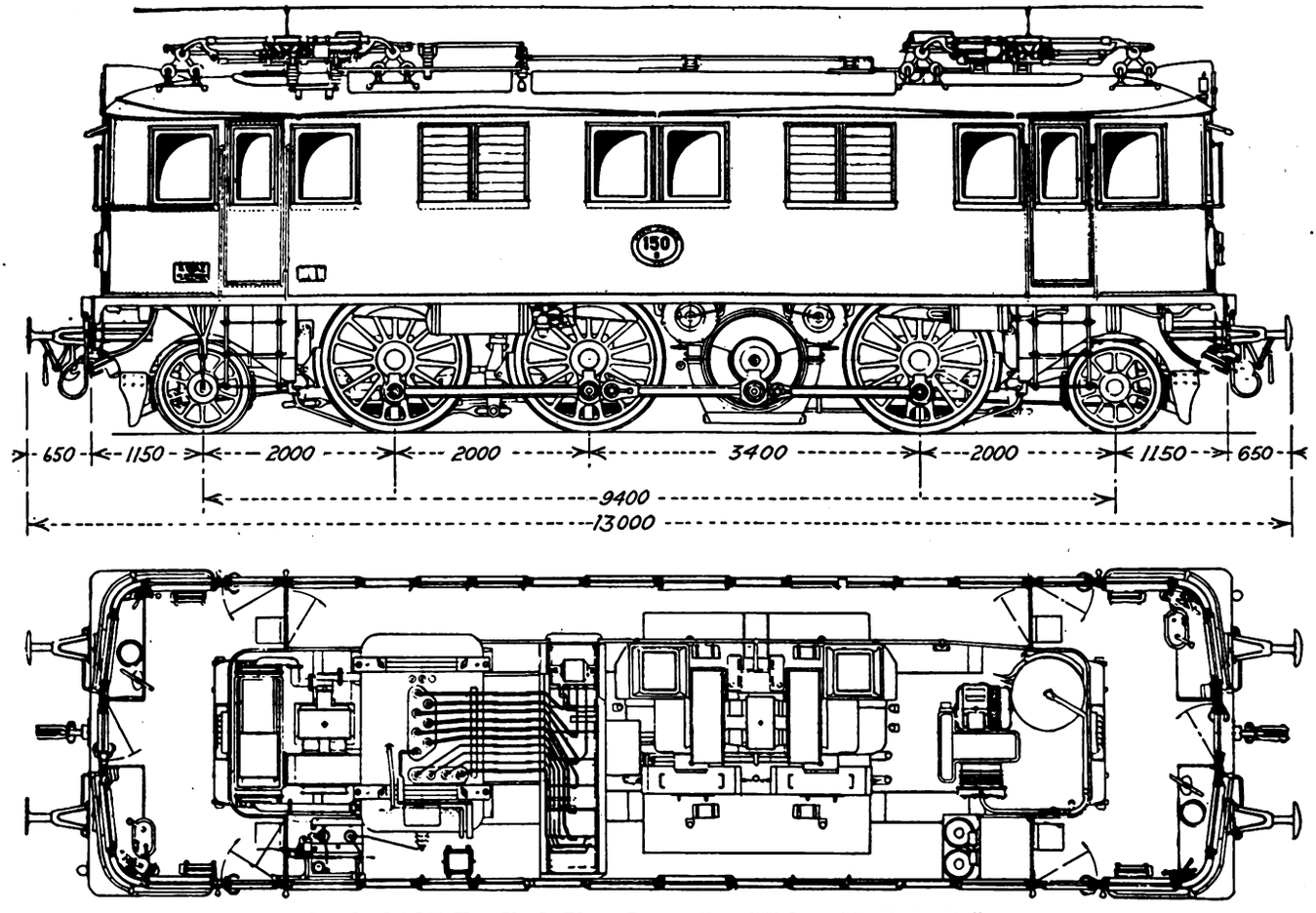
This Is the Most Important Railway in Sweden and Has Been Equipped with the 16⅔-Cycle, Single-Phase System—Power Is Taken from Existing 50-Cycle, Three-Phase Circuits and Transformed for Railway Use in Substations—Crankshaft Locomotives Are Used

By Dr. F. Neithammer
Prague, Czechoslovakia

ELECTRIFIED railway service between Stockholm and Göteborg, the two largest cities in Sweden, began operation the end of May, 1926, and I had an opportunity to study it thoroughly in June. This railway electrified a length of 458 km. (284 miles) with a ruling grade of only 1 per cent and a minimum curve radius of 500 meters (1,640 ft.).

Power is obtained from hydro-electric stations at Trollhättan, Lilla Edet, Alvkarleby and Motala and from a steam station at Västeras. These are existing three-phase, 50-cycle stations distributing power for general commercial use over high-tension lines and are under the direction of the Royal Water Power Board. Energy from them is delivered at 50,000, 70,000 and 130,000 volts to railway substations, of which there are five between Stockholm and Göteborg. Here the electrical energy is converted by motor-generators to 3,000-volt, 16⅔-cycle, single-phase current which is stepped up for the trolley contact line to 15,000 volts. Two of these substations are equipped with three of these frequency changer sets, consisting of a motor rated 3,200 kw. at 70 per cent power factor, a single-phase generator of 2,400 kw. at 80 per cent power factor to stand heavy overloads and a static oil transformer of 2,400 kw. at 80 per cent power factor. The three other substations contain only two sets of the same size.

These sets, built by the ASEA Västeras, have only



Standard 1,700-Hp., Single-Phase Locomotive, Göteborg-Stockholm Railway

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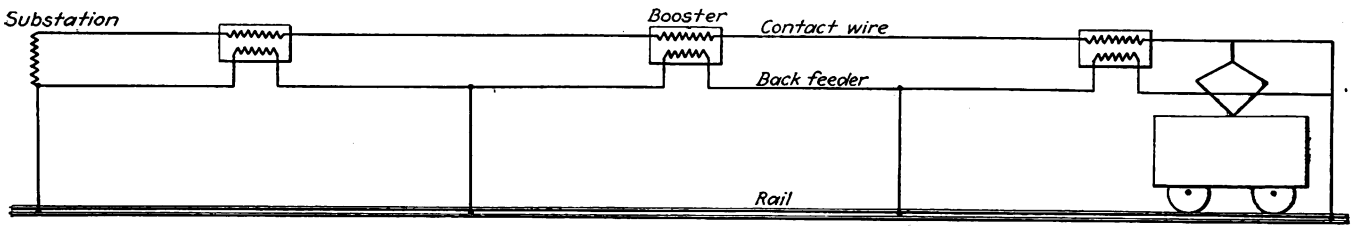
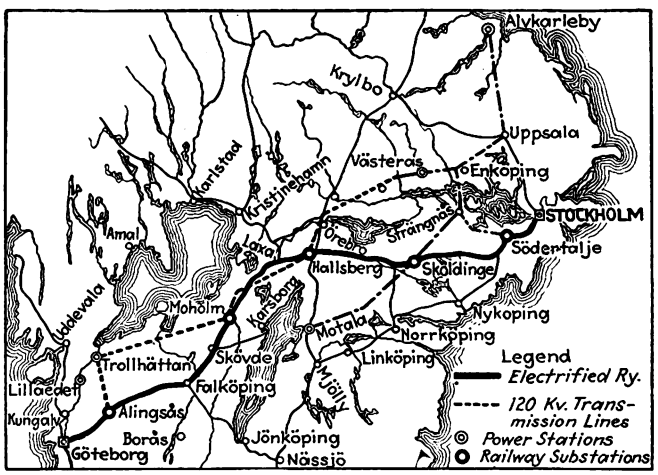


Wiring Diagram Showing Use of Boosters for Equalizing Drop in Return Circuit

two bearings and possess a combined efficiency at full load as high as 87 per cent. The 50-cycle, three-phase machine has exactly the same outside dimensions as the single-phase, 16⅔-cycle machine, as shown in the substation plan, which gives the unit an excellent appearance. Possibly the single-armature Bergmann frequency changer with a single rotating field for 50 and 16⅔ periods would be even more advantageous.



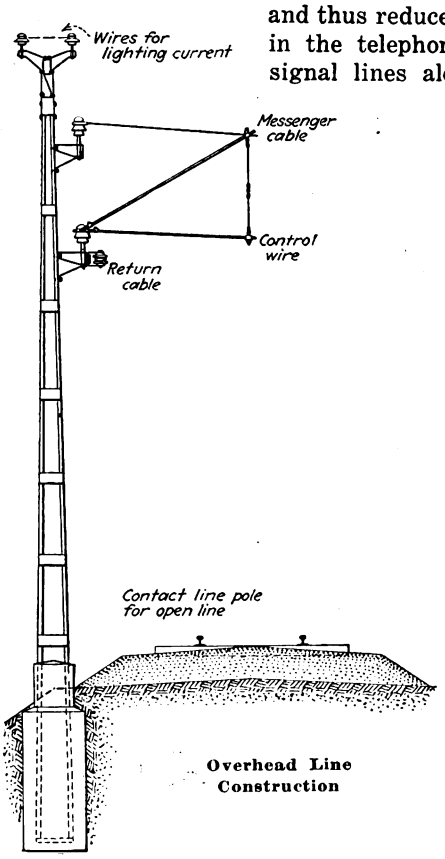
Map Showing Electrified Line, Generating Station and Substations

Catenary construction is used, with side brackets and hinged pull-offs for the contact wire, as shown in one of the illustrations. The catenary is fitted with counterweight adjustment. A lighting line is carried on the top of the pole, and further down is an insulated return wire which is connected to boosters or suction transformers and to the rails as shown in the wiring diagram. These connections to the rails are made alternately at distances of 1.4 or 2.8 km. to each rail and no rail bonds are used. These boosters equalize the voltage drop in the rails and thus reduce any disturbances in the telephone, telegraph and signal lines along the right-of-way. As a further precaution, 25 pairs of telephone and telegraph wires have been combined in a cable which has been laid underground.

Locomotive Equipment

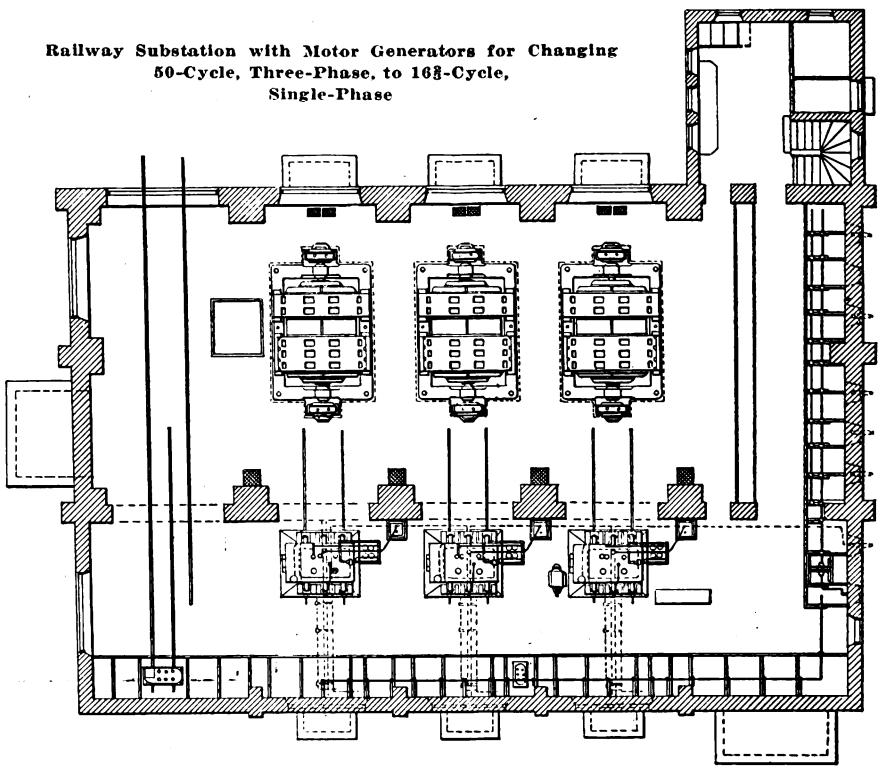
The locomotive equipment for the new electrified line consists of 50 ASEA units of the 1-C-1 type. Each has a total weight of 79.5 metric tons with a weight of 51 tons on drivers, and a capacity of 1,700 hp. The maximum speed is 90 km. (56 miles) per hour. The motor equipment consists of one pair of twin motors, geared to a jackshaft which drives the three axles by connecting rods as shown in the accompanying drawing. Tests with this simple method of drive show that a much greater train load is required to slip the wheels than with individual axle drive. The motors are of the straight series type with forced ventilation. The freight locomotives are identical in design with the passenger locomotives except that a different gear ratio is used.

The main transformer on the locomotive is of 1,490 kva. capacity. It is of the shell type with oil insulation and ventilated oil cooler, and reduces the voltage



Overhead Line Construction

Railway Substation with Motor Generators for Changing 50-Cycle, Three-Phase, to 16⅔-Cycle, Single-Phase



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from 15,000 for the driving motors. Taps are provided giving from 168 volts to 840 volts for the main motors and 215, plus or minus 10 per cent, for the auxiliary motors. Multiple-unit control for the motors is obtained with electromagnetic contactors operated from a storage battery. I was informed while in Sweden that these single-phase locomotives cost no more than would have been charged for a corresponding number of 3,000-volt d.c. locomotives of the same capacity.

Departures from Prior Swedish Practice

In taking electric energy for the operation of the line from existing stations the railway authorities have departed from the principle followed on the Riksgräns Railway in the north of Sweden, which has its own power station. While results from this railway have been good, a notable reduction in capital cost follows the use of existing stations, and there is no reason to expect anything but satisfactory results. The station load factor is much better when the power is taken from central stations, and the load variation from railway operation has no disturbing effect on the rest of the output. In fact, the use of the synchronous machines in the railway substations should have a very favorable influence on the power factor of the general distribution system and may bring it up to about 90 per cent. This alone produces an advantage that should have great appeal to central station companies.

A gain of this kind has been found to follow the use of motor-generators for commercial service in Stockholm and Göteborg, in which cities three-phase current is changed to direct current for general distribution.

The Swedish Railway electrification seems to represent the most economical plan to follow in such installations where the single-phase system of distribution has been selected. From observation it does not appear to be materially inferior to the best direct-current electrification. Of course, factors may develop through the maintenance angle that will take some years to determine and which may prove to be important considerations.

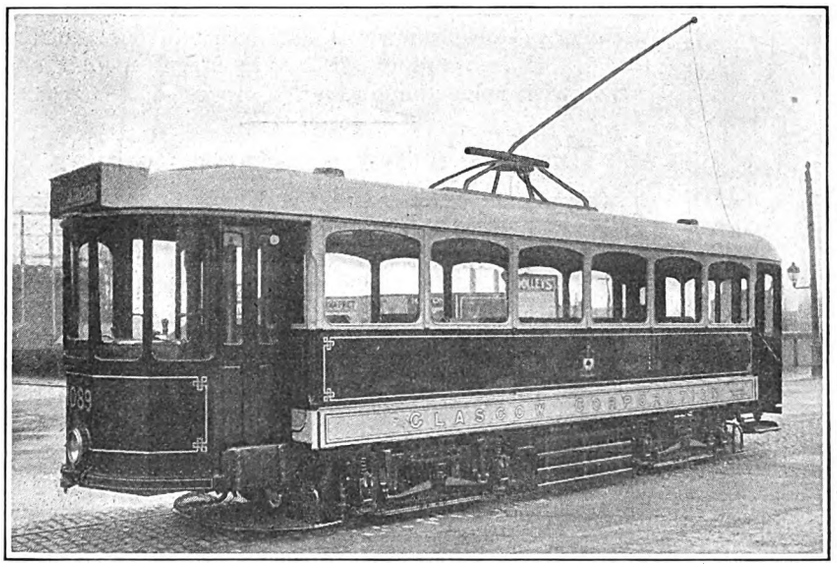
The Norwegian railways use the same electric system for the operation of the railways of that country as that in Sweden.

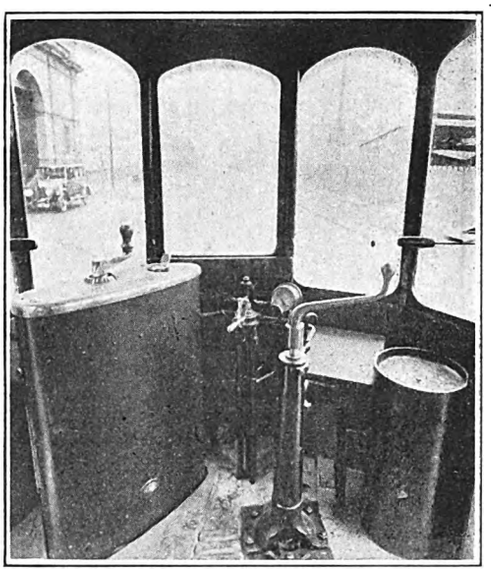
Experimental Car at Glasgow Follows American Design

Single-Deck, Double-Truck Car Is Equipped with Four Motors to Give Increased Speed and Combat Bus Competition

INCREASING pressure of bus competition, begun about two years ago, has led the Glasgow Corporation Tramways management to make several experimental departures from its usual practices. For years the four-wheeled, double-deck, top-covered car has been standard with practically no modifications. Recently, however, a single-deck, double-truck car has been built and three of the ordinary four-wheeled, double-deck cars have been equipped with different types of trucks and motors.

In the early days of electric traction in Glasgow a few single-deck cars, of a type now quite obsolete, were tried, but failed to meet with much public favor. Moreover, the double-decker had the advantage of being able to seat more people, and thus came into general use. The advent of the bus, however, has somewhat changed public taste in this matter, as many of the buses running into and out of Glasgow are single-deckers, and it has been decided to make a new trial of the merits of the single-deck tram car.





Many Features Characteristic of American Electric Railway Practice Are Embodied in the Design of This New Single-Deck Car of the Glasgow Corporation Tramways. At Right, Arrangement of Equipment on the Platform Follows the Usual American Practice

Features characteristic of American practices are found in the new car. General dimensions are as follows:

	Ft.	In.
Length over bumpers	32	6
Body length	22	6
Body width over all	7	2
Body width inside	6	10½
Body height inside	6	10½
Platform length	4	9
Bogie centers	13	0
Bogie wheelbase	5	4
Wheel diameter	2	2

The car is equipped with Brill 77-E trucks and four G.E. motors of 25 hp. each. It is anticipated that more rapid acceleration and greater speed will be obtained than in the case of the ordinary single-truck car.

Besides the usual hand brakes, the car is equipped

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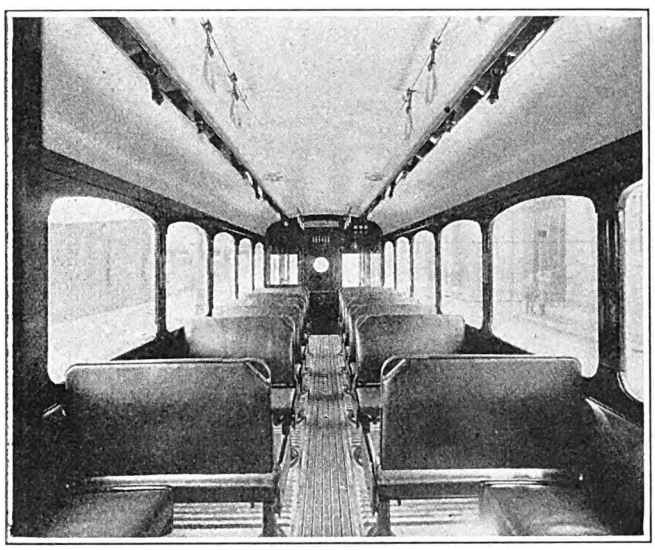
with air brakes and one electro-magnetic brake. Power braking is rather a novelty for tram cars in Glasgow. Air brake equipment was supplied by the Westinghouse Brake & Saxby Signal Company, Ltd. In connection with the electro-magnetic brake, one pair of Metropolitan-Vickers 25-E magnets is fitted to each truck. There are four sand ejectors, two being operated by compressed air and two by pedal motion.

Luxuriously Finished Interiors Are Provided

Seats are provided for 36 passengers, of whom 24 are accommodated on cross-seats and the remainder on longitudinal seats at the ends. This arrangement allows standing room for about twelve passengers. In contrast to the bare wooden seats hitherto used, the new car has spring cushion seats upholstered in leather. The



Cross-Seats with Spring Cushions Upholstered in Leather Are an Innovation in the Design of Tram Cars in Glasgow

introduction of transverse seating is also new, as the longitudinal seat has hitherto been the rule in the lower saloon of double-deck cars, though cross-seats are employed on the upper decks.

Platforms are provided with double exits, the passengers entering at the rear and leaving by the front, or *vice versa*, whichever system is found to be the more efficient. This feature should give a much higher average speed. It is one of the great drawbacks of the ordinary double-deck British car that the passengers have both to enter and leave at the rear, thus greatly increasing the duration of stops. All exits of the experimental car are equipped with doors and folding steps. It will thus be seen that the designed has uppermost in his mind making the new equipment generally adaptable.

Experiments with Older Equipment

In connection with the other experiments, three standard double-deck cars have been slightly altered and equipped with different types of trucks and motors. Car No. 15 has had its underframe lengthened in order to accommodate a pair of Brill maximum traction trucks, type 39E. The driving wheels are of 26-in. and the pony wheels of 21-in. diameter. The motors are Metropolitan-Vickers No. 101-BR, of the lightweight, ventilated type. The trucks are equipped with electro-magnetic track brakes and there is also a complete air brake installation. The car seats 61 passengers, 38 on the upper deck and 23 on the lower. Longitudinal seats in the lower saloon have been removed and cross-seats substituted. The standard bodies are not wide enough to accommodate two passengers abreast on each side and the central aisle, so single seats are fitted on one side. There is, however, only one seat less than with the former arrangement. All seats are upholstered with air cushions.

Car No. 16 has been reconstructed and is now mounted on E.M.R. pivotal trucks. B.T.H. 502 motors and electro-magnetic track brakes are included in the equipment. The heating arrangement is similar to that of Car 15. Car No. 17 is being mounted on Brill 70E1 swing link trucks, with a wheelbase of 8 ft. and a wheel diameter of 26 in. Metropolitan-Vickers 101-BR motors are being fitted, as also are air brakes. Upholstered cross-seats are used on both decks.

One general disadvantage of the single-deck car, in the opinion of the Glasgow management, is that it has not sufficient seating capacity. The number of seats is little more than half that of the ordinary double-decker. It seems probable, therefore, that the ultimate decision of the Tramway Committee will be to utilize the double-deck rolling stock with larger motors and either with longer single trucks or with double trucks.

Duralumin Tokens Prove Popular

FOR a number of years the Union Street Railway, New Bedford, Mass., has sold 21 metal tickets for $1, the cash fare being 5 cents. At first paper tickets were used, but later, when Rooke automatic registers were introduced, these were replaced by metal tickets about the size of a 5-cent piece. In 1920 the unit of fare was set at 5 cents for a ride from either end of the city to the traffic center. There has been no fare increase since that date and metal tickets are still sold at the same rate. These metal tickets were replaced in 1922 by a light-weight, duralumin token. Front-page newspaper advertisements were used to promote the sale of tokens and in the spring of 1924 the company established selling agencies for these tickets at neighborhood drug stores. Previous to this, it was necessary for the purchaser to go to the ticket office in the center of the city. At no time have these reduced rate tickets been sold by the conductors on the cars.

Results attained under these various conditions are shown in the following table:

TOKEN USE ON UNION STREET RAILWAY

Years	Number of Metal Tickets Sold	Ratio of Metal Tickets to Gross Receipts, Per Cent	Per Cent Increase in Sale of Metal Tickets Since 1920
1920	538,382	1.89	.....
1921	670,087	2.56	24.4
1922	1,187,299	4.37	120.5
1923	1,774,425	6.41	229.5
1924	1,783,587	7.16	231.2
1925	1,835,627	7.37	241.1

While the gross receipts have slightly decreased since 1923, due to local mill depressions, the use of metal tickets has steadily increased, although the amount of saving made by metal ticket users was only 5 per cent. Use of metal tickets as ready fares has speeded up fare collections and has supplied the company with advanced revenue prior to the time that the tickets are used as fares. The company believes, also, that one of the benefits of metal tickets is that a person in possession of these tickets, already paid for, will ride much more frequently than one who has to pay a cash fare.

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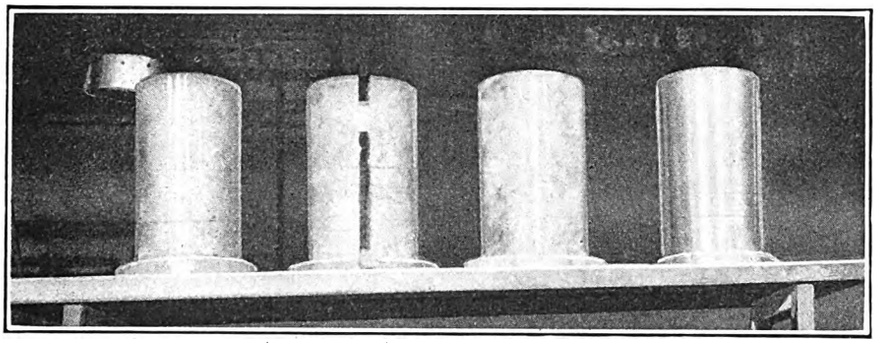
Maintenance Notes

Undersize Armature Bearings Reclaimed

BY THE adoption of a method for building up the worn external surface of armature bearings the New York Railways has been able to reclaim practically all worn bearings and, as a result, effected a very appreciable saving in armature bearing maintenance.



New York Railways Rebuilds Its Worn Armature Bearings

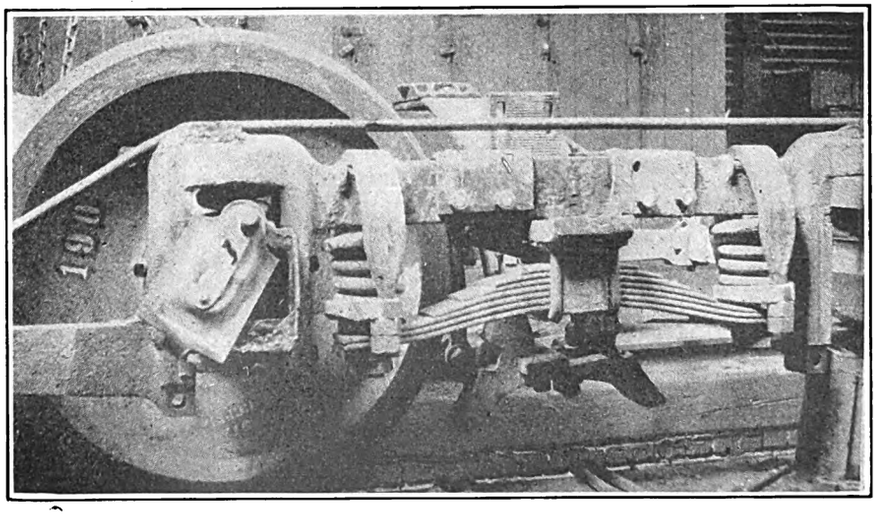
Armature bearing on the left is one with a worn external surface. Next is a similar worn bearing which has been split, spread and is ready for welding. Next is a bearing which has had the split welded. At the right is a welded bearing which has been turned and is ready for rebabbitting.

Bearings which show abnormal wear on the outer surface or are undersize are split longitudinally and spread such an amount as will permit of obtaining the proper outside diameter. The spreading is done cold by means of hard wood or steel wedges.

The opening left in the bearings after spreading is electrically welded with a bronze rod of about the same chemical composition as the bearings. They are turned to the standard outside diameter and the inside rebabbitted. The larger internal diameter is compensated by a thicker babbitt wall for the bearing surface. By use of this plan of salvage for worn bearings at least double life has been obtained.

Reinforcing Trucks for Heavy Duty

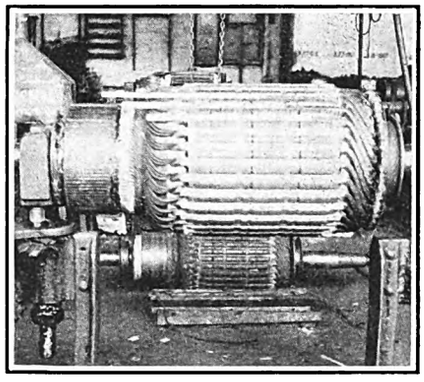
DESIRING to prepare a number of motor cars for operation with trailers the Portland Railroad, Portland, Me., found it necessary to reinforce the old 27 E-1 trucks with which the cars were equipped so that they would stand up under the heavier duty. As indicated in the accompanying illustration, both trusses and gussets were used to aid in supporting the heavy 201-G motors. Two of these motors were mounted on each truck, each motor being rated at 5 hp. The trusses and gussets used were sufficient to strengthen the trucks for the heavier load.



Gussets and Trusses Were Used in Reinforcing These Trucks

Wood Strip Prevents Injury to Armature Coils

WHERE the insulation of armature coils is unprotected and exposed to foreign material after rewinding it is very often punctured or damaged in transportation or handling. To decrease this possibility the New York Railways is installing a hard wood strip on top of each coil under the banding wire. This strip has not only practically eliminated mechanical injury to the coils during handling, shipment and installation in field frames but it has served as a protective shield to the coils in case the armature revolved on the pole faces or a banding wire becomes loosened. On account of the protective features of these strips the armature maintenance costs have been materially reduced.



Hard Wood Strips in Place and Partly in Place on Top of Coil in Armature Core Slots

Bus Stop Signs from Trolley Poles

A PRACTICAL way of making use of old trolley poles has been hit upon by the Springfield Street Railway, Springfield, Mass. Needing a number of bus stop signs it was decided to trim several old poles to a

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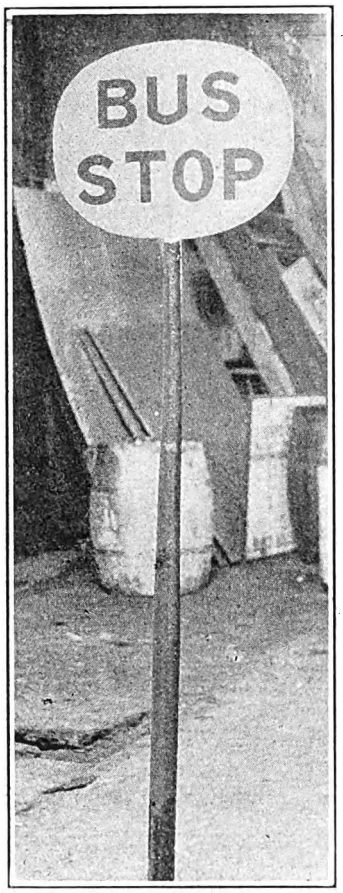
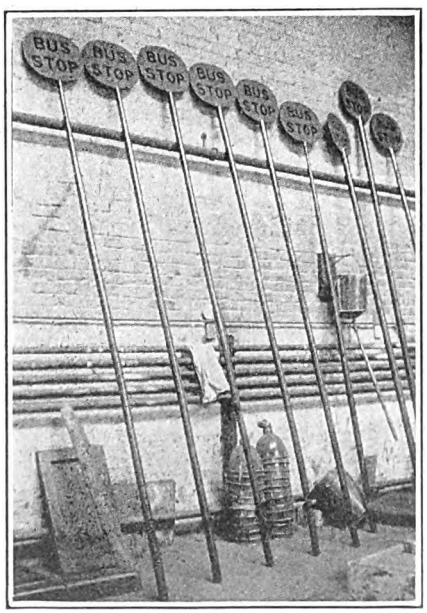


One of Springfield's New Bus Stop Signs

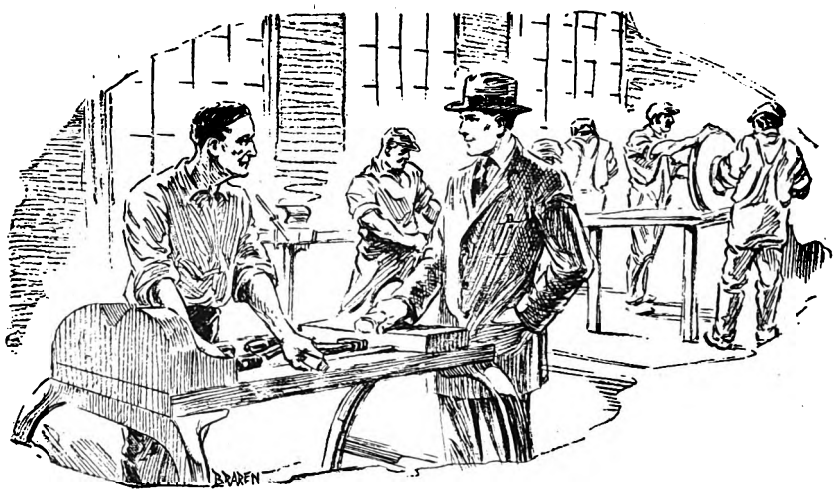
uniform length and then to weld oval sheets of metal to their upper extremities. Poles and signs were then given a coat of paint, after which the words "Bus Stop" were painted upon the metal background. The lettering is black upon a yellow background, thus making a striking appearance.



A Number of the Signs Which Were Made from Reclaimed Material

Dick Prescott Stops a Makeshift Job

And Embitters an Enemy



BY SOME of those peculiar combinations of chance which often bring about critical moments in men's lives, Dick Prescott, newly appointed assistant superintendent in the shops of the Consolidated Railway & Light Company, found himself frequently crossing the path of Pete Welcher, disaffected and envious shop inspector. Although Dick knew nothing of Pete's avowed determination to "show him up," there had on several occasions been something in the inspector's attitude and general demeanor that had raised a faint question in Dick's mind. He had, however, dismissed it without giving the subject much thought.

Pete was something of a mechanic. He loved to indulge a hobby of tinkering in the shop instead of attending to his work of checking up on repairs. Under the old shop management he had acquired some little reputation for inventiveness. This particularly pleased his vanity and gave him, he thought, a certain prestige in the eyes of the men. Though some of his products were crude substitutes for more efficient shop equipment sold by accredited manufacturers, they had been better than nothing and were used in various shop departments.

On one of his regular trips through the shop, Dick Prescott chanced to come on the inspector busily engaged in a corner of the machine shop.

"Hello, Pete," said Dick pleasantly, "what are you working on here?"

"Fixing up a commutator milling outfit," replied the inspector with an air of importance, pointing to an old lathe bed on which he had mounted some crude parts made in the blacksmith shop.

"Don't we have a commutator miller?" queried Dick, suddenly interested.

"Oh, yes, there's an old one in the armature room that I fixed up several years ago, but it ain't much good. This old lathe bed is just the thing we've needed right along."

"Well, if we need a new machine why don't we put in a requisition for one that's really designed for the job instead of wasting time and money trying to improvise one?" asked Dick.

"We're not wastin' money," exclaimed Steve sharply. "I can make one a whole lot cheaper than we can buy it and, besides, the only way we can get anything that we need around here is to make it."

"I can't quite see that," replied Dick. "In the first place you can't afford to be spending time away from your work doing this sort of thing. We're trying to get that pull-in record down, and the only way we're going to succeed is to have a check up on every job that goes through. It's far cheaper and better to buy a first-class machine than for you to putter around trying to make one. I'll see Bert Smith, the armature room foreman, and if we need a new miller, he can make out a requisition for one. The management understands that efficient tools are necessary to produce satisfactory work and keep down costs. You ought to be checking up on cars going through the shop instead of fooling with this."

Pete watched Dick as he walked toward the armature room. Then he slowly began to collect his tools, conscious that near-by workmen had overheard enough of the conversation to understand its import. With flushed face and averted eyes he finally left the machine shop, internally burning with rage and hatred.

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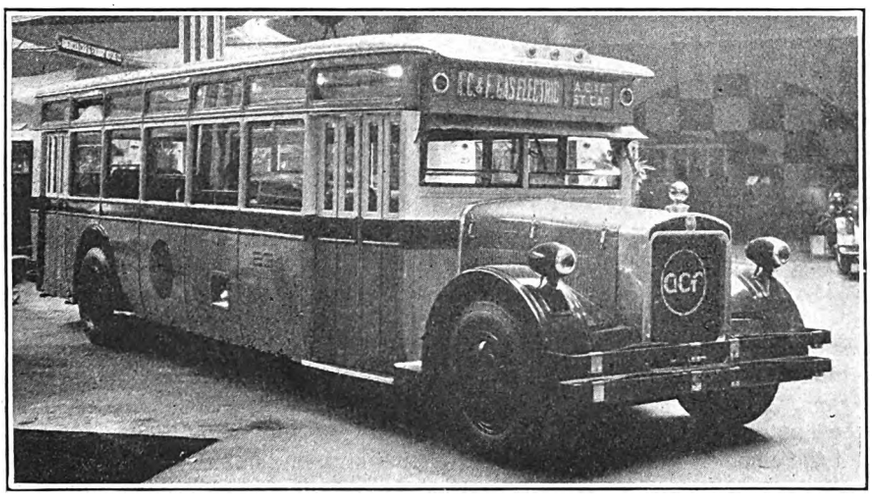
New Equipment Available

Hall-Scott Motor Used in "a.c.f." Six-Cylinder Bus

MUCH wider springs than have heretofore been customary practice have been incorporated into the design of the "a.c.f." coach, which was recently announced by the American Car & Foundry Motors Company of New York. In addition to being wider the springs are built with a fewer number of leaves and are so designed as to be flat under load for the maximum of easy riding. This effect is heightened by the unusual length of the spring, the front spring being 49 in. x 4 in., and the rear spring 64 in. x 5 in. This extreme length gives a very slow period of vibration and the periods of the front and the rear are as far apart as possible, so that the vibrations of one set of springs will not build up in the other and cause a galloping effect.



Easy Riding Qualities of This Six-Cylinder "a.c.f." Bus Are Enhanced by Long Springs

Several models of the "a.c.f." coach are now on the market. Standard body designs are as follows: 29-passenger standard car type, 26-passenger parlor car, 29-passenger urban parlor car, 22-passenger intercity or sedan type and 56-passenger double-deck.

The bus is an entirely new one, although it has been developed along lines suggested by experience which the American Car & Foundry Motors Company's engineers have had in the manufacture of other buses, and after a careful study of bus operating requirements throughout the country. The general chassis dimensions are as follows: Wheelbase 230 in., over-all length 357 in., tread, front, 70⅝ in., rear, 78 in., over-all width 96 in. The frame is of heat treated pressed steel, fish belly type, with a maximum depth of 11 in., tapering to 6 in. at the front and rear. It is stepped up over the front axle and arched over the rear axle, and has a 3-in. flange through the entire length.

The power plant is the standard six-cylinder Hall-Scott engine, with 4½-in. bore and 5-in. stroke. This engine is capable of developing more than 90 b.hp. at a governed speed of 1,750 r.p.m. The lubricating system of the engine is provided with a filter and a means of removing the condensed moisture and fuel dilution so that the crankcase oil does not need to be changed until it begins to break down.

Particular care was exercised in the design of the axles. The front axle is a special "a.c.f." Timken design, reinforced to withstand the strain imposed by the front wheel brakes. It is of the I-beam drop center type, with straight thrust roller bearings in the steering spindles and opposed Timken tapering roller bearings in the wheel hubs. The springs are carried on top of the I-beam.

The rear axle was built by Timken Roller Bearing Company on a design which was developed by the American Car & Foundry engineers. It is of the underslung worm type with the worm mounted between Timken tapered roller bearings, with a Hyatt roller bearing on the shaft. The springs are mounted beneath the rear axle.

Westinghouse steel shoe air brakes are standard equipment on all models. On the single-deck model these operate on the rear wheels only, with 16½-in. x 6-in. hardened steel drums. On the double-deck and gas-electric models Westinghouse air brakes are also provided on the front wheels, working in conjunction with the rear wheel brakes. The single-deck mechanically driven models are equipped with emergency brakes on the front wheels, these being of the Bendix three-shoe type operating in 16½-in. x 3-in. drums.

With the exception of the axle, the chassis is lubricated by the one-shot system with feed lines to all main lubricating points on the engine, clutch, drive line, spring ends and brake mechanism located on the frame. Lubricating points on the axles are equipped for the Zerk high pressure system.

Body framing consists of selected straight grain hard wood paneled with Plymetl. Upholstery is in genuine leather, the woodwork is mahogany, the trimmings nickel, and the exterior finish is Pyroxalin enamel. All models are lighted by means of a 12-volt electrical system, employing two three-cell batteries. Standard equipment includes ventilators and heaters, illuminated destination signs, bumpers, buzzer systems and emergency stop signals.

Low Pressure Tires Are Standard on White Six-Cylinder Bus

SAID to be the first bus to be designed completely from the ground up for the application of ballon tires and four-wheel metal-to-metal air brakes, the six-cylinder model 54 chassis has been placed on the market by the White Company. The chassis is intended for 18 to 29-passenger bodies and deliveries will start early in April, it is expected. From now on the company will manufacture a line of four and six-cylinder chassis to meet all types of service demands.

As in the case of the other White bus models, the new six-cylinder unit is being built only as a single-deck bus.

The engine delivers 100 hp. at 1,900 r.p.m. The length over the various bodies, including bumpers, is just under 28 ft., the maximum allowed in several states. The width can be kept

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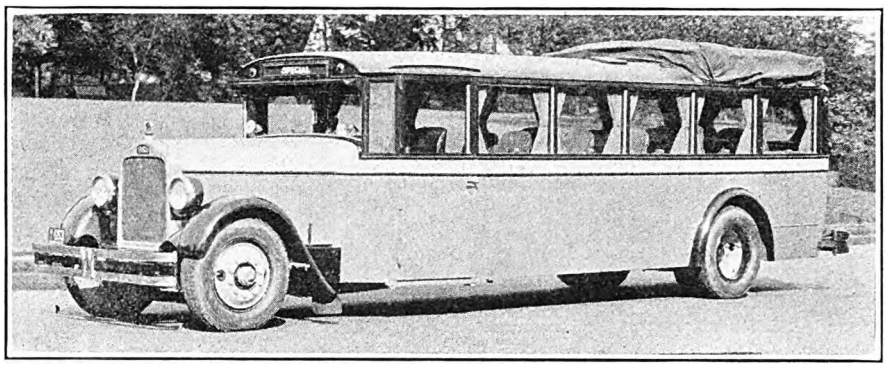


This White Six Cylinder Model Was First Exhibited at the Cleveland Convention

down within the 84-in. limit several of the southern states require, provided high pressure tires are used.

Efficiency and operating requirements have both been considered in working out the engine design. It is of 4⅜-in. bore and 5¾-in. stroke, giving a total displacement of 519 cu.in. Cylinders are cast in a single block to get rigidity and quietness of operation. Two spark plugs are used in each cylinder. Valve construction is of the overhead type, the valves being operated by push rods from the camshaft along the right-hand side. It is, therefore, possible to remove the head and grind the valves without retiming.

A Stewart-Warner vacuum tank of large capacity is used to supply fuel and no difficulty is experienced in obtaining fuel even when operating over the steepest grades.

The exhaust valves of the engine are of the internally cooled type, the hollow stem being filled with a potassium nitrate which carries the heat from the head of the stem and guide. An ejector type exhaust manifold is used and has resulted in a decided increase in engine power. In this the passages from each cylinder head are arranged so that exhaust rushing from one cylinder helps that from the next. Cooling is by a centrifugal pump, with temperature control by thermostat placed in the water outlet between the engine and radiator. This consists of a cast aluminum shell with removable core.

Standardization on balloon tires for the model 54 has led to a slightly narrower frame, of high carbon steel, heat treated. The 46-gal. fuel tank is mounted in a cradle which is bolted to the outriggers so that the tank can be dropped down without disturbing the body. Another feature of help to the body builder is the location of clutch pedal and steering gear; both are outside the left-hand frame rail.

The clutch is of the two-plate dry disk type, air cooled, the central member having impellers which give a positive circulation. From the clutch and four-speed transmission the drive is through a tubular shaft with three universal joints and S.K.F. center bearing to a spiral bevel rear axle. Normally this has a 4.5 to 1 reduction, although other ratios can be supplied to meet operating conditions. Transmission ratios are direct on high; 1.65 to 1 on third; 2.7 to 1 on second, and 5 to 1 on first, with a reverse ratio of 6.35 to 1.

Westinghouse air brakes of the metal-to-metal type are standard equipment and the chassis has been designed with their application in mind. The drums are high carbon steel and shoes of low carbon steel, the latter being of the one-piece type so that they can be thrown away when worn out. In addition to the automatic equalization of the air brakes, a slack adjustment is provided between the brake diaphragm and the cam. The compressor, which is of 6 cu.ft. per minute capacity, is directly lubricated from the engine and driven directly from the crankshaft.

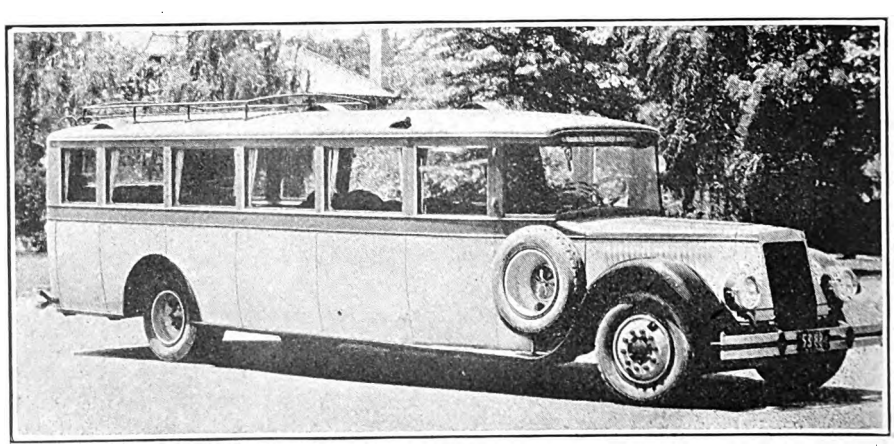
The compact instrument board which was first developed for the model 53 bus chassis is a feature of the new unit. An air pressure gage for the brakes is included on the model 54 board. On the board are the electrical indicating instruments for the two unit systems, consisting of a Leece-Neville 12-volt starting and lighting equipment with voltage regulator. The generator is rated at 30-amp. and the battery at 112 amp.-hr. at the 20-amp. rate.

Due to the use of low pressure tires as standard equipment a semi-center-point steering with inverted Ellicott type front axle has been adopted. The steering gear is of the Ross cam and lever type with a 16 to 1 reduction at the middle point. A device to prevent undue flexure or vibration at high speeds has been mounted on each end of both front springs. Front springs are 48 in. x 3 in., and the rear springs 64 in. x 4 in., the latter being of the two-stage type.

Mack "6" Has Made Its Debut

MANY of the practices followed in the standard model AB Mack bus have been repeated in the new six-cylinder model AL unit, but it has been necessary to effect certain departures to allow for the additional power output of the six-cylinder engine. Among the mechanical features which come under this category are the engine, a single plate clutch and the relocation of the transmission to a point amidships, thereby effecting a better disposition of the weight and increasing the accessibility of both transmission and clutch.

In outward appearance the new model resembles the company's other parlor car type bus until the hood is reached. Here the physical aspect has been changed somewhat by a new windshield known as the "clear-vision" type and a new radiator. This latter unit, having individual fins and tubes, is built up from four castings; the top tank, the



Principles of Shock Insulation Have Been Further Applied in This Mack Six-Cylinder Bus

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bottom tank and two side plates. Over these is placed the radiator shell of sheet metal.

The AL is being built in two models, the 29-passenger parlor car and the 29-passenger city type bus, the latter being also obtainable with gas-electric drive, the same as in the AB city type buses. The only dimensional difference between the parlor and city type models is an additional eight inches on the over-all length of the parlor car, making it 341 in.

The six-cylinder engine has a 4½-in. bore and a 5-in. stroke, which is identical with that of the AB model engine. It is rated at 97 hp. at 2,200 r.p.m. The cylinders are cast en bloc with the removable heads cast in pairs, insuring against distortion on the cylinder head. The pistons are of magnesium aluminum alloy of the constant clearance type, with wrist pins clamped in the connection rod and free to rock in bronze bushed piston bosses. Four main bearings having a diameter of 3½ in. are employed. Forced feed and splash lubrication is employed as in other Mack engines and a special oil filter is provided in connection therewith.

A single plate clutch has been used to obtain greater simplicity and to eliminate clutch rattle, a frequent fault with multiple disk clutches in heavy duty service. A cushioning effect between transmission and clutch is secured by a device known as a torque insulator. The purpose of this unit, which is made up of four rubber blocks, is partly to absorb the initial starting torque and reduce the resultant strain on the drive line.

It has for some time been standard Mack practice to use blocks of live rubber for insulating the various units from the frame. This method of mounting springs, radiator and steering column has been elaborated somewhat in the AL model so that the engine, transmission and gasoline tank are now also thus mounted. This practice of rubber mounting, or "shock insulating" as it is termed, is said to result in a vehicle which is remarkably free from road shocks, vibration and noises incident to propulsion.

The transmission, especially developed for this chassis, affords four speeds forward and the ratios are proportioned to harmonize with the characteristics of the engine on the one hand and those of the chassis on the other. The conventional three-rod arrangement ordinarily employed with admiship gear boxes is dispensed with in favor of a single control rod. The reverse latch is released by depressing the control rod, no catches or buttons being used. The location of the transmission necessitates the use of one more universal joint than is employed in the AB model, consequently the drive line is equipped with five Spicer universals of the 500 series. Ball bearings are used throughout.

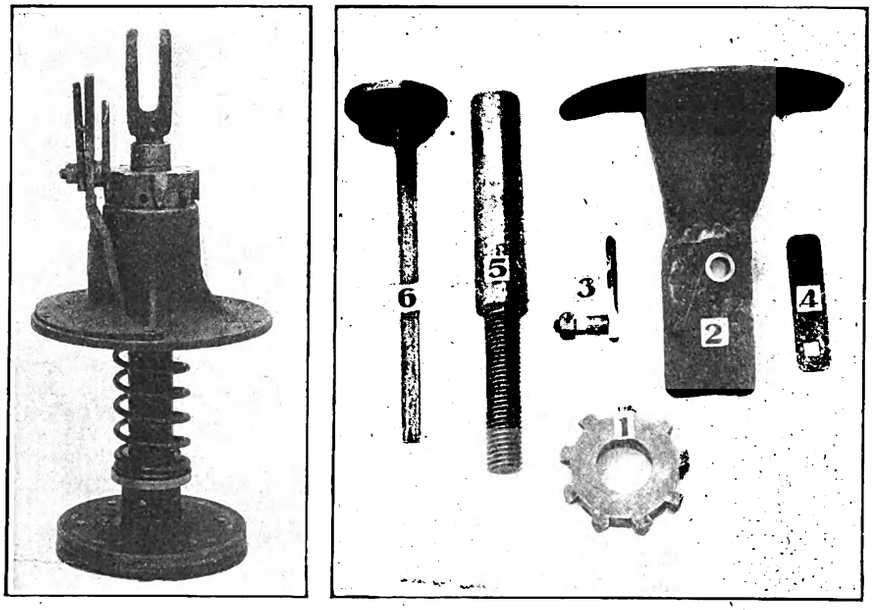
Springs are semi-elliptic throughout with 36½-in. x 2-in. auxiliary springs fitted to the rear springs to allow for variable loads. The frame is of pressed chrome-nickel steel, heat treated. The gasoline tank is mounted longitudinally along the left-hand side and has a capacity of 50 gal. Tires are 34 x 7 in. with duals on the rear wheels.

Slack Adjuster Attached to Brake Cylinder

FOLLOWING a successful test extending over several months on a car of the Scioto Valley Traction Company, Columbus, Ohio, a type of brake slack adjuster invented by W. S. De Camp will be manufactured by the Deschler Machine Works, Chillicothe, Ohio. This slack adjuster is intended for fitting to the brake cylinder on the non-pressure head. Movement of the piston beyond a predetermined travel produces a turning movement through a ratchet and pawl to take up slack in the brake rigging.

Accompanying illustrations show the slack adjuster attached to the non-pressure head of the brake cylinder and also details of the various parts. In the details part No. 1 is a ratchet which is attached to the end of a hollow piston. The pawl for engaging this ratchet is supported by a bracket bolted to the non- pressure head of the brake cylinder. This is shown as No. 2 in the detailed parts. The pawl which engages the ratchet is No. 3, and in order to insure that the pawl will drop whenever the ratchet goes beyond it in application position a weight lever, No. 4, is provided. In release position the pawl engages the ratchet and turns the piston in the cylinder ⅛ in., which makes the push rod ⅛ in. longer.

A screw piston with an oblong hole for application to an oblong push rod is shown as detail No. 5. The push rod slides in this whenever the hand brakes are applied. The oblong portion fitting into an oblong hole holds the screw piston while the piston in the cylinder is turning ⅛ in. in release position. A nut is bolted into the hollow piston to hold it when it is turned by the piston in the cylinder. The screw piston has two double threads to an inch. A washer with a key is shown as detail No. 6. This washer and key boxes the release spring and keeps it from turning the piston back in the cylinder. The washer fits over the hollow piston and the key slides in a bushing in the non-pressure head. If the release spring bore firmly against the non-pressure head the desired turning would not result, but with the spring against the washer the necessary turning movement is provided.



At Left, Automatic Brake Slack Adjuster Assembled on Non-Pressure Head of Brake Cylinder. At Right, Detailed Parts—(1) Ratchet, (2) Supporting Bracket, (3) Pawl, (4) Weight Lever, (5) Screw Piston, (6) Washer with Key

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Association News & Discussions

More Detailed Annual Reports Urged

PUBLICATION of more information upon property valuation, details of mortgages and franchises, etc., by utility companies and especially by holding companies in the utility field to secure a broader public market for their securities, is urged in the last report of the Public Service Securities Committee of the Investment Bankers Association of America. This report was presented at the annual convention of the association, held in Quebec, Oct. 11-15. The annual reports of some of the leading utilities are models, says the committee, and while lacking in some of the statistical operating figures which feature the railroad reports and while not yet standardized, they nevertheless give an excellent statement of the company's affairs in a form well suited for the general public. With the broadening market for utility securities, however, the report points out, there will arise, particularly from savings banks and other institutions accustomed to give closer and more detailed scrutiny to the selection of their investments than the average individual, an increasing demand for data on these securities.

In the present policy of the formation of large operating utility systems, based on geographic lines, the committee sees a condition corresponding to that of the formation of our large railroad systems many years ago. The continual increase in the distance over which electricity can be transmitted economically has made such grouping not only possible but profitable, and in such a period the public utility industry and its bankers are urged to avoid many of the mistakes made in the railroad history. The reward, in the opinion of the committee, will surely be sufficient if the utilities can avoid the burden of public antagonism under which the railroads have labored so long.

The committee sees in the plans of the state of Oregon to construct, acquire and operate a state-wide electric generation, transmission and distribution system a proposal contrary to the soundest economic and governmental principles. It will put the public utility business under the management of five board members, subject to political election and without the necessity of having any experience or qualification for running such a business enterprise and with a pledge of the credit of the state for all examinations.

The committee sees in the passage of laws by the states of Massachusetts, Connecticut and New Jersey admitting public utility bonds conforming to certain specified requirements as legal investments for savings banks a step of very considerable importance to the industry. Such legislation, it says, affords the banks a proper and wider field of selection for their investments and makes available to a sound and essential industry large additional amounts of private capital. The committee points out, however, the practical difficulty of establishing any set rule by which to measure the safety or desirability of an investment security for any class of investors and urges that the restrictions be made not too narrow, but that the fullest extent possible be given to the institutions for the exercise of their own discretion and judgment. The committee declares the plan of the National Association of Railroad and Utilities Commissioners to secure the adoption of uniform state regulatory laws is desirable.

West Virginians Hold Convention

J. D. WHITTEMORE, vice-president and general manager Monongahela West Penn Public Service Company, Fairmont, was elected president of the Public Utilities Association of West Virginia, which held its ninth annual convention at Charleston last week. Others elected as officers were: A. M. Hill, Charleston; C. S. Dawson, Charleston, and A. C. Spurr, Wheeling, vice-presidents; A. Bliss McCrum, Charleston, secretary; G. B. Moir, Charleston, treasurer, and J. W. Cummings, Charleston, assistant treasurer.

Instructive as well as educational addresses were presented at the closing session. Chief among the talks was that given by N. M. Argabrite of New York, vice-president of the Appalachian Electric Company.

Addresses given included the annual talk by the president, W. R. Power of Huntington; Helen E. Steiner of Cleveland, chairman of the women's committee of the east central division, National Electric Light Association; George M. Chute, Jr., of Schenectady, N. Y.; A. M. Hill, vice-president and general manager of the Charleston Interurban Railroad and chairman of the bus division of the A.A.A., whose subject was "Transportation a Science"; D. L. Gaskill, Greenville, Ohio, secretary of the east central division of the National Electric Light Association, who spoke on "Public Relations, a Liability or an Asset," and former Governor E. F. Morgan, whose subject was "Citizenship."

At the annual banquet former Gov. W. A. MacCorkle was toastmaster and H. B. Flowers, president of the New Orleans Public Service, Inc., was the chief speaker.

"Advertising has been distinctly educational to the utilities as well as to their customers," delegates to the convention were told by Thomas D. Mays, president of the Mays-Williams Company, Inc., Charleston advertising agency.

A. M. Hill of Charleston spoke as follows, in part:

> We are living today in a great transportation era, particularly in our own great country where our people seem to have an insatiable desire to be always going somewhere or returning and in a considerable hurry at that. The public wants frequent, complete, safe, comfortable and fast means of travel, and if it gets what it wants it will pay the price.
>
> The story of the comeback staged by the electric railways is one in which fortitude, brains and nerve predominate, with fair-minded, open-handed salesmanship always in the foreground. A type of leadership was developed which tackled the problems confronting the industry according to new conceptions. They sold themselves on their jobs, then sold their employees, and finally went right to the people with their story, and sold them too.
>
> These men did not set their jaws and relentlessly fight the compelling advance of the motor bus. They were quick to recognize it as an ally if operated by them and a dangerous menace otherwise. Many companies have paid dearly for their early antagonism to the bus, but, I am glad to say, practically all of these have seen the error of their way and are turning their enemies into allies.
>
> While the condition of the railways is improved, there is still much room for further improvement. Although operating economies have been introduced, there is the possibility of greater economy. Better employee co-operation and understanding have been brought about. We must continue to advertise frankly our story to the public. Above all else, we must constantly strive for better service to the public.

COMING MEETINGS OF *Electric Railway and Allied Associations*

***Oct. 25-29*—Annual Congress and Exhibit, National Safety Council, Book-Cadillac Hotel, Detroit, Mich.**

***October 28*—New England Street Railway Club, regular meeting, Copley Plaza Hotel, Boston, Mass., 3:30 p.m.**

***Nov. 5*—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.**

***Nov. 16-18*—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

***Nov. 17-18*—Iowa Electric Railway Association, operating and maintenance section, annual convention, Fontanelle Hotel, Omaha, Neb.**

New England Street Railway Club to Meet October 28

ELECTRIC welding as used in the Springfield and Worcester car shops will be discussed by W. L. Harwood, superintendent of equipment of these companies, at the next regular meeting of the New England Street Railway Club, Oct. 28. The afternoon session will convene at 3:30 p.m. at the Copley Plaza Hotel.

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The News of the Industry

Chicago Council Acts

Committee Orders Ordinance Framed to Embody Features Proposed by Eastern Bankers—Local Traction Man Attacks Plan

Before Nov. 1 Chicago will have a new traction ordinance presented for its approval which embraces the plan affecting the city's street car system brought forward by F. J. Lisman, New York, and associates.

The City Council committee on local transportation on Oct. 15 voted its approval of the Lisman plan after many days of dramatic debate and ordered Corporation Counsel Francis X. Busch to start preparing the ordinance immediately. Up to this time conferences between the city and the New York bankers have been based on a skeleton draft of their proposal. When the new ordinance is completed it will be sent back to the main committee of the City Council without discussion.

Prior to the acceptance of the principal points of the Lisman plan by the sub-committee, Major R. F. Kelker, Jr., city engineer, presented an analysis showing that without an increase in fares it would be possible to amortize in 30 years the $140.000,000 of first mortgage bonds proposed to be issued under the plan.

The enforced absence of several of the bankers and Surface Lines executives who are represented in the negotiations caused the postponement of the last scheduled conference of the Aldermen, the Surface Lines executives and local bankers. A report on the financial features upon which the new ordinance is to be based was to have been heard.

Perhaps the most pointed criticism against the Lisman plan was made by Leonard A. Busby, president of the Chicago City Railway, in a signed article recently appearing in the Chicago *Herald and Examiner*. Mr. Busby said in part:

> The plan is expressly conditioned upon its acceptance by the present security holders. Unless they voluntarily accept the proposition, the plan fails. Yet the plan offers to the present first mortgage bondholders only 5 per cent interest, while the new money is to get 5½ per cent and be underwritten at 91.
>
> Taking the bond interest into account, the proposition means that the car riders will pay on an average more than 6 per cent for the new money—an additional burden of $500,000 for twenty years, as against financing on a plan whereby the money could be procured on a 5 per cent basis. The junior security holders are offered an average return of 3.6 per cent during the first five years, compared with the 5 per cent they are now receiving and a 5 per cent return thereafter.
>
> The total amount to be paid the promoters under the Lisman plan is $82,040,000, or an average of $2,734,600 a year for 30 years. This will, of course, have to be paid by the car riders in addition to the $7,500,000 a year required for sinking fund purposes in order to turn the property over to the city at the end of 30 years for $1.

As Mr. Busby sees the Lisman plan, under it "the 20-year franchise is a bait to get control, if possible, of a sound business enterprise on a basis very profitable to the promoters."

Further Data on St. Louis Transit Needs Revealed

Rapid transit needs of St. Louis, Mo., require an immediate expenditure of $40,000,000 for the installation of five downtown subways, the erection of a three-story river-front structure to serve as a subway loop, storage grounds for street cars and a riverside driveway for automobiles, according to the final section of a report by C. E. Smith, consulting engineer for the city, and a special committee of the Board of Aldermen.

The second step in the development of rapid transit anticipates the extension of six radial subways from the downtown section half way to the city limits. The last step would carry the tubes or L lines to the city limits, or a total of 28 miles of rapid transit lines. Mr. Smith estimates that the complete rapid transit system can be built for $100,000,000.

Three ways of financing the subways and other rapid transit improvements were suggested.

Pending construction of the subways the committee recommends that service be speeded up by the installation of express service by street car and local service by bus.

On the subject of buses the committee specifically criticised the unregulated operation of buses in St. Louis and deplored the hardship this works upon the street railway.

The committee also reported in favor of neutral zones for street cars on wide boulevards. It advised consideration of the skip-stop plan in vogue during the war period.

Service to Argentine, Kan., Restored

Railway service over the Twelfth Street bridge into the Argentine district of Kansas City, Kan., was resumed on Oct. 14 by the Kansas City Public Service Company, pursuant to an order of Judge Kimbrough Stone in the federal court. The service was discontinued two years ago.

The line will be known as the Argentine-Twelfth Street line. The route is the same as that of the old Argentine line. Five-minute service is being given, beginning at 5:30 o'clock a.m.

Action of the new owners of the railway in restoring this service brought much favorable comment from the newspapers and citizens of the Argentine district and from the city commissioners of Kansas City, Kan.

Boston "L" Insistent

Trustees Want New Subway Finance Plan — Company Unwilling to Operate Extensions if Fares Must Be Increased

Correspondence between the Mayor of Boston and the board of trustees of the Boston Elevated Railway, Boston, Mass., makes it appear that the city has reached its limit in subway and tunnel extensions under the plan of financing followed up to this point. If the position prevails which the trustees have taken in this new controversy the Elevated will not obligate itself to support alone the financing of any future extensions. The trustees suggest a plan to divide the burden among the taxpayers, real estate owners and car riders.

The issue between Mayor Nichols and the trustees was brought to a head over the continued failure of the Elevated to sign a lease for the use of a proposed subway under Governor Square, where traffic congestion has become very serious. The Elevated took the view that the congestion is caused by automobiles and that the cost of the remedy should not be placed upon those who ride in the Elevated cars; further, that the Elevated can no longer finance such extensions without increasing the car fares.

Conclusive Answer Contained in Company Statistics

Former Congressman Samuel L. Powers, chairman of the Elevated trustees, concluded a letter dated Oct. 14 to Mayor Nichols as follows:

> In your letter you use the following language:
>
> "Let me ask you a blunt question. Is it because your company is unwilling to undertake any further rapid transit extensions until the settlement of public control by the Legislature?"
>
> I cannot but feel that the statistics I have given are a conclusive answer to your question. The question of extension of public control has nothing whatever to do with the attitude of the trustees relative to subway extensions.
>
> We fully appreciate the effort you are making to improve transportation facilities in Metropolitan Boston, and it is the desire of the trustees to co-operate with you as as far as they can consistent with their official duty as they see it. No one doubts that the extension of subways in certain localities would go a long way toward improving rapid transit facilities, and, as you say, such facilities are vital to the welfare of this community, but it is entirely evident that the extensions contemplated by you and by the Planning Board cannot be made as called for, at the expense of that part of our people who travel in elevated cars.
>
> It is self-evident that subway construction already completed has added millions upon millions to the value of real estate in Boston—undoubtedly more than the amount that the subways have cost. It is apparent that the increase of vehicular use of the streets calls for the expenditure of further millions, but it is equally apparent that until there has been adopted a different method of meeting the cost of construction of subways, either through general taxation or by the assessment of betterments upon those directly benefited, there can be no substantial advance in subway extension.

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H. P. Savage Elected American Legion Commander

National commandership of the American Legion was conferred upon Howard P. Savage, superintendent of maintenance of way of the Chicago Rapid Transit Company, at the annual convention of that organization held in Philadelphia on Oct. 15. The election of Mr. Savage was made on the twenty-first ballot after the stiffest fight in the history of the Legion.

"High Power" Savage, as he is affectionately known to his fellows on the "L," was the first commander of the Chicago Elevated Post of the Legion. He is a past state commander of Illinois. Conspicuous among his achievements in Legion affairs have been his activities in securing the soldiers' bonus, his work in increasing Legion membership and his plans for a sound financial status of all posts.

He entered the service of the Metropolitan West Side Elevated Railroad, now part of the Chicago Rapid Transit system, as a track foreman. He was shortly promoted to track engineer, and later to his present position of general superintendent of maintenance of way of the elevated railroads.

During the war Mr. Savage served overseas as lieutenant in the 55th Engineers. On his return to Chicago he organized Chicago Elevated Post No. 184 of the American Legion.

When he stepped from the train in Chicago on his return from the Philadelphia convention, he was greeted by one of the largest crowds ever gathered in the vast Union station. Bernard J. Fallon, vice-president of the Chicago Rapid Transit Company and official spokesman of the occasion, proclaimed Savage a "credit to Chicago and a credit to the nation, the type of man Chicago needs."

Indianapolis Inciter Sentenced

Harry Boggs, former president of the Indianapolis union, who pleaded guilty some time ago to a charge of contempt of federal court in connection with the recent strike of trainmen of the Indianapolis Street Railway, has been sentenced to serve 120 days in jail by Judge Robert C. Baltzell in United States court.

During the testimony it was disclosed that Boggs had been in the employ of the Indianapolis Street Railway up to the time he fled the city. The contempt charge against Boggs was based on information by the district attorney in which it was alleged that Boggs had incited acts of violence among the strikers in violation of Judge Baltzell's injunction. Boggs fled from the city at the time federal authorities began an investigation of the strike. He has been in jail 44 days pending disposition of his case.

Boggs said that officers of the railway did not know that he advised striking employees to "cut loose" with acts of violence to impede operation of cars.

"I'll say frankly," interrupted Judge Baltzell, "I don't like the looks of things. I want the government to look into this."

"Are you trying to shield the railway?" inquired the judge of Boggs.

"No, sir," said Boggs.

"Why don't you tell the truth?" asked the court.

"I didn't want to tell the court I was playing both sides."

"You double-crossed them both, didn't you?"

"No, sir, I didn't double-cross the car company."

"Didn't you double-cross the company when you told the strikers there were too many cars running?"

Boggs did not answer.

"This man looks like a pretty dangerous citizen," said the judge.

Boggs denied that Robert P. Armstrong and John M. Parker, vice-presidents of the national organization and organizers in Indianapolis, had any knowledge that he was on the payroll of the company. He said they wished him to take charge of the strike.

He said that he was employed by the railway to bring about an amicable settlement if possible and to try to keep the men from damaging cars. He told the court on one occasion he called the police and told them of a conversation he heard in which it was planned to dynamite a car in the downtown district. The court said there was no doubt in his mind that Boggs's acts largely were responsible for the violence committed by strikers.

Judge Robert C. Baltzell of the federal court ordered a further investigation when he sentenced Boggs for contempt of court.

Electricity for Reading Suburban Lines

A survey of the system of the Reading Company, Philadelphia, to determine the feasibility of electrifying its suburban lines is now in progress. Charles H. Ewing, vice-president, in charge of operations, so announced on Oct. 21. He said a report from the engineers was expected within three months, but that then and only then could definite announcement be made of the plans for starting the work.

The same day E. B. Temple, assistant chief engineer of the Pennsylvania Railroad, declared that electrification of that road's line from Philadelphia to West Chester would be completed early in 1928.

Utility Speakers to Inform Students

Ohio students will learn the elements of economic life through public utility speakers. To this end Vernon M. Riegel, state superintendent of public instruction, has sent a letter urging all superintendents of schools to arrange for public utility speakers to address student bodies. He said it is always helpful to be able to give students in the latter years of school authoritative information about forces and factors which affect economic life. He feels the public utilities can furnish the information needed to dispel the general ignorance about the structure under which modern industrial society functions.

Service Restored in Pensacola

The railway lines of the Pensacola Electric Company, Pensacola, Fla., were forced to suspend while the storm raged on Sunday night, and there was a hurried order to return the cars to the carhouse. Practically all had been housed before the power plant went out of commission, and since the night of Sept. 19, or the early morning of Sept. 20, Pensacola has been without railway transportation. On Oct. 3 the statement was made that it probably would be a week or ten days before service could be restored.

Service on the line of the Miami Beach Railway, operating between Coral Gables and Miami, Fla., was restored on Oct. 3. All poles, wires and power facilities have been replaced, but several of the cars were damaged by water. Two cars are being operated every half hour between Ponce de Leon Boulevard at Coral Way and South Miami Avenue at First Street.

Mr. Mitten on Industrial Peace

Thomas E. Mitten, chairman of the Philadelphia Rapid Transit Company, Philadelphia, told the Congress of American Industry, in session recently, that "humanizing the capitalistic system has been fully accomplished, so far as the P.R.T. is concerned, the basis of its success having been built on a foundation of trust and confidence." Mr. Mitten was responding to the request of the congress that he show in what way the plan of industrial peace in use in Philadelphia had contributed to the industrial success of the nation. The points he covered were the conception of the plan, what it had done, why it had succeeded and what it could be made to accomplish. In concluding his remarks Mr. Mitten said in part:

America's best way to overcome industrial autocracy is to harness labor and capital into an industrial democracy for greater production, with proper distribution of the resultant profits, since labor, capital and consumer are all benefited through added production, which makes for lessened cost of living. When a physical merger of capital and labor is thus effected, so that they have only one interest instead of two, then only will they pull together. There can be no strikes then, because a man does not destroy his own.

America endeavored in Kansas to, by law, require arbitration of disputes between capital and labor, but failed in the attempt. Harmony of these interests cannot be enforced by law, nor can co-operation be secured by coercion. Recent labor legislation can produce only temporary peace with the railroads, which, however, cannot last longer than the time required to increase wages beyond the power of the industry to pay. Capital must encourage labor to produce by permitting its participation in the resultant profits. Labor must produce more to get more and in so doing should get its fair share of the profits.

If the employees in the anthracite fields were offered an increase of wages in proportion to their future increased production, it is reasonably certain that a sufficient increase would be forthcoming, to compensate labor, capital, management and consumer. Even if this increase should justify only 10 per cent a year and this amount be invested in securities representing ownership, the men would in ten years control the mines.

A similar condition could be brought about in the bituminous coal industry in fifteen years, and it is safe to say that if the employee-ownership principle were applied to all industry, America would within one generation become a strike-proof nation, its democracy would be industrial as well as political, and the capitalistic system would not only have been humanized, but would have reached its maximum of usefulness in the advancement of human progress and civilization.

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Franchise Accepted in Louisville

Railway Agrees to Seven-Cent Fare with Transfer Privilege—Submits to Supervision of Board of Public Works—Initial Valuation Expense to Be Met by Company

THE Louisville Railway, Louisville, Ky., has formally accepted the provisions of the new franchise ordinance which was put through the City Council and signed by Mayor Will. Accepting the provisions of the ordinance was merely a formality as the company made a long struggle to get the ordinance through, agreeing to the few changes made just before its passage. The ordinance adopts general principles of regulation, fixes rates of fare and imposes certain duties upon the Board of Public Works.

Section 1 stipulates that the fare is to be continued at the present rate, namely, 7 cents for single-trip cash fare with general transfer privileges for two years or until appraisers report to the Board of Public Works and the Board of Public Works reports its findings to the General Council.

School Children to Ride at Half Fare

The company is ordered to establish a general transfer system under which the combined rides by street car and automotive units shall not exceed in price the fare charged for a ride upon automotive vehicles alone, and shall also afford transportation to school children at half fare, and to policemen, firemen and park guards, when in uniform, free, provided the fare charged for a ride upon automotive vehicle shall not exceed 10 cents during the two-year period.

The Mayor, with the approval of the General Council, will appoint a qualified appraiser whose duty it will be to value the property of the Louisville Railway. In addition an independent certified accountant will be employed to make a separate report. After the Board of Public Works has reviewed the valuation, the General Council will determine the value of the property used and useful by it in the public service and determine a rate of fare which will enable the company to earn a fair return on its property, this fare to be subject to readjustment from time to time.

The expense incurred by the city in making the initial valuation will be paid by the Louisville Railway, provided, however, that the company shall not be obligated to expend more than $50,000, which sum shall be charged to operating expenses.

In the exercise of its power to fix just and reasonable rates the General Council shall, after the report of the appraisers, modify, establish, adjust or approve rates so that the railway will, under economical management, earn an aggregate annual net operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property. The General Council from time to time will determine what percentage of such aggregate property value constitutes a fair return. In making such determination, it will give due consideration, among other things, to the transportation needs of the city and the necessity of enlarging such facilities in order to provide the people of the community with adequate transportation.

Changes in rates initiated by the General Council will be made after reasonable notice to the company. The Board of Public Works will compile and keep all information up to date in respect to the value of the company's property and will report the findings to the Council for its full information and advice in fixing rates.

Should the company desire a change in rate it may file the proposed change with the General Council for its consideration and at the same time file a copy of the proposed change with the Board of Public Works. If within 60 days the petition has not been acted upon by the General Council the changes proposed shall take effect, but the Council shall have the right by resolution duly passed within such 60 days period to extend the time for any period fixed by it not exceeding 90 days. The General Council must neither disapprove nor modify the proposal of the company without according the company a full and fair hearing.

The company will report monthly to the Board of Public Works and on April 1 of every year file with the Board of Public Works and with the General Council a statement of the investment, revenues and expenses for the preceding calendar year.

The Board of Public Works will supervise the management of the railway. To enable it to do this, auditors, accountants and inspectors are to be employed as the General Council may, by ordinance, from time to time authorize. In order to defray the expenses of such supervision, the Louisville Railway, in lieu of any payments now provided for, will pay annually to the city of Louisville the sum of $10,000.

Section 9 states that the Board of Public Works shall have access to all books, records, correspondence, files, data and all other recorded information of any kind or character kept by the railway. The accounts are to be kept according to the rules promulgated by the Interstate Commerce Commission.

Company to Prescribe Rate of Depreciation

Section 10 states that the company shall, as an expense of operation, accrue adequate sums for depreciation and amortization and set up the same in the form of reserves. Subject to revision by the Council, it will have power to prescribe the annual rate of depreciation and the class or property to which it shall be applied, but until the valuation shall have been made the gross sum for depreciation will be $175,000 a year unless the Board of Public Works shall assent to a greater sum. Property becoming obsolete, worn out in service or abandoned is to be amortized over a period of fifteen years, unless some other period is agreed upon by the Board of Public Works and the company.

The company will issue no new bonds or other securities representative of funded debt without the assent of the Board of Public Works as to amount, interest rate, maturity and sinking fund provisions.

To obtain new money for improvements, extensions or for betterments the company may from time to time issue and sell new securities in such amounts as may be necessary under certain conditions provided. New money for such purposes shall be obtained by the company at as low a rate as practicable, and should the price of such new money as secured be unreasonably high, then and in that event the return upon the property represented by the new money shall be allowed only at a reasonable rate without respect of the actual cost of such money to the company.

The new ordinance states that the surrender by the company of any and all franchise terms in excess of the present constitutional limit of twenty years from Aug. 25, 1922, by its formal acceptance of Ordinance No. 330 is confirmed and all franchise operating rights that the company may own, have or possess extending beyond Aug. 25, 1922, are included in said surrender and any and all its franchise rights shall expire and determine twenty years from Aug. 25, 1922, provided the said surrender by the company will be without prejudice to any or all rights of any and all holders of any bond or bonds heretofore issued by it or secured by any of three mortgages now outstanding on the property and franchises of the company. The surrender shall further be without prejudice to the right of said company, with the assent or approval of the Board of Public Works, to continue the sale of its general mortgage bonds, putting the holders of said hereafter sold general mortgage bonds upon an exact parity with the holders of said general mortgage bonds sold prior to Aug. 25, 1922.

The company is required to construct and maintain the supporting substructures of the streets to the extent that its track or tracks are laid above them, and adjacent to its rails, is to construct and maintain a stringer not less than 4 in. wide to keep the top surface of its rails flush with the surface of the street. Wherever the construction, maintenance or operation of the railway results in damage to the street surface, the company is to make repairs at its own expense.

Nothing in the ordinance "shall be deemed to barter away or to impair the police or rate-making powers of the city of Louisville, but, on the other hand, the city expressly retains those powers free and unimpaired."

In the event the Louisville Railway fails or refuses to abide by the terms of the ordinance, it shall be subject to a fine of not less than $50 nor more than $100 for each offense, and each day's failure or refusal shall constitute a separate offense.

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Resumption of Franchise Negotiations Planned in St. Louis

When negotiations are resumed on the terms of the franchise under which the reorganized lines at St. Louis, Mo., will operate, officials of the St. Louis Public Service Company, the successor to the United Railways, are prepared to advance further arguments in favor of a 7 per cent rate of return on their investment. Mayor Victor J. Miller has sought to limit the return to 6 per cent. Failure to agree on the rate of return for the company has delayed progress on the new franchise.

C. E. Smith, consulting engineer for the city, in an address before the Civitan Club, declared that under the franchise to be offered the company by the city the municipality will have the right to demand and direct the use by the company of any rapid transit facilities constructed by the city. Mr. Smith was explaining the recent report of a rapid transit committee of the Board of Aldermen recommending the construction of subways in St. Louis. He declared that the logical and economical arrangement would be to operate the subways in conjunction with the present surface lines, but said that should an impasse develop between the city and the railway a rapid transit system with a series of bus lines could be developed to furnish transportation.

Approval Sought for Kansas City Traffic Artery Plan

The Grand Avenue Association of Kansas City, Missouri, an organization composed of property owners and leaseholders on Grand Avenue from Sixth Street Trafficway to Twenty-seventh Street, will ask the Kansas City Public Service Company to remove its tracks on Grand Avenue. It is the plan of the association to make a 99-ft. traffic artery of Grand Avenue, unimpeded by tracks, through the heart of the downtown business district. Notices have been mailed to all property interests, asking their opinion of the proposed change. Negotiations will not be opened with the railway unless most of the property owners favor the plan.

"Chicago" in the Movies

The public is being told of the causes of delays and the efforts required to overcome them in a motion picture just released by the Chicago Surface Lines, Chicago, Ill. The picture is called "Carrying On." It shows typical blockades caused by broken-down vehicles on the tracks, flooded subways under viaducts, fires and snowstorms. The use of emergency equipment in overcoming these difficulties is graphically illustrated.

Another picture will be released by the Surface Lines shortly entitled "Arteries of City Life." It is directed against the parking evil and shows the congestion resulting from the parking of vehicles along main street car lines and too close to loading zones. It also shows how schedules are disrupted by blocked railroad grade crossings, and other interferences. A striking contrast between conditions as they usually exist in the Loop district, where parking is permitted, and as they were during the Eucharistic Congress, when parking was prohibited, is shown.

Inclusive Educational Program at Boston

Because of the continual demand for intellectual advancement among all classes of its employees the Boston Elevated Railway, Boston, Mass., will again offer an educational program with topics for courses selected from those which proved most interesting and profitable last year. The committee this year is confining the program definitely to five months, Nov. 1 to March 31, with provision for one general meeting, five sets of departmental conferences and the holiday season. Among the courses will be a reading course, the purpose of which will be to lay out fifteen minutes or more for daily reading. There will be a course in current events, public speaking, business English, interdepartmental accounts, automotive maintenance and electric railway law. The Boston Elevated Railway has issued an explanatory pamphlet on the educational program for the 1926-1927 season containing a valuable foreword by Edward Dana, general manager.

Ticket Bootlegger Caught in Portland

The Portland Electric Power Company, Portland, Ore., through its attorney, caused the arrest of a man charged with forging car tickets. The man was employed until recently in a local print shop. In his possession when he was arrested was found one of the supposedly forged tickets and a witness told of buying three books for $5 when the price of one is regularly $3.65. Evidence also showed that he had sold more than 1,000 tickets at 3 cents each, when the price is 8 cents. The man under arrest has been held in jail in default of bail set at $2,000.

Georgia Railway Burns the 164th Car

An indication of the extent to which the Georgia Railway & Power Company, Atlanta, Ga., is keeping its equipment and its service up to date is seen in the funeral pyre of the 164th car to be scrapped during the past three years.

Car No. 164 was a double-truck, four-motor car, built in 1902, and had seen 24 years of almost continuous service. The length of the car over all was 38 ft. 6 in., its seating capacity 40 passengers and its total weight complete, when empty, 44,740 lb. It was the last of 34 cars dismantled and burned during September.

Of the 164 cars destroyed in the last three years 130 were single-truck cars, eight were double-truck two-motor cars and 26 were double-truck, four motor street-cars. All had been in service for more than twenty years. Their value new was $597,000. The cars have been replaced by new, modern low-floor safety cars, each with a seating capacity of 48 and a complete weight of 37,380 lb.

Antiquated Cars Cast to Flames in Atlanta

Spreading the Story of "L" Service in Chicago

Employees of the Chicago Rapid Transit Company, Chicago, Ill., through the public speakers' organization, are doing good work in carrying the story of the company's service into public schools, clubs fraternal societies and similar organizations. Since the public speakers' organization was formed less than a year ago, 182 talks have been made to audiences aggregating more than 48,000. At the same time the first aid team has given 176 demonstrations before audiences totaling more than 83,000. Altogether the story of the "L" lines has been put before 358 separate audiences totaling more than 132,000 persons in the last ten months. These activities by the company have been the subject of comment before in the ELECTRIC RAILWAY JOURNAL.

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Commission Wants Albany Earnings Segregated

The United Traction Company, Albany, N. Y., in its arguments for a 10-cent fare, must segregate its accounts in every municipality. George R. Lunn, Public Service Commissioner, so ruled at a recent hearing. The question upon which the previous hearing had closed was the admission as evidence of the traction company's valuation of the lines covered by franchises in Rensselaer and Troy. Mr. Lunn said:

> The commission will accept this evidence, but on the understanding that there must be segregation. The fact must be faced that the traction company must segregate its accounts in every municipality before the rates are fixed.

Public Hearing on "L" Lease Scheduled

The Public Service Commission of Pennsylvania recently ordered a public hearing in Philadelphia on Nov. 4 on the joint application of the city of Philadelphia and Philadelphia Rapid Transit Company for approval of the Frankford "L" lease. The lease providing a 30-year extension of the agreement with the Philadelphia Rapid Transit Company was signed by Mayor Kendrick on Oct. 13 despite a considerable amount of criticism. At the Nov. 4 session opposition to the lease will be renewed. Following the Mayor's approval the United Business Men's Association filed a petition with the commission protesting against ratification of the lease.

Future of Detroit's Business District Studied

J. R. Bibbins, consulting engineer, Washington, D. C., has been called to Detroit to undertake for the Detroit Edison Company a comprehensive economic survey of the future development of the rapidly growing business district and such other outside subcenters as are already taking form for the purpose of securing a fairly definite picture of the growth and needs of the present and future districts for central station utility service, particularly district steam heating. The period comprehended by the survey will be five-year intervals up to the year 1950, and an attempt will be made to visualize the portable building development block by block in these areas, taking into account such controlling factors as transportation, traffic, zoning, city planning, land values, living conditions, local trends, industrial employment and output, business population, etc., and the particular economic relation of Detroit as an industrial center to other contiguous or competing centers of the Middle West.

Detroit is rapidly developing its municipal railway and bus transportation system and its interurban facilities. It has ambitious plans for port development, has already developed a major highway plan for its rapidly enlarging suburbs and is entering upon active rapid transit development and facilities for transportation by air. Its municipal area now covers 139 square miles, as compared with 28 square miles in 1900, and its population has grown from 286,000 in 1900 to more than 1,300,000 in 1925, not including tributary suburban population outside of the city limits.

World's Series News Told by Grand Rapids Cars

PATRONS of the Grand Rapids Railway, Grand Rapids, Mich., were served with inning-by-inning bulletins during the world series baseball games. Plays were received by radio and the results by innings, including chief features, such as Ruth's home runs, placed on the bulletin boards of the new electric rail coaches as they passed through Campau Square. Many compliments were received by the company from patrons who enjoyed the games while they rode home.

Railway Proclaims World's Champions

"Rajah" Hornsby, the manager of the Cardinals, and the other members of the St. Louis team certainly received the plaudits of the populace of the metropolis on the Mississippi. It was a grand welcome that city accorded its world champions. Whistles blew, auto horns honked, and if the use of any other noise-making device were overlooked, history as written in the daily papers failed to record it. Many of the people of St. Louis remained up all night to celebrate. The expediency of this may be debatable, but it is a fact that they did it. Joy was unconfined. And when joy is unconfined in St. Louis it apparently knows no limit.

The ELECTRIC RAILWAY JOURNAL has already told how the United Railways did its part in transporting the fans to the baseball park. The company might well have remained content with this contribution to the affair, but it did not. Nothing like that for it. Of course, its men individually took cognizance of the fact that the world's championship pennant will swish in the breeze—when there is a breeze in St. Louis next summer—from the flagpole at Sportsman's park, but the company took official notice of the event in which Alexander the Great, Rog, Bell, Bottomley and others covered themselves with glory. Its most conspicuous contribution to the event was a car proclaiming the world's champions. This car, with its cardinal decorations, was operated over the system at night. It made a big hit. Incidentally the car and the signs it carried on either side conveyed to the public the fact that "corporations have a soul."

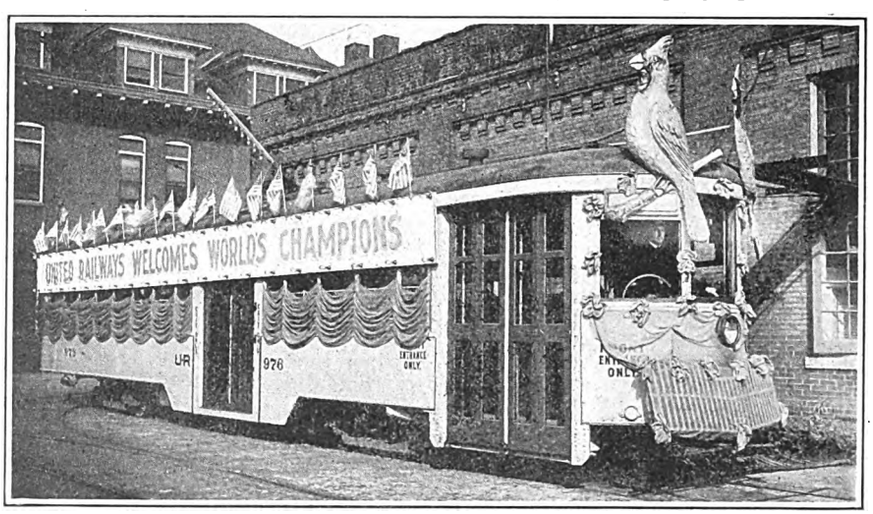
Prompt Decision Expected on New York Fare Referendum

The Court of Appeals of New York decided on Oct. 15 in Albany to hear arguments on Oct. 19 on the appeal in the taxpayer's action for an injunction to prevent the submission of the so-called 5-cent fare referendum in New York City. All other matters before the court will wait until after this issue and the one on the prohibition vote have been heard. It is expected that a decision in each case will be rendered before the date fixed for a recess of the court until after election.

Advertisements to Be Carried in Honolulu Cars

The Honolulu Rapid Transit Company, Honolulu, Hawaii, has voted to carry advertisements in its cars if an attractive bid is received. This reverses a policy of 25 years standing. The situation in Honolulu, with its hotels located 3 to 4 miles out of the city proper and its many tourists, is regarded as unusual. The city frowns on billboards, of which there are very few.

In 1925 the company carried 17,085,088 passengers in 71 cars. It is asking for bids and preliminary specifications for twelve additional cars. Advertising bids will also include the use of buses. The proposed contract is to run from March 1, 1927, for a period of five years. The advertising privilege is to include the use of the lower portion of the ceiling along either side of the car for card advertising. No other space in or out of the car will be included in this privilege. Bids are to be received by the company up to Dec 15.



Crowing About the Cardinals a la Railway

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New Providence Plan Contemplates No Subways Now

Robert Whitten, city plan consultant, reported to the City Council of Providence, R. I., on Oct. 12. He advances plans involving an expenditure of $40,000,000 for the relief of traffic congestion in the city and calling for the construction of four 140-ft. boulevard highways across the city, the widening of more than 25 streets and the elimination of several grade street crossings by underpasses. In addition to providing additional street capacity, the plant proposes to create thoroughfares upon which a speed of 30 m.p.h. will be as safe as 15 m.p.h. is on the ordinary city street today. It is also designed to carry through travel around the congested down-town district instead of through streets already crowded.

Mr. Whitten put aside for the present a plan submitted last summer by William W. Lewis for a subway system of two tubes to carry street cars through the congested area as a means of easing the traffic situation. Mr. Whitten said that purchase of land for the widening of highways can be made much more economically now than will be possible 25 years from now, but subways, if needed then, probably can be built in 1950 as cheaply as now.

Dallas-Irving Franchise Extended

The Dallas Southwestern Traction Company was granted an extension of time until Dec. 31, 1927, for the construction of its line from Dallas to Irving by a recent action of the County Commissioners' Court. E. P. Turner, chairman of the board of the company, made the request. This line, it is proposed, will be an electric line connecting Dallas and the Irving territory. The promoters organized a company about fifteen years ago and several extensions of time under the franchise have been granted. E. P. Hopkins is president of the company.

News Notes

Fare Lowered to Stimulate Travel.—A reduction in fare between Harrisburg and Mechanicsburg has been put into effect by the Valley Railways, Lemoyne, Pa. Instead of three 8-cent fares only two will be charged. The new rate will be tried out until Dec. 31, and if increased revenues result the plan will be continued after that date.

Towns Celebrate New Electric Branch.—The first electric train passed through the newly electrified West Hempstead branch of the Long Island Railroad on Oct. 19. The train left the Pennsylvania Station at 2 p.m. and passed through Jamaica, Malverne, Lake View, Hempstead Gardens and West Hempstead to Mineola amid much celebration and cheers. Since 1893 the West Hempstead branch has had shuttle service by steam or storage battery cars between Mineola and Valley Stream connecting at either end with main line trains. The new electrification will mean through service to New York and Brooklyn. One year ago last May the electrification of the Montauk Division to Babylon was completed.

"Stars" Awarded in Atlanta.—Officials of the Georgia Railway & Power Company, Atlanta, Ga., have given out recently more than 600 "service stars," representing a total of 3,000 years of service by the 600 employees. Among the trainmen who received seven stars, having served more than 35 years with the company, are S. B. Lyon and W. B. Kirk. These men are also the oldest trainmen in the company from the standpoint of continuous service. A set of stars, one to be worn on each side of the uniform collar, is issued for each five years.

Fare Hearing Scheduled.—The matter of a 10-cent fare in Syracuse, N. Y., is up again. The Public Service Commission will hear the city's side of the case against the application of the New York State Railways at the New York City offices on Oct. 26. The company is seeking permission to charge a 10-cent cash fare and a 7½-cent ticket fare. The original petition was submitted nearly a year ago. Several hearings have already been held.

Council Blocks New Car Line.—The Common Council of Madison, Wis., passed an ordinance on Oct. 8, signed later by the Mayor, prohibiting the use of Regent Street from Breese Terrace to Prospect Avenue by the Madison Railways for a new car line. The action of the Common Council blocks the plan of the company to abandon its Harrison Street line in favor of the new line on Regent Street from Breese Terrace to Prospect Avenue. The Railroad Commission had approved the company's plan to lay new rails on Regent Street and counsel for the company had contended that under the franchise granted the company in 1892 it had the right to use any city street without first obtaining permission from the city. An appeal by the city from the order of the commission authorizing the abandonment of Harrison Street is now pending in Circuit Court.

Pittsburgh Officials Attend Utility School.—Officials of the Philadelphia Company and its subsidiaries, owners of public utilities in Pittsburgh, Pa., are going to "night school" at the University of Pittsburgh. Ninety men of the Philadelphia Company, including four vice-presidents, registered for the course in public utility administration. Classes are held each Thursday evening under the direction of Dr. Charles Reitell and will be continued throughout the school year. The faculty includes Dr. Reitell, Dr. John G. Bowman, chancellor of the university, and A. W. Robertson, president of the Philadelphia Company.

Railway in Laurel to Continue.—According to Barney E. Eaton, president of the Mississippi Power Company, plans for the rehabilitation of the railway at Laurel, Miss., are being completed. An unofficial announcement made some time ago was to the effect that the railway service of the Laurel Light & Railway Company would be abandoned in favor of buses.

Free Rides in Charleston. — The Charleston Consolidated Railway & Lighting Company, Charleston, S. C., was temporarily "bought" by Kerrison's Department Store on Sept. 25, for one hour and turned over to the public for free rides. This idea was conceived by the officials of one of the city's oldest firms in appreciation of the patronage the shoppers had given in connection with the 95th anniversary sale held in the store during that week. The watchword of the hour on Sept. 25 was "the rides are on Kerrison's, jump aboard."

Tickets in Atlanta Have New Color.—The Georgia Railway & Power Company, Atlanta, Ga., is discarding the green tickets and substituting pink ones. Fifteen pink tickets will be given upon submission of $1, just the same as fifteen green ones heretofore. Any green tickets which have been purchased will be honored upon presentation.

School Fare Ruling on Interurban. The Public Service Commission has approved a new tariff of the Schenectady Railway, Schenectady, N. Y., fixing regulations heretofore applicable on the Troy division only, which provide for the sale of 50-trip one-zone interurban school tickets at a price of $2 a ticket, applicable within zones 2, 3 and 4 on the Saratoga division.

More One-Man Cars in Service.—The number of one-man car lines operated in Milwaukee, Wis., was increased to six on Oct. 3 when the Milwaukee Electric Railway & Light Company placed one-man cars in operation on its Wells-Downer line. Twenty reconstructed cars newly equipped and refurnished were added to the line.

Resident Buyer in Birmingham for Illinois Traction.—The Illinois Traction System, Springfield, Ill., will open a branch office in Birmingham, Ala., according to O. L. Bunn, general manager of the Chamber of Commerce. Leander Poole will represent the company in Birmingham. The Illinois Light & Power Corporation, the principal holding company for the Illinois Traction System, buys heavily in the Birmingham district.

Dallas Railway Takes Interurban Rails in City.—Rails of the Texas Interurban Railway on St. Paul Street and Fairmount Avenue, Dallas, used for the last two years by the Dallas Railway & Terminal Company, are to be purchased by the latter company for a consideration of $46,620. Denton Interurban cars will continue to use the rails, which had been under a lease to the purchasing company that expired Sept. 30.

Coal Carrying Improves Business.—The Evansville, Suburban & Newburgh Railway and the Evansville & Ohio Valley Railway, Evansville, Ind., are hauling considerable coal at the present time, which will prove a good source of revenue for several months to come. Many of the coal mines in Warrick and Spencer Counties along these traction lines are resuming operation and a good many men are employed in mining. The transportation of the products of the mines furnishes one of the best sources of revenue that these lines have from year to year.

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Recent Bus Developments

Pinchot Raps Commission

Pennsylvania's Chief Executive Sees Red at Steam Railroads' Proposals to Run Buses

Governor Pinchot of Pennsylvania announced recently that he refused the grant of charters to the Pennsylvania General Transit Company and the Reading Transportation Company, formed by officers of the Pennsylvania Railroad and the Reading Company, respectively, to operate bus and truck lines.

The Pennsylvania company asked for a charter covering 55 of the 57 counties of the state, the Reading for charter rights in 24 counties. The Reading's application was for a $1,000,000 corporation, while the capital stock of the proposed Pennslyvania Bus Company was half that amount.

The Governor said in part:

I decline to approve the charter applications of the Philadelphia & Reading and the Pennsylvania Railroads to operate bus and truck lines over the highways of the state, as recommended by the Public Service Commission, for the reason that these applications are the first steps toward securing a monopoly of bus transportation over the highways of this Commonwealth.

These charters appear merely to grant the right to run buses and trucks over the highways and stipulate that lines cannot be run over any definite route or routes until after the Public Service Commission has granted the right to operate in each individual case. In fact, they are the opening wedge in handing the highways of Pennsylvania over to the railroads.

Such blanket grants as these have never been made before. They can have but one purpose. It is no answer to say that other bus and truck lines might be permitted to operate. The history of similar cases demonstrates beyond question that competing lines would be crushed out or bought out (with increased charges to the public), that the railroads would absorb them as they did canals, and that the formation of a railroad bus and truck line monopoly would scarcely even be retarded.

If the present majority of the Public Service Commission could be trusted to protect the rights of the citizens of Pennsylvania against encroachment or extortion by railroads, street railroads, electric and other public utility corporations, the apparent safeguarding of public rights in those charters might have some meaning. Under the actual circumstances it has none. If I were to sign those charters, the commission could complete the railroad monopoly by granting certificates of public convenience without anybody being able to stop it. For this reason alone, even if these charter applications did not involve a fundamental public policy, which they do, they ought not to be approved.

The time to stop the intended control of our highways by the railroads is before it starts. These charter applications on behalf of the Pennsylvania and the Reading Railroads will be followed by similar applications from other railroads. Since the rights of our citizens are not otherwise protected, the Governor must protect them and so long as I am in office the Governor will, to the full extent of his power.

The commission's letter, stating the facts in the case, and signed by Chairman W. D. B. Ainey, was in part as follows:

The commission's approval of these applications merely clothes these companies with lawful authority to furnish service of this character if and when by subsequent order, the commission shall have determined that the public necessities require the furnishing of bus service as auxiliary or supplemental to service presently being furnished, whether by rail carrier or otherwise.

The commission's approval of these incorporations will in no wise relieve them, in seeking authority to operate over specific routes, of the burden imposed by law of affirmatively establishing by proper testimony that the particular service which they propose to furnish in any given case is necessary for the service, accommodation, convenience and safety of the public.

When such applications are presented the commission will require, as it does in all similar cases, that copies of the petitions be served upon all existing carriers engaged in furnishing a similar type of service in the territory, and these carriers will be afforded full opportunity to protest and be heard in public hearings.

At the present writing seven applications for operation over specific routes have been filed in the interest of the Pennsylvania General Transit Company and four in the interest of the Reading Transportation Company. Of the former, three have been approved, one refused and three are pending. Of the latter, all four cases are pending. The commission's refusal, above noted, was in the application for the carriage of persons between Waynesburg and Washington ,and its reason therefor was that reasonably adequate service of this character is presently being there furnished by an existing certificate holder.

The proceeding is of interest because of the point of view taken by the Governor, because the electric railways appeared in opposition to the plans of some of the applications, which appeared to threaten the entrance by the railroads' bus lines of territory in which trolleys were operating, and because of the pronouncement of the commission of its intention to protect the rights of existing carriers.

Would Operate Buses Only

The Omaha & Lincoln Railway & Light Company, Ralston, Neb., has asked the State Railway Commission for authority to tear up the last of its trackage, that between Omaha and Ralston. The company formerly operated cars to Papillion, but a year ago was allowed to abandon the track and service and substitute buses. A little later it was authorized to abandon railway service between Omaha and Ralston, save two cars a day, buses having been used for supplemental service for two years. Now the public authorities propose the reconstruction of a viaduct in Omaha over which the company's tracks run, and as this will call for an expenditure that the railway regards as prohibitive its officers desire to abandon railway operation and furnish transportation entirely with buses.

Doylestown Bus Project Argued

The application of the Philadelphia Rapid Transit Company, Philadelphia, Pa., for certificates of public convenience to operate bus lines from Philadelphia to Doylestown and to Cypress Avenue and Cadwallader Avenue, Montgomery County, was heard by the Public Service Commission on Oct. 19. The Bucks County application is new, but the Montgomery County application is for an extension of service already existing. The company in this has asked for approval of additional rights to permit the operation of its buses from Broad Street and Olney Avenue, operating over route V to Montgomery County. A. B. Millar, of the Philadelphia Rapid Transit Company, declared there was need for the additional line. The Bucks County line was opposed by the Reading Transit Company.

Agreement Reached on White Plains-Tarrytown Service

The Third Avenue Railway, New York, and the city authorities of White Plains have reached an agreement whereby buses will be run for five years on all routes now covered by trolleys. Buses will reestablish service to Mamaroneck from White Plains on a 20-cent fare, but trolleys will be retained to Tarrytown with fare increased to 10 cents.

Clang of the Gong Replaces Honk of the Horn in Alliance

The honk of the horn of the bus has been replaced by the clang of the trolley gong on local lines of the Stark Electric Railroad at Alliance, Ohio, for after nearly a year of operation the Stark Electric has abandoned its city bus lines.

When six new gray buses fresh from the factory were received in Alliance a year ago wheels were lifted from the ground and the high-pressure tires were replaced with balloons. Thus equipped, buses began operating. For making this experiment with balloon tires, the Stark Electric had a tire proposition from the manufacturers which was considered by company officials to be very reasonable.

It is true that the four buses which replaced the three street cars at Alliance took in more in gross than did the local trolleys, but the cost of operating the buses more than offset their added earning power. Not only that, but the Stark Electric had operated its local street cars over the route used by its interurban cars, so that there was an important element of economy here which worked to their benefit.

With two branches of car tracks in the city, it has now been established that street cars can be operated at a cost much less than that for buses. By rearranging schedules it was necessary to secure only three trolley cars to give local service over two lines. For this service one-man cars were leased. These cars do not represent the best of their type, but they are proving fairly popular with patrons. If the railway service as restored with one-man cars proves profitable Stark Electric officials plan to purchase new cars for the city service. Routes over which the buses operated ran the mileage for each bus up to about 40,000 miles in less than a year, a severe drain upon the physical equipment.

Buses Serve Davenport. — The Tri-City Railway of Iowa put into regular service on Oct. 3 the new buses recently purchased as an added improvement to the street transportation service of Davenport. Six Yellow coaches seating 21 passengers and two 25-passenger Mack gas-electric coaches are now being used. The fifteen drivers who are now operating the buses were put through a rigid period of training before the buses were put into public service.

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Financial and Corporate

Receivership Ended in Kansas City

Deeds that passed on Oct. 14, terminated the receivership of the Kansas City Railways, Kansas City, Mo., and turned the property over to the new Kansas City Public Service Company.

To afford time for certain court orders to be drawn Judge Stone had fixed 2 o'clock Thursday afternoon as the hour for the delivery of the deeds. This ceremony marked the end of a receivership, in which adherence to a policy of public service rebuilt a property virtually bankrupt.

The document was executed by John T. Harding, special master commissioner, acting for the federal court, and by Powell C. Groner, Mr. Groner having acted as bidder at the foreclosure sale by the Kansas City Railways through the signature of Frank C. Niles, vice-president, and the Kansas City Public Service Company, which received title. Copies of the deeds were filed immediately in Kansas City, Mo.; Kansas City, Kan., and Independence.

The revenue stamps required reached the unusual total of $22,000.

The receivership having extended a month and a half beyond the date estimated when salary allowances were made, Judge Stone authorized payment to the receivers, Fred W. Fleming and Francis M. Wilson, and their counsel, James E. Goodrich, for the extra period. The receivers were paid at the rate of approximately $31,000 a year. Counsel received 20 per cent less.

To the Kansas City Public Service Company passed full possession of the property, subject to the supervision of the State Public Service Commission and to franchise conditions, such as provide for the board of control.

$300,000 Theoretical Deficit on Municipal Line

San Francisco Civic Body Recapitulates Figures of Local Railway on the Basis of Private Operation

An analysis of the monthly operating statements of the San Francisco Municipal Railway for the fiscal year 1925-26, contained in the *City*, issued by the San Francisco Bureau of Governmental Research, shows a book profit of $21,395. This is an increase of $15,009 over the preceding year's profit, for which reduced debt charges are largely responsible. The figures are contained in the accompanying table.

The total operating revenue was approximately $3,400,000. This is $132,000 more than for 1924-25. This was practically absorbed, however, by an increase of $125,000 in operating costs, $94,000 of which was for conducting transportation.

The bureau explains:

A change in the method of setting up reserve funds for depreciation and for accident and damage claims, effective during the last two months of the year, resulted in reducing by about $1,000 the amount which would have been set aside for these purposes under the old method.

Comparison charges, shown in the accompanying table, are taxes which the road would bear if privately owned but which the publicly owned road does not pay. The charter requires, however, that account shall be taken of these for comparative purposes. These charges are partly offset by bond redemption payments which a privately owned road would not ordinarily be called upon to make.

The table showing the operations of the system in detail is subject to adjustment after the accounts are audited which may make minor changes in the totals.

SAN FRANCISCO MUNICIPAL RAILWAY

Last two fiscal years ended June 30, 1925-June 30, 1926.
(Compiled by Bureau of Governmental Research from Official Monthly Reports.)

	1924-25	1925-26	Increase or Decrease
Passenger revenue	$3,268,383	$3,395,186	$126,803
Miscellaneous revenue	13,115	18,671	5,556
Operating revenue	$3,281,498	$3,413,857	$132,359
Operating Expenses:			
Ways and structures	115,074	136,604	21,530
Equipment	197,619	204,046	6,427
Power	464,990	488,812	23,822
Conducting transportation	1,600,499	1,694,960	94,461
Workmen's compensation	45,656	41,324	*4,332*
Other general and miscellaneous	149,417	152,006	2,589
*Accident and damage claims	121,247	102,010	*19,237*
Total operating expense	$2,694,502	$2,819,762	$125,260
Net operating revenue	586,996	594,095	7,099
*Reserve for depreciation	266,062	260,403	*5,659*
Reserve for accident and damage claims	.....	4,609	4,609
Total charges to reserve	$266,062	$265,012	*$1,050*
Operating income	320,934	329,083	8,149
Interest received on securities owned	44,495	43,718	*877*
†Compensation fund dividend	28,535	22,727	*5,808*
Total non-operating income	73,130	66,445	*6,685*
Gross income	$394,064	$395,528	$1,464
Interest on funded debt	186,678	177,133	(a) *9,545*
Surplus	$207,386	$218,395	$11,009
*Redemption of debt	201,000	197,000	*4,000*
Surplus	$6,386	$21,395	$15,009
‡Comparison charges—taxes unpaid	311,548	324,910	13,362
Theoretical deficit	$305,162	$303,515	*$1,647*

* B. P. W. accounts included in "Depreciation Reserve."
† Difference between reserve charges as operating expense and actual expenditures.
‡ Estimate by bureau.
(a) Approximately $17,500 of this amount was expended from 1910 and 1913 bond funds.

Valuable Stock Rights for Montreal Holders

The long-anticipated issue of new stock by the Montreal Tramways, Montreal, Que., has at last materialized. For every four shares now held the shareholders will have the right to subscribe for one new share at $125. The present common share capitalization of the company is $4,000,000; thus the new financing will increase the common stock outstanding to $5,000,000.

Payment for the new issue will be made in three installments: 25 per cent on Dec. 1, 1926, 25 per cent on Dec. 31, 1926, and the remainder on March 31, 1927. The new shares will carry dividends for the quarter ended March 31, 1927.

This operation marks the first financing by means of a stock issue in more than ten years. The last stock issue made was in the fiscal year ended June 30, 1916, when 10,000 shares were issued and allotted to shareholders at par, thereby increasing the issued capital to $4,000,000, at which it has remained up to the present time.

Last year the funded debt structure of the company was simplified by the authorization of $100,000,000 of general and refunding bonds. An issue of $17,826,500 series A, carrying 5 per cent interest, was made to redeem $17,650,000 outstanding debenture stock at 101, and an issue of series B to the amount of $2,500,000 was also made, the proceeds of which were used partly for capital expenditures and partly to replace $1,750,000 of first mortgage bonds. These issues and the issue of first mortgage bonds gave the company a total mortgage debt of $41,823,343 at the close of the last fiscal year.

The new financing will net the company $1,250,000 to be used in various extensions and other capital expenditures. Since 1920 the stock has been on an annual dividend basis of 10 per cent. The stock has been quoted recently around 170.

Rockford Properties Ordered Sold

A court order for the sale within 30 days of all properties of the Rockford City Traction Company, Rockford & Interurban Railway and Rockford, Beloit & Janesville Railway, all of Rockford, Ill., has been entered by Judge E. D. Shurtleff in the Winnebago County Circuit Court.

The petition for the order for sale was presented by the Continental & Commercial Trust Company, Chicago, trustees for first mortgage bond holders, and the order was issued without objection. Charles W. Ferguson, master in chancery, will be in charge of the sale of the properties. Milton Ellis, Beloit, Wis., railway banker, is expected to bid in the road, controlling as he does the majority of outstanding

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bonds, for which he paid about 23 cents on the dollar for $1,300,000 of obligations. Simultaneous with the action in the Rockford courts, H. C. Van Oven, receiver for the Rockford, Beloit & Janesville lines, filed a petition for the sale of the northern interurban line. This plea was granted. That sale will take place at the same time as the other railway properties.

Foreclosure Sale for Norwich Property Set

Judge Jennings at a recent hearing in the Superior Court at Norwich, Conn., authorized foreclosure proceedings in connection with a mortgage against the Groton & Stonington Traction Company of that city. The sale under foreclosure has been set for Nov. 22 at New London to dispose of the property.

The sale is the outcome of proceedings started in December, 1924, by Ernest E. Rogers, state treasurer, as trustee for the owners and bondholders of the Groton & Stonington Traction Company, on bonds secured by a mortgage made on July 1, 1904.

Coral Gables May Purchase Its Railway

Plans are under way by the developers of Coral Gables, Fla., a Miami suburb, to divest themselves of certain properties there so as to secure funds for further new work on their part. The developers offer taxpayers the two street railway lines for $1,782,730; the golf clubs and courses for $1,750,000 and the Venetian Casino and pools for $300,000. In order to put through this program it is proposed by the city commissioners to hold an election to authorize an issue of bonds to the amount of $4,500,000, about $4,000,000 of the proceeds of the sale to go to the Coral Gables Corporation, developers of the resort, and $500,000 to be used for public improvements. George M. Merrick, president of the corporation, declared it to be his intention to use the money realized from the sale in carrying on a program of development. According to the Coral Gables Chamber of Commerce the City Commission favors the purchase of the utilities from the private owners and will meet during the week ended Oct 30 to take final action for the consummation of the deal.

California Beach Sale Under Way

Negotiations are under way for the sale by the Pacific Electric Railway, Los Angeles, Cal., of its resort properties at Redondo Beach. The impending sale was confirmed by D. W. Pontius, vice-president and general manager of the railway. He stated that the Charles G. Andrews Realty Company was handling the deal. It is reported that the deal, if consummated, will involve approximately $2,000,000.

The property is known as the railway's amusement holdings. It consists of a bathhouse, dancing pavilion, restaurant, and other buildings, as well as the land on which they stand.

The property passed to the railway from Henry E. Huntington about fifteen years ago when it purchased the Los Angeles & Redondo Railway. A portion of the property is under lease, but the company has been operating the pavilion and the bathhouse.

Improvement Noted in Evanston Operation

For the year ended Dec. 31, 1925, the Evanston Railway, Evanston, Ill., reports a balance of $70,458, against $59,095 for 1924. The accompanying table shows revenue and expenses for last year compared with the year previous. The Evanston Railway operates 10 miles of line, controls and operates the North Shore & Western Railway and connects with the Chicago Surface Lines.

EARNINGS STATEMENT OF EVANSTON RAILWAY

	1925	1924
Gross operating revenue	$306,178	$290,607
Other sources	8,152	4,137
Total revenue	$314,331	$294,745
Operating expenses	184,132	181,005
Taxes	28,423	24,363
Total expenses	$212,555	$205,368
Gross income	$101,775	89,376
Interest on funded debt	30,355	28,252
Interest on floating debt	540	1,669
Miscellaneous	422	360
	$31,317	$30,281
Balance	$70,458	$59,095

Changes in Penn-Ohio System Being Worked Out

Revamping of the corporate structure of the Penn-Ohio system, announced in the last annual report of the Republic Railway & Light Company, New York, is proceeding rapidly. Upon completion of these plans there will be only one holding company for the system, instead of three as at present. This holding company will control four main operating groups: Pennsylvania Power for the electric properties in Pennsylvania; Pennsylvania - Ohio Power & Light for the Ohio electric properties; Ohio River Edison, operating the most important power-producing units of the system, and a fourth company to have charge of the railway properties formerly owned by the several holding companies.

According to the *Wall Street Journal* much progress has been made on consolidation and simplification of the subholding companies and of operating companies looking toward the ultimate goal of four main operating companies. Pennsylvania-Ohio Power & Light has eliminated properties operating in Pennsylvania and now has only electric properties in Ohio. The newly formed Pennsylvania Power Company now operates the electric properties in Pennsylvania. These two companies, comprising the Penn-Ohio system, receive the majority of their power from Ohio River Edison.

The majority of the electric railways are now controlled by one company, Pennsylvania-Ohio Electric Company. Possibly in the distant future these traction securities will be distributed to Penn-Ohio Edison stockholders, thus eliminating all but electric power companies from the system.

Benefits from this consolidation program have already manifested themselves through ability of the operating companies to finance on favorable terms. Last summer Ohio River Edison was able to place an issue of $4,000,000 5 per cent bonds to yield 5.50 per cent, and Pennsylvania Power placed $3,800,000 30-year 5 per cent first mortgage bonds to yield 5.13 per cent.

Quarterly Earnings Reports Likely from Insull Railroads

Quarterly earnings reports to stockholders may soon become a fixed policy of the managements of the Chicago Rapid Transit Company; Chicago, North Shore & Milwaukee; Chicago, South Shore & South Bend and Chicago, Aurora & Elgin Railroads—the four electric railroads in the Chicago district controlled by Samuel Insull and associates.

The policy of all these companies heretofore has been to issue only annual reports, but the issuance on Oct. 18 of a quarterly statement with the dividend checks of the Peoples Gas & Coke Company is regarded in financial circles of Chicago as significant of a new program presently to be adopted with regard to the corporate publicity of the Commonwealth Edison, Public Service of Northern Illinois, Middle West Utilities and Midland Utilities companies as well as that of the electric railways.

Change Effected in Capital Structure.—The Danbury Power & Transportation Company, Danbury, Conn., formerly the Danbury & Bethel Traction Company, has been authorized to change its capital from $500,000 to 5,000 shares of stock of no stated par value.

Authorizes Sale of Land.—Robert W. Perkins, receiver of the Shore Line Electric Railway, New London, Conn., has been authorized to sell six tracts of land owned by the company in Essex, Preston and Norwich. The sale is the result of action brought by the United States Trust Company, New York, and the Old Colony Trust Company, Boston, Mass.

Revenues Show Gain.—Revenues of the Community Traction Company, Toledo, Ohio, in September showed a gain of more than $3,400 over those for the corresponding month last year. Total revenue in September was $258,919 compared with $255,550 for a similar month last year. The gain was made in spite of "open weather." Mr. Johnson said the improvement was due, he thought, to continual improvements in service and the chartered bus service which has proved popular since its installation on Sept. 1.

Net Income Increases.—For the three months period ended Sept. 30, 1926, the total operating revenues of the Brooklyn-Manhattan Transit System, Brooklyn, N. Y., was $11,673,905, against $11,228,732 for a similar period ended Sept. 30, 1925. Total operating expenses increased from $7,338,227 to $7,442,816 for a similar period this year. The net

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income after the consideration of income deductions amounted to $1,732,554 for the three months period ended Sept. 30 this year, against $1,490,688 for the similar three months period of 1925.

Seattle Not Liable to Tax Portion.—Contending that the city of Seattle, Wash., is not liable to any portion of the 1919 street railway taxes and cannot legally pay such taxes from either the general fund or any special fund, Corporation Counsel T. J. L. Kennedy and his first assistant, Ray Dummet, recently argued the city's appeal in the tax case before the United States Circuit Court of Appeals. James B. Howe, counsel for the Puget Sound Power & Light Company, which won a decision in the District Court to the effect that the city is obligated to pay three-quarters of the 1919 tax, approximately $543,000, argued that the city had agreed by ordinance, held valid by the State Supreme Court, to pay its portion of the taxes. Taxes and interest on the street railway for the year 1919, totalling approximately $650,000, were paid by the company under protest. The company is seeking to have the city pay three-quarters of this amount, or the taxes for the nine months of 1919 that the city had possession of the carlines.

Short Massachusetts Line Suspends.—The Templeton-Gardner Street Railway operated its last car on Oct. 9. The service was replaced by buses on Oct. 10. The railway has been in existence since 1900. The road was finally acquired by the Northern Massachusetts Street Railway and thence passed into the hands of the present company to include only the East Templeton to Baldwinville and Gardner to Riley's Switch routes. The East Templeton to Baldwinville line was abanboned last summer.

Surplus Lower.—For the period from Jan. 1 to July 31, 1926, the gross earnings of the Lake Shore Electric Railway, Sandusky, Ohio, were $1,873,262, against $1.852,849 for a similar period in 1925. Operating expenses and taxes increased from $1,512,120 in 1925 to $1,606,916 in 1926. After the consideration of interest, the surplus for the period from January to July, inclusive, was $13.244, against $84,959 for a similar period last year.

Seeks Permission to Sell Bonds.—Authority to issue and sell $56,000 of first and refunding 5 per cent bonds has been asked of the Indiana Public Service Commission by the Evansville & Ohio Railway, operating railway lines from Evansville, Ind., to Mount Vernon, and Henderson, Ky. G. R. Millican, vice-president and general manager of the company, said the money will be used to pay for general improvements and for six new interurban cars which were bought some time ago.

Service Discontinued.—The Huntingdon, Lewiston & Juniata Valley Traction Company discontinued service on Oct. 7 in the borough of Huntingdon, Pa., on its line, which is 1.7 miles long. The service ended with F. Blair Isenberg, general manager, announcing plans to tear up and scrap the track, property and all holdings.

Personal Items

Personnel of New Kansas City Company Announced

When Judge Stone had approved the transfer of the Kansas City Railways, Kansas City, Mo., to the Kansas City Public Service Company on Oct. 14, W. C. Woolfolk, president of the new company, announced the following operating staff, with various advances in title and increased authority:

F. G. Buffe, vice-president in charge of operations.

J. A. Harder, secretary and treasurer.

L. M. Boschert, assistant secretary.

Neal S. Doran, comptroller and assistant treasurer.

Charles L. Carr, general solicitor in charge of legal and claim department.

D. L. Fennell, general superintendent of transportation.

R. W. Bailey, general superintendent of maintenance.

E. E. Stigall, purchasing agent.

E. B. Sanders, manager commercial department.

A. T. Bagley, superintendent department of personnel.

J. D. Cornell, freight traffic manager.

D. E. Druen, superintendent of power.

H. W. Smith, superintendent of way and structures.

C. A. Kincade, superintendent of distribution.

R. S. Neal, superintendent of equipment.

F. C. Lynch, superintendent of bus maintenance.

I. R. Carson, assistant superintendent of transportation.

H. M. Smith, assistant superintendent of transportation.

H. H. Cloyd, assistant to Mr. Buffe.

A separate construction department is being organized, with A. E. Harvey as superintendent of construction.

Senator Francis M. Wilson and Col. Fred W. Fleming, co-receivers, have, of course, relinquished their duties. Colonel Fleming will assume management of the Central Surety & Insurance Corporation, of which he is president. He is also vice-president and treasurer of the Willock Realty & Loan Company and president of the Golden Rule Baking Company.

Senator Wilson plans a hunting trip in Platte County, the first real vacation he has had for thirteen years. During the period of the receivership, Senator Wilson was away from the office only 60 days, 30 of which were spent in pursuit of bus knowledge. After Jan. 1 he expects to open a law office in Kansas City, "a modest sort of an office where if any client should come, he would be courteously received."

W. J. Wright a Public Service Corporation Counsel

Wendell J. Wright has been appointed assistant general counsel of the Public Service Corporation of New Jersey and its subsidiary companies.

Mr. Wright in 1898 became associated in his New Jersey and New York law practise with Edmund W. Wakelee, now vice-president of Public Service in charge of law. Later he founded the firm of Wright, Vander Burgh & McCarthy, with offices in Hackensack.

In 1905 Mr. Wright was appointed counsel to the Bergen County Board of Freeholders and in 1909 was appointed by Governor Fort first judge of the First District Court of Bergen County. Later he became prosecuter.

Mr. Wright was one of the organizers of the Closter National Bank, of which he was a director. He also is a director of the North Jersey Title Insurance Company and its general counsel.

John S. Bleecker—Public Utility Consultant

John S. Bleecker is leaving Day & Zimmermann, Philadelphia, Pa., to establish offices at 910 Finance Building, that city, as industrial and public utility consultant, but will retain certain connections with the industrial management department of Day & Zimmermann. Mr. Bleecker has been connected with Day & Zimmermann for the last two years, but was associated before that with the Indianapolis, Columbus & Eastern and the Columbus, Newark & Zanesville lines, operated jointly for the bondholders by the Day & Zimmermann organization. Of these roads he was general manager. Mr. Bleecker was formerly manager of the New Orleans Railway & Light Company, New Orleans, La.; the Columbus Electric Company, Columbus, Ga., and the Columbus Railroad. In addition to serving Stone & Webster on the Columbus properties he was affiliated with that concern in its home office in Boston and at Seattle, Paducah and Houghton.

Elmer Ambrose Sperry, Electric Railway Pioneer, Honored

Elmer Ambrose Sperry, New York, inventor and early builder of electric railways, has been awarded the John Fritz Gold Medal for 1927 for the development of the gyro-compass and the application of the gyroscope to the stabilization of ships and airplanes. The award was made unanimously on Oct. 15 by the board of sixteen representatives of the American Societies of Civil, Mining and Metallurgical, Mechanical and Electrical Engineers. The presentation of the medal will take place on Dec. 7, in New York, at the annual meeting of the American Society of Mechanical Engineers.

Shortly after Mr. Sperry's early successes in mining machinery he founded the Sperry Electric Railway, Cleveland, Ohio, built electric railway motors and controllers and installed several of the early electric railways put in operation in the later '80s. Subsequently he sold his electric railway patents to companies now represented by the General Electric Company.

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Mr. Sperry is a charter member and one of the founders of the American Institute of Electrical Engineers and the American Electrochemical Society. He is also a member of the American Society of Mechanical Engineers, American Chemical Society, Society of Naval Architects and Marine Engineers, Society of Automotive Engineers, and many others.

Cleveland Officials Advanced

Col. J. H. Alexander, the New President, and P. E. Wilson and R. W. Emerson, New Vice-Presidents, All Men of Long Experience Schooled Under Late Mr. Stanley—Their Careers Reviewed Briefly

COL. JOSEPH H. ALEXANDER, newly elected president of the Cleveland Railway, Cleveland, Ohio, succeeding the late John J. Stanley, takes at the age of 42 one of the most important public utility posts in the country. At 35 years of age he was advanced to the position of vice-president of the company, similarly one of the youngest ranking officials in such work. Responsibility is nothing new to Colonel Alexander. The very year of his graduation from the Case School of Applied Science at Cleveland he took a job with Tom L. Johnson's Municipal Traction Company at Cleveland as chief engineer, a sizable job for a youth of 22 years.

The following four years witnessed in Cleveland a bitter struggle for supremacy between rival railway systems, several in number, and in that conflict Mr. Alexander first came into prominence. Standing loyally beside Johnson and his chief aid, the late Fred Goff, young Alexander fought courageously. That historic fight terminated in 1910 with the adoption of the Tayler grant, a document of great merit, the provisions of which still govern railway operation in Cleveland.

At various times during the railway fight Mr. Alexander prepared for Johnson numerous surveys of the various competing car systems and made many tests of their facilities and equipment. Shortly after the franchise settlement in Cleveland the young engineer went to Pittsburgh. There, at the age of 26, he became assistant to the general manager of the Pittsburgh Railways. Two years later, in 1912, he was back in Cleveland as chief engineer in the office of Peter Witt, then the city's traction commissioner.

Mr. Alexander proved an invaluable aid in the commissioner's office and in so doing attracted the attention of Mr. Stanley. So in 1916 Mr. Stanley made him assistant to the president. His progress was rapid in this new position and it wasn't at all surprising when in April, 1919, there was another promotion. At that time he was elected to the office of vice-president.

Less than a year after going with the railway in 1916 the Colonel responded to the nation's call to arms, receiving an appointment of major in the administrative section of the construction division of the United States army. He entered service on Nov. 1, 1917, and continued in the army until November, 1918. Early in 1918 he was promoted to the rank of colonel.

A page from war records might serve best to describe Colonel Alexander's work as a member of Uncle Sam's fighting forces. Here it is:

He established and approved all labor rates and supervised all labor matters and conditions on all army construction projects in the United States and Porto Rico, on which as many as 400,000 laborers were engaged at one time and which in the construction division alone numbered approximately 500 and aggregated $1,400,000,000 in value.

He conferred with labor delegations, determined prevailing union rates and conditions, interpreted labor agreements, conferred with the war labor policies board, co-operated with the United States employment service in the procuring and distributing of workmen on the various projects and imported approximately 13,000 Porto Ricans and 2,600 Nassauans on ships which were assigned to and operated by the construction division.

He conferred in an advisory capacity for many months with the cantonment adjustment commission (later known as the emergency construction wage commision), and thereafter was made the army representative on the emergency construction wage commission and on the general committee of war labor adjustment.

At the time of the signing of the armistice he had been nominated by representatives of labor and by representatives of employers as chairman of the national committee on standardization of wages for building trades employers. He made approximately 300 speeches on 100 total jobs to approximately 200,000 workmen.

In substance, he established and supervised the carrying out of the fundamental standards and policies for the general administrative work of the construction division of the army.

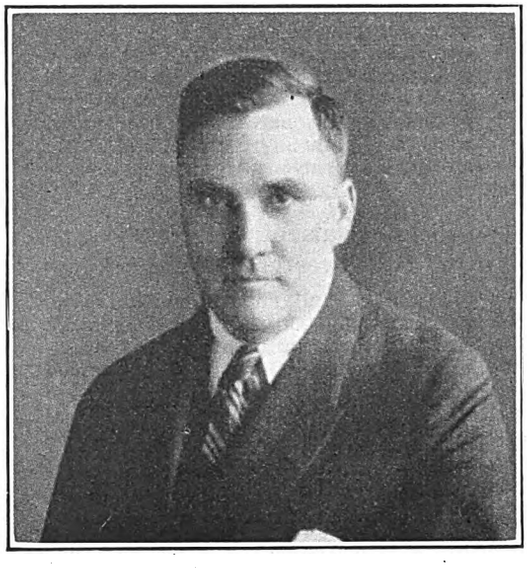
The foregoing leaves no doubt as to the splendid war record made by Colonel Alexander. He returned to Cleveland shortly after the war and was back at his job of assistant to Mr. Stanley for only a short time before he was elevated to the vice-presidency. As stated previously, he was 35 years old when he ascended to the office of vice-president, and now at 42 years becomes president.

In 1925, when buses were added to the service of the Cleveland Railway, Mr. Stanley assigned to Colonel Alexander the job of directing their operations. Today the bus is one of the chief cogs in the system of the Cleveland Railway.

As a boy Colonel Alexander was sent to a preparatory school in Canada. Some few years later he went to the University of Minnesota. After three years of study there he enrolled in the Case School of Applied Science, Cleveland, to complete his technical education. That was in 1901. In 1905 he was graduated with a degree of B.S. in mechanical and electrical engineering, and the following year the same institution conferred a fellowship upon him.

He is president of the Ohio Safety Council and likewise president of the Cleveland Safety Council. It might be

R. W. Emerson



J. H. Alexander

P. E. Wilson

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well to point out that largely through his efforts the annual International Safety Congress, with its 10,000 delegates, met in Cleveland last year. He is an ex-president of the Cleveland Engineering Society and long has been prominent in civic movements here.

PAUL E. WILSON

Other important changes in the organization were the advancement of Paul E. Wilson to the post of vice-president and of Ralph W. Emerson to a similar office. Mr. Wilson previously was secretary of the company and Mr. Emerson general manager. Each of these officials retains his former title in addition to the new one. Mr. Wilson has been secretary of the company since 1921. In that post he succeeded the late Henry J. Davies. Before that he had been assistant secretary of the company for two years and previous to that, from 1910, had been secretary to Mr. Stanley. While he was still attending high school Mr. Wilson worked for the railway as office boy and clerk for two summers. Upon his graduation he was for three years clerk to the superintendent at the operating headquarters of the company. He attended law school at Western Reserve University for two years and did newspaper work for the Cleveland *Leader* and the Cleveland *Press* for two years before becoming secretary to Mr. Stanley. Mr. Wilson has long been the point of contact between the company and the public through the press, although the other officers of the company were always accessible to the newspapers. Mr. Wilson is not yet 40 years old.

RALPH W. EMERSON

Mr. Emerson has been general manager of the company since 1922. In that year he succeeded in that post the late George L. Radcliffe, who had been vice-president and general manager. Before that, from 1915 on, he had been assistant superintendent of the company. Mr. Emerson's experience in the railway field has been varied and rather unusual. He was graduated in 1906 from the Case School of Applied Science as a mechanical and electrical engineer. Immediately thereafter he joined the engineering forces of the Cleveland Railway. In 1910 he resigned from the service of the company to install and operate the power plant of the New York & North Shore Traction Company at Roslyn, L. I. When this Long Island road was placed in service Mr. Emerson was made general superintendent. He continued in that capacity until 1915, when he rejoined the forces of the Cleveland Railway. He is 41 years old.

The promotions by the Cleveland Railway advance to the principal operating and executive posts of the company men all of whom are young, but officials well versed in the affairs of the company who in addition have the confidence and the respect of the public of Cleveland gained through years of operation under the late Mr. Stanley and fostered by each of the operating officials that served with him in directing the property.

A. C. Mellette, investigator for the claim department prior to his resignation early this year, has returned to the Los Angeles Railway, Los Angeles, Cal., and will once more act as an outside investigator. Since leaving the company Mr. Mellette has been with the claim department of the St. Louis & San Francisco Railroad at Memphis, Tenn.

New Claims Attorney for All Insull Railroads

G. T. Hellmuth, for many years chief counsel for the Chicago, North Shore & Milwaukee Railroad and more recently of the Chicago Rapid Transit Company, has been appointed general claims attorney for the entire group of Insull transportation companies in and around Chicago. He will have complete supervision over the claims departments of the Chicago, North Shore & Milwaukee, Chicago Rapid Transit, Chicago, South Shore & South Bend and Chicago, Aurora & Elgin Railroads. His office will be located in the general executive headquarters of the four companies at 72 West Adams Street, Chicago. Mr. Hellmuth is a graduate of the John Marshall School of Law in Chicago and the greater part of his business career has been spent with the North Shore and Rapid Transit lines in various legal capacities.

Officials of Cleveland-Southwestern Advanced

Frank E. Hull, superintendent of the northern division of the Cleveland, Southwestern Railway & Light Company, Cleveland, Ohio, has been named superintendent of the southern division of the system. John Nester, general superintendent, will take over the superintendency of the northern division. H. A. Humphrey, train dispatcher of Elyria, also has been promoted to trainmaster.

Paul A. Beique has been appointed a member of the Montreal Tramways Commission, Montreal, Que. In this capacity he succeeds the late Paul E. Mercier, who had occupied the position for only about four months. Mr. Beique is a civil engineer.

Howard Wright, formerly of the claims department of the Puget Sound Power & Light Company, Seattle, Wash., has been appointed safety engineer for the Southwestern District to succeed the late Capt. David J. Kinzie.

J. D. Whittemore, vice-president and general manager of the Monongahela West Penn Public Service Company, Fairmont, W. Va., was elected president of the Public Utilities Association of West Virginia at the ninth annual meeting of that body, held recently at the Hotel Kanawha, Charleston, W. Va.

E. B. Gunn, superintendent of transportation and equipment of the Western Ohio Railway, Lima, Ohio, is resigning his position after a service of eight and one-half years with that property. His office was located at Wapakoneta. In the past few years the Western Ohio Railway introduced many economies in the mechanical department, reducing the cost of maintenance, increased its freight business and strived with success for a clear record in the matter of accidents. In all of this work Mr. Gunn took an important part.

Obituary

R. E. Breed

Richard Edwards Breed, well known in public utilities circles, died on Oct. 14 in Roosevelt Hospital, New York City. Mr. Breed, who was born in Pittsburgh, came to New York twenty years ago at the age of 40. Although a prominent figure in the entire utility field he was affiliated more particularly with the light and power industry. He was a director of the American Light & Power Company, the Electric Light & Power Corporation, the Carolina Power & Light Company, the Wheeling Bank & Trust Company and many other concerns.

Adolphe Alfred Dion, president of the Moose Jaw Electric Railway, Moose Jaw, Sask., died recently in Ottawa. He was one of Canada's most prominent electrical engineers and was recognized as an authority on electrical development. Mr. Dion was 67 years old.

Paul E. Mercier, a member of the Montreal Tramways Commission, Montreal, Que., since April, 1926, died recently when making a survey for the St. Regis Paper Company. In 1895 he was engaged as chainman on the Montreal Park & Island Railway and in 1896 and 1897 was identified with the Canadian Pacific Railway in the Quebec district. He served in many other engineering capacities in Montreal and Quebec. Mr. Mercier was born 49 years ago in St. Hyacinthe, Que. He was educated in engineering at the Polytechnique School, Montreal.

Frank W. Remick, member of the banking house of Kidder, Peabody & Company, Boston, Mass., died on Oct. 16 at the Massachusetts General Hospital. Mr. Remick's business connections were extensive and diversified. In the street railway industry he was well represented, being a director of the Boston Elevated Railway, the Middlesex & Boston Street Railway, the Puget Sound Electric Railway and the Puget Sound Power & Light Company. Mr. Remick was born in Boston in 1861. He received his education in the Boston public schools. In 1879 he entered the employ of Kidder, Peabody & Company, and had been connected with the concern continuously since that date. He became a member of the firm in 1905.

Capt. David J. Kinzie, for the past several years safety engineer for the southwestern district of the Puget Sound Power & Light Company, Seattle, Wash., is dead. The captain was noted for carrying on in the Tacoma public schools the safety educational work sponsored by the Safety Council. Captain Kinzie was born in Boston. His early business career was spent in Alaska, where he had charge of personnel and safety work in several large mines. During the war he was located at Camp Lewis, where he was chief personnel adjutant. At the close of the war he joined the forces of the company, where he served until his death.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Baltimore to Have Interesting Tests on Pneumatic Car Wheels

A test set of pneumatic street car wheels has been prepared for the United Railways & Electric Company of Baltimore, Md., by the Hatfield Resilient Wheel Company, the J. G. Brill Company, the United States Rubber Company and the SKF Industries. One of these wheels was on exhibit in the J. G. Brill Company's space at the Cleveland convention. The theory of the wheel as worked out for application to railway usage is an adaptation of the Hatfield resilient wheel previously developed for truck and bus operation. Two pneumatic tubes are inserted into the circumference of the wheel to absorb all shocks and vibration before they reach the axle. These rubber pneumatic cushions are protected from all dirt, oil and heat by steel cover plates, the latter, however, allowing complete freedom of movement in a vertical direction.

The pneumatic tubes are bolted around their inner rim to the center steel section of the wheel and around their outer rim to the steel bearing surface which is applied to the rails. It is upon these bolted sections that the greatest strain will come in actual operation, due to braking, rapid acceleration, etc. If the pneumatic cushions are capable of withstanding the severe torque which will be applied to their rims the numerous advantages of the wheel will recommend it to widespread attention in the railway field. The test to be conducted in Baltimore will, therefore, be watched with considerable interest.

The air pressure in both tubes is equalized by dual connections from an air locking valve stem. The two tubes are placed side by side and are of equal cross-sections. The only metallic connection between the outside wheel surface and the inner wheel section is a ground connection of flexible wire.

Templeton, Kenly Company Stages a Prize Letter Contest

An opportunity to gain a little extra Christmas money has been offered to roadmasters, supervisors of track, their assistants and track foremen by the manufacturers of the Simplex jacks, in the way of a prize contest for letters telling about the use of Simplex tie-spacing shoes.

For ten letters that best describe and explain the different kinds of work done with the tie spacers, and which also tell how they were used and the results obtained, cash prizes from $100 to $10 will be awarded.

There are no special conditions to be followed. Letters may be written in pencil, ink or on a typewriter, and one contestant may write and submit as many letters as he wishes.

The contest closes Dec. 1 and the judges, who will be three maintenance of way engineers, will select the winners before Christmas. Details of the contest may be obtained from Templeton, Kenly & Company, Ltd., Chicago, Ill.

Widespread Use of Timken Bearings in Buses

An interesting point was brought out by the Timken Roller Bearing Company of Canton, Ohio, when a check-up by that company's representative indicated that of the 85 buses of 21 different makes displayed at the Cleveland convention of the American Electric Railway Association Timken bearings were included as regular equipment in every bus. The company states that this has also been true at other recent shows where buses have been exhibited. Efforts are now being made to bring about a widespread adoption of Timken bearings in electric railway cars, for both passenger and freight service.

F. H. Shepard Comments on Pennsylvania Railroad Order

Announcement was made in the issue of ELECTRIC RAILWAY JOURNAL for Oct. 9 of the large equipment order just placed with the Westinghouse Electric & Manufacturing Company by the Pennsylvania Railroad. It is considered to be of outstanding interest by railway and electrical equipment men because of its value in indicating the trend toward heavy traction electrification by the major railroad systems.

Commenting on this recent order, F. H. Shepard, director of heavy traction operation of the Westinghouse company, said:

> This commitment and the announcement of the plans for this important work by the Pennsylvania Railroad presages one of its most important activities since the war and indicates the time when New York will be linked to Philadelphia and Washington by electric service. The railroads have been making great strides in efficiency since their return from government operation, and traffic handling within the past month exceeded all previous records in America. And this with a freedom of movement and efficiency undreamed of during the dark days of the war and subsequent thereto.
>
> It is confidently believed that railroad conditions, as well as business generally, are reaching their normal stride and that the increment of growth may now be expected to follow year after year just as obtained before the war. This means provisions for increased capacity for traffic movement, and in many cases electrification to enable the increased service to be undertaken where physical restrictions make increased tracks and facilities impossible.
>
> It is well known that electrification will double the capacity over steam operation, and the last evidence of this is the example of the Virginian Railway, which completed the extension of its electrification to Roanoke, Va., last week. Here train operation under mountain grade conditions and for fast freight train service are demonstrating the maximum realized in the world today, 9,000-ton trains being hauled by a single locomotive at 28 miles an hour and mountain grade operation accomplished with 2,000 hp. per single train, more than double any performance accomplished by steam.

Chromium Corporation of America Has Been Formed

A company known as the Chromium Corporation of America has been organized to take over the patents of the chromium plating process developed by the Chemical Treatment Company and the Chromium Products Corporation, the latter a subsidiary of the Metal & Thermit Corporation. This new company will have plants and branch offices in most of the leading industrial centers.

John T. Pratt, president of the Chemical Treatment Company, will continue in that office and also be chairman of the board of the new corporation, of which Dr. F. H. Hirschland will be president. The latter is also president of the Metal & Thermit Corporation. Vice-presidents in charge of operations will be Louis C. Owens, Jr., Dr. Erich A. Beck, and Richard Loengard. In addition to the above officers, the directors will consist of a prominent and financially strong group of men.

In announcing the formation of the new corporation, Mr. Pratt made the following statement:

> Manufacturers of metal products have followed with the greatest interest the rapid development of chromium plating during the past few years. Knowing the properties of chromium, particularly its extreme hardness and ability to resist acids, high temperatures and all sources of tarnish, corrosion or discoloration, they have felt that it would only be a matter of time before chromium plate would become a standard finish for many types of metal products.
>
> The new corporation will take over and operate the Chromium Products plant in Jersey City and the Chemical Treatment plants in New York and Waterbury. Plans are also being formulated for the opening of new plants at Carteret, N. J.; East Chicago, Ind., and South San Francisco, Cal., in each of which the Metal & Thermit Corporation now has plants, as well as in Chicago, Detroit, Cincinnati, Akron, Philadelphia, Pittsburgh and Cleveland. The company's expansion program contemplates a national service within two to three years.
>
> Having taken over from the Chemical Treatment Company its trade name, "Crodon," which will hereafter stand for chrome plate as applied by the Chromium Corporation of America or its licensees, the company will inaugurate immediately an intensified selling, merchandising and engineering campaign which will cover manufacturers of certain types of metal products throughout the country. The Chemical Treatment Company policy of limiting the use of Crodon to manufacturers of quality products will be rigidly adhered to. At the same time, the educational advertising, designed to inform manufacturers, the trade and the public of the many advantages of Crodon will be intensified.

Credit Where Credit Is Due

The Cutter Company, Philadelphia, Pa., appreciates its employees. Furthermore, it does not hesitate to express that appreciation in some tangible way. Recently the company published a handsome little volume entitled "Experience Is Master." In this book are pages and pages of pictures and interesting little sketches of the many members of the Cutter organization who have helped to build up the company's prestige as a manufacturer of circuit breakers and other electrical protective devices since 1888.

Only men who have served the Cutter organization for ten years or more are introduced to the readers of the book. But there are many of these, and in looking over the various sketches it is possible to obtain a very good idea of the spirit which imbues all of the members of the Cutter organization.

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Comfort Features Are Provided in New Ruggles Bus

Service on long interurban runs and special tours has been particularly considered by the Ruggles Motor Truck Company of Saginaw, Mich., in designing its new 26-passenger touring coach, which has just been placed on the market. Heretofore one of the drawbacks in using motor buses for long-distance runs has been the lack of comfort facilities for the passengers. The Ruggles company has attacked this problem by installing complete lavatory and toilet facilities in its bus.

The body is mounted on the standard Ruggles model 70 coach chassis, with a 236-in. wheelbase, powered with a 105-hp., six-cylinder motor, with double reduction drive. The bus is equipped with 34x36-in. pneumatic cord tires, with dual rear tires on Budd steel disk wheels. Gruss transport type air springs are used on the front.

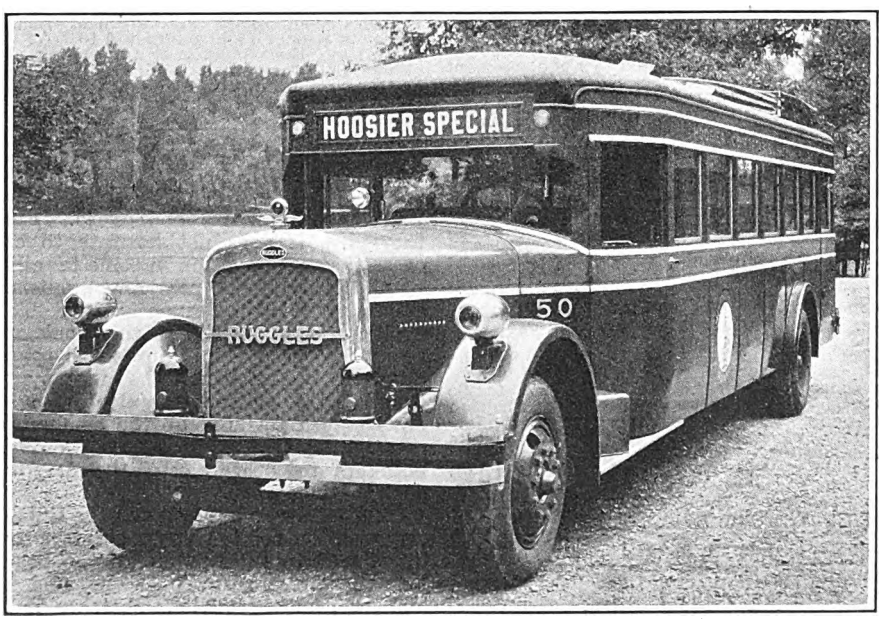
Sufficient headroom has been provided in the interior arrangement of the bus to allow the average person to walk through the aisle without stooping. Pullman seats with arms and special backs have been installed. These are covered with a high grade of striped mohair. The window sashes are of brass construction, Pullman type, with maximum openings. The floor is covered with battleship linoleum and over this covering, in the aisle, is Wilton carpet. Pillar mirrors are installed between the windows, together with double coat hooks and combination ticket holders. All dome lights are protected with non-glare shields. Over the rear wheel housings are built side seats with ample space between the seats for a portable lunch or card table. An electric buzzer system, electric clock and adjustable driver's seat are other standard equipment featured.

Running the entire length of each side of the interior and above the seats of this bus are individual luggage racks. They are nickel-plated and placed high enough to be out of the passenger's way, yet easily accessible for handling small baggage parcels and heavy wraps and small grips. Space is provided on the roof for taking care of large luggage requirements.

Comfort Is Carried to the Point of Luxury in the Interior Fittings

The lavatory is situated in the right rear side of the bus and is finished in mahogany paneling. It is economical in the space it consumes and is built under strictly sanitary conditions. The lavatory includes toilet, ice water tank, large mirror or heavy plate glass and a porcelain wash bowl with running water. The installation of this lavatory relieves the necessity of providing the necessary long rest period which has heretofore been given in long distance operation.

The new bus was on display at the American Electric Railway Association convention which was held in Cleveland, Ohio, Oct. 4 to 8. Visitors at the convention were given an opportunity to inspect every new detail of its construction.



New Ruggles Coach Which Was on Display at the American Electric Railway Association Convention in Cleveland

Fifth National Power Show to Be Held

The Grand Central Palace in New York City will be the scene of the Fifth National Exposition of Power and Mechanical Engineering, to be held from Monday, Dec. 6, through Saturday, Dec. 11. On exhibition there will be heat and power generating apparatus, hoisting and conveying equipment, power transmission equipment, machine tools, refrigerating machinery and heating and ventilating machinery.

In addition an elaborate program of the latest films showing engineering and industrial progress will be displayed.

The fifth exposition will include exhibits of 500 manufacturers and will occupy four floors in the Grand Central Palace, the largest exposition of its kind ever held in this country. The American Society of Mechanical Engineers will hold its annual meeting in the Engineering Societies Building on dates included by those of the Power Show, as will also the American Society of Refrigerating Engineers.

Electric Locomotives for Rack Railroads

Several electric locomotives of a new type, intended for use on rack railroads, are at present in course of construction at the works of the Brown-Boveri Company in Mannheim, Germany. A number of these are intended for service on a section of the Andes railroad, operated by the Chilean Transandine Railway. The engines for this line weigh 85 tons and are fitted with six motors, each capable of developing 235 kw. for one hour, with a continuous output of 195 kw. These units will operate on 3,000 volts d.c. With a total hourly capacity of about 1,400 kw., these locomotives are claimed to be the most powerful of their kind so far constructed.

The remainder of the locomotives now being built are intended for service on the Asui Pass in Japan. The section includes a ramp about 600 yd. in length with a gradient of 6.7 per cent. Direct current at 600 volts is supplied by means of a third rail system. The engines are equipped with three motors having a one hour capacity of 200 kw. and a continuous capacity of 160 kw.

Work is being rapidly pushed on all of these units with a view to delivery in the near future.

Electric Railway Orders for Haskelite and Plymetl

In the recent issue of "The Lightweight Champions' Record," published by the Haskelite Manufacturing Corporation, Chicago, Ill., the following orders for Haskelite and Plymetl received from electric railway companies were listed:

Rochester & Syracuse Railroad—Plymetl to replace steel on a 45-ton interurban car.

Indianapolis Street Railway—Haskelite for headlinings of twelve cars.

Houston Electric Company—Plymetl for side panels.

West Penn Railroad — Plymetl for side panels in rebuilt cars.

Chicago, Milwaukee & St. Paul Railroad—Haskelite for interior trim in five gas-electric cars.

Twin City Motor Bus Company—Plymetl for side panels.

Peoples Motor Bus Company—Haskelite for roofs and headlinings in 25 double-deck buses.

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Every One Has a Good Word for Cleveland Exhibit

Manufacturers Were Not Loath to Demonstrate Their Faith in the Industry by Making Possible the Largest Display Ever Staged—Total Registration 8,623; Total Indoor Space Sold 119,007 Sq.Ft.

AND still the figures go up. This year there were 119,007 sq.ft. of exhibit space sold at the Cleveland convention of the American Electric Railway Association. Oddly enough, the total amount of space available for exhibits came to the same total of 119,007 sq.ft. Nor was there any lack of manufacturers, who, like the famed virgins of Hebraic times, had failed to safeguard themselves by making advance preparations, and found at the last moment that the doors were shut to them. As a result of this year's work the crown of Fred Dell, director of exhibits, might be said to bear many jewels. Brightest of these is the sparkling record of 41 street cars and other rolling stock which was placed on exhibit. Twenty-six were for passenger service and the remainder consisted of freight and service equipment.

The best that had ever been mustered in previous exhibits was 11 cars. And yet in the first half of this year the purchases of rolling stock had reached a low ebb. It seems that the manufacturers have set up against this a high tide of enthusiasm, for no cost was spared in preparing the exhibits at Cleveland.

Registration Sets New Record

This year the total registration at the convention was 8,623 and the total number of manufacturer members listed was 423. Both of these figures surpass by large margins any records which have been set up in the past. A comparison of these various totals for the past six years might be interesting:

Year	Where Held	Registration	Sq.Ft. of Space Sold	No. of Mfg. Co.
1921	Atlantic City	1,189	No exhibit	225
1922	Chicago	4,200	61,895	244
1923	Atlantic City	4,404	75,681	274
1924	Atlantic City	5,804	86,349	330
1925	Atlantic City	7,147	100,030	371
1926	Cleveland	8,623	119,007	423

Naturally it was impossible, with the tremendous amount of material on display, to consolidate all of the exhibits on one floor, or even in a single building. But the co-operation of the city authorities in Cleveland made it possible to have available a supplementary building, known as the West Wing, by the time the exhibits began to arrive. Most of the bus and bus equipment manufacturers were assigned space in this wing but there were also many trackwork, steel castings, and similar displays there. Then there was the regular exhibit hall downstairs in the auditorium building, which housed most of the balance of the indoor exhibits. There were a few large booths on the arena floor proper.

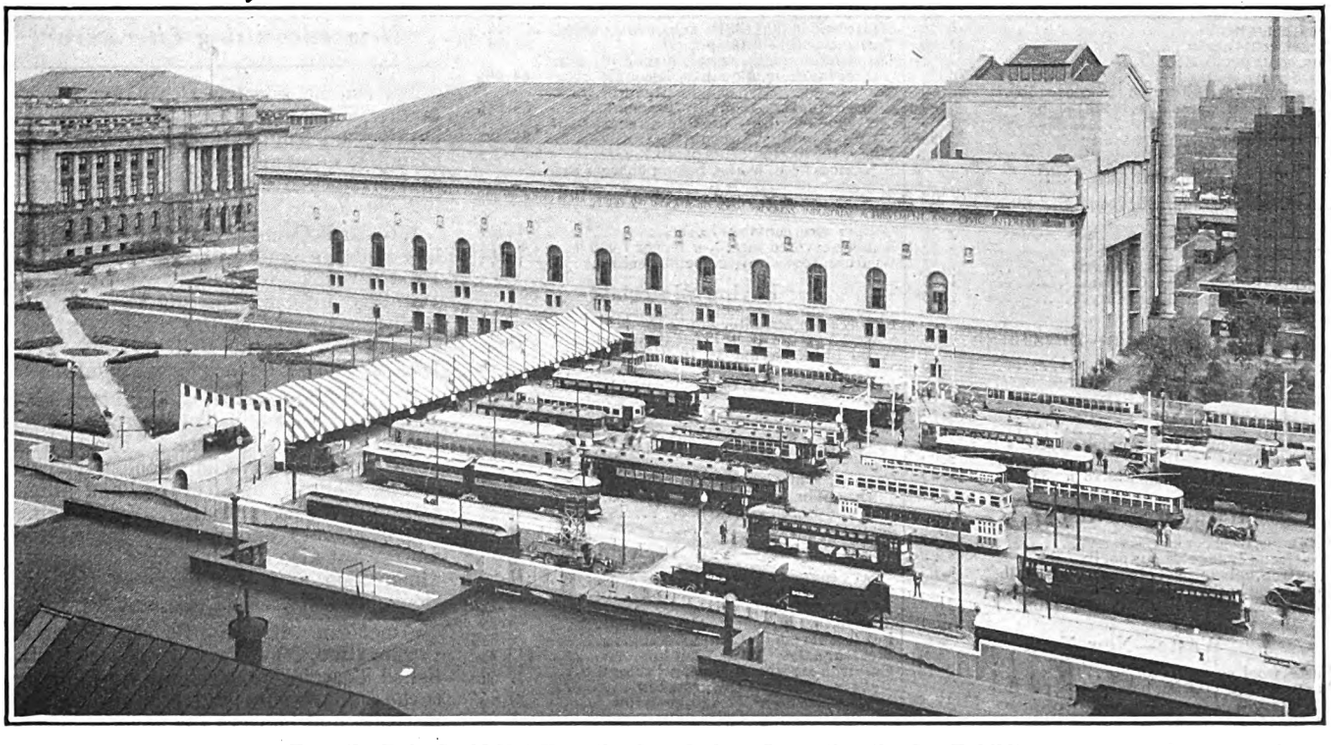
Much to the satisfaction of the exhibitors the crowds circulated very well during the several days of the convention and the fears which had been expressed by some that they would be overlooked due to their locations in the west wing or in the downstairs exhibit proved ill founded. Mr. Dell sent out a questionnaire to the various exhibitors recently to get the reaction of each company to the convention as a whole and to the general arrangements and handling of the exhibit. Replies from these sources have been most enthusiastic. Exhibitors were particularly impressed with the excellent facilities which Cleveland had available for handling shipments of display material and for setting up and generally facilitating the progress of the show.

It has been said before that one of the most outstanding features of the whole exhibit was the generous display of rolling stock, both passenger cars and freight and service equipment. It does no harm to emphasize this point by occasional repetition. The cars were not only conspicuous by their numbers; they indicated such strides forward in appearance, comfort, reduction in weight, and in general operating efficiency that they could not but prove of monumental inspiration to the railway men there assembled.

Many Unexpected Lines Represented

But the many other features of the exhibit were not without their own significance. When one stepped into the west wing he was literally dazzled by the display of buses—bodies, chassis and complete units. Certainly the last word in the artistic as well as in sturdy dependability was very much in evidence there.

Almost every conceivable line of railway supplies was represented in the Cleveland show. And there was a surprising array of materials which would not, at first glance, strike one as being subject to great demand in this industry. All of which goes to prove that the electric railway field is being looked upon with increasing favor by manufacturers in general as one worthy of thorough exploitation and development as a major channel for marketing goods.



Even the Rain Could Not Keep the Crowds from Inspecting the Car Exhibits

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Rolling Stock

Boston Elevated Railway, Boston, Mass., has purchased eight 29-passenger city type Mack buses. Two of these units will be used between Allston and Cambridge and the remaining six are classed as "extras."

Honolulu Rapid Transit Company, Honolulu, Hawaii, is asking for tentative bids and preliminary specifications for twelve additional cars. This will bring the total of cars owned up to 83.

Los Angeles Railway, Los Angeles, Cal., received six new buses from the Fageol Motor Company of Oakland, Cal. during the month of August. Among these were included one four-cylinder street car type bus, four six-cylinder street car type buses and one double-deck bus. All but the four-cylinder unit were equipped with air brakes.

Hamilton Street Railway Company, Hamilton, Ont., Canada, is preparing to order 24 new double-truck street cars, according to an announcement recently made by the Dominion Power & Transmission Company.

Chicago & Northwestern Railroad, Chicago, Ill., has placed an order for five 72-ft. gas-electric rail cars with the Electro-Motive Company. These units will be practically identical with the three cars which were delivered to the railroad in May. They will have seats for 42 passengers, and in addition each will have a 15-ft. railway post office and a 16-ft. 8-in. baggage compartment.

Maryland & Pennsylvania Railroad, Baltimore, Md., has ordered one 72-ft. gas-electric rail car for all-passenger service from the Electro-Motive Car Company. This car will be equipped with a model No. 120 power plant.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has purchased one six-cylinder parlor-car type Fageol bus equipped with Westinghouse air brakes for use in suburban service out of Milwaukee.

Track and Line

Virginia Electric & Power Company, Richmond, Va., is making rapid progress on the extension of its Norfolk trolley line to Port Norfolk and Pinners Point and expects to have the improved service in operation early in October. A part of the old line is being double-tracked and a single-track extension for some distance is being laid. Total new trackage is around 15,000 ft. The company will improve its High Street lines, laying 12,200 ft. of new trackage.

Los Angeles Railway Corporation, Los Angeles, Cal., has applied to the Railroad Commission for permission to construct a double track in Leonis Boulevard between Pacific Boulevard and Downey Road in the city of Vernon.

Pacific Railway, San Jose, Costa Rica, will be electrified, according to a recently approved contract between the government of Costa Rica and the Allgemeine Elektricitäts-Gesellschaft of Berlin. The electrified portion of the railway will extend from San Jose to Punta Arenas, the Pacific port.

Honolulu Rapid Transit Company, Honolulu, Hawaii, was given authority by the Public Utilities Commission to spend $31,124 in double-tracking Punahou Street from Wilder Avenue to below Dominis Street.

Gary Railways, Gary, Ind., has started laying a second track on its Hammond line in Eleventh Avenue, Gary, for a distance of ½ mile between the Pennsylvania Railroad crossing and Rutledge Road. The work will be completed in about two weeks. At the request of residents along Eleventh Avenue the company has willingly agreed to remove its poles from the center of the street and to erect poles near the curb line from which the trolley wires will be suspended. The cost of the entire undertaking, including the realignment of poles, is estimated at $25,000.

Trade Notes

American Brown Boveri Electric Corporation, Camden, N. J., announces that four district offices of the company have now been established. These are located at 165 Broadway, New York City; 842 Summer Street, Boston, Mass.; 922 Witherspoon Building, Philadelphia, Pa., and 230 S. Clark Street, Chicago, Ill.

American Steel & Wire Company, Chicago, Ill., has announced that the scope of its Birmingham, Ala., office will be enlarged to cover all of the products manufactured by the company. J. J. Gilmore has been promoted to be manager of sales in the Birmingham district, covering Alabama, Mississippi and Louisiana.

J. H. Bunnell & Company, Inc., New York, N. Y., announced the removal of its factory location to new and larger quarters at Pearl and Prospect Streets, Brooklyn, N. Y. The main office and warehouse will continues to be located at 32 Park Place, New York City.

New Advertising Literature

Martindale Electric Company, Cleveland, Ohio, has issued its most recent catalog on commutator, slotting and grinding equipment and various motor maintenance specialties. This is catalog No. 7.

J. G. Brill Company, Philadelphia, Pa., has issued a leaflet describing the Brill 177-E truck for light-weight cars. Detailed information on the various component parts of the truck is given. Dimensions for the Brill 177-EX, 177-E1X and 177-E1 trucks are included.

Wright Manufacturing Company, Lisbon, Ohio, has published a new catalog, No. 11, which is said to be one of the most comprehensive handbooks on chain hoists, trolleys, hand cranes and allied equipment ever prepared. It contains not only cuts and general descriptive matter but also line drawings giving all dimensions and clearances of the various products.

American Brown Boveri Electric Corporation, New York, N. Y., has published descriptive circular No. 200 on turbo-compressors and blowers. Compressors and blowers for various industrial applications are listed.

ELECTRIC RAILWAY MATERIAL PRICES—Oct. 19, 1926

Metals—New York

Copper, electrolytic, cents per lb.	14.15
Lead, cents per lb.	8.35
Nickel, cents per lb.	35.00
Zinc, cents per lb.	7.68
Tin, Straits, cents per lb.	70.50
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	63.00
General service	32.50

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$6.50
Somerset mine run, Boston	2.20
Pittsburgh mine run, Pittsburgh	2.225
Franklin, Ill., screenings, Chicago	1.525
Central, Ill., screenings, Chicago	1.45
Kansas screenings, Kansas City	2.35

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.30
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.20
Steel bars, cents per lb.	2.00
Ties, white oak, Chicago, 6 in. x 8 in. x 8 ft.	$1.45

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (24 gage), cents per lb.	3.00
Sheet iron, galvanized (24 gage), cents per lb.	3.85
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	2.50

Waste—New York

Waste, wool, cents per lb.	12–18
Waste, cotton (100 lb. bale), cents per lb.:	
White	13–17.50
Colored	10–14

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	11.2
White lead in oil (100 lb. keg), cents per lb.	15.25
Turpentine (bbl. lots), per gal.	$0.90
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	5.25–5.50

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire, cents per lb.	16.25
Rubber-covered wire, No. 14, per 1,000 ft.	$5.75
Weatherproof wire base, cents per lb.	17.75

Paving Materials

Paving stone, granite, 5 in. New York—Grade 1, per thousand	$147
Wood block paving 3½, 16 lb. treatment, N. Y., per sq. yd.	$2.70
Paving brick 3½ x 8½ x 4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3x8½x4 N.Y., per 1,000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu. yd.	1.94
Cement, Chicago consumers' net prices, without bags	2.10
Gravel, ¾-in., cu. yd., f.o.b. N. Y.	1.75
Sand, cu. yd., f.o.b. N. Y.	1.00

Old Metals—New York and Chicago

Heavy copper, cents per lb.	11.50
Light copper, cents per lb.	9.75
Heavy brass, cents per lb.	7.25
Zinc, old scrap, cents per lb.	4.25
Lead, cents per lb. (heavy)	6.875
Steel car axles, Chicago, net ton	$17.25
Cast iron car wheels, Chicago, gross ton	14.75
Rails (short), Chicago, gross ton	16.75
Rails, (relaying), Chicago, gross ton	28.50
Machine turnings, Chicago, gross ton	6.50

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, October 30, 1926 *Number* 18

The Bus Case Is Sound Provided Its Import Is Understood

REPRESENTATIVES of the Bus Division of the A.A.A. have recently submitted to the Interstate Commerce Commission their views regarding the principles that should govern interstate bus regulation. Boiled down, these include two primary contentions: First, that interstate bus operation is essentially a local matter and should be regulated by the state commissions in the states affected; second, that bus transportation is an industry in its own right, that it is an addition to the sum total of transportation facilities offered the public and that it should be regulated regardless of its effect on existing carriers.

Most transportation men are agreed with the first principle set down, namely, that interstate bus operation in its present stage of development is essentially a local matter and of interest primarily to the states concerned. It is also probable that bus operation of the scheduled common carrier variety will always remain largely a local service. Although long distance operations may be expected to expand in the next few years, these operations will be of the special party or tour variety rather than regularly scheduled common carrier service. In this form of bus operations the elements of pleasure and sightseeing are large factors in determining the character of the service rendered. Time and cost are secondary rather than primary factors. Such service, if properly developed under competent and responsible management, offers an attractive substitute for tours in individually owned machines and may be expected to draw its passengers from that source rather than from existing common carriers. Thereby it fulfills the primary requirement for being considered a transportation service in its own right. It offers an entirely different character of service at rates needed to maintain quality and reliability. Such operations seem to fall outside the classification of common carriers on fixed schedules and routes.

In considering bus operations which fall within the limits of common carrier service the question of whether these operations should be judged on their own merits without regard to existing carriers depends entirely on what the nature of the operations is to be. If the bus service is merely a duplication of the rail service on highways, both in the character of operations and rates of fare, then the bus contention is entirely unfounded and the existing carriers should most decidedly be considered in judging the necessity for the new service. Under such conditions bus operations are merely a duplication of existing facilities and represent an economic loss to the community.

When two vehicles are operated where one was operated before, with no corresponding increase in traffic, some one stands to pay the piper, and that some one is the man who buys transportation service. Under such conditions the bus does not offer something new, but merely tears down something which already exists. Only when a rail carrier is consistently operating at a loss, and when it is established that such operations cannot be made profitable, is the substitution of buses for rail service justified. Surely bus men are themselves in a delicate position when advocating that no consideration be given the existing carriers in determining the necessity for a new bus line, for what is sauce for the goose is also sauce for the gander. If the mere desire for more transportation is to become ample basis for granting certificates to operate, then the holders of existing certificates of convenience and necessity are indeed the possessors of nothing more than scraps of paper. Carrying this reasoning to the *reductio ad absurdum*, a maximum amount of service would be provided on a given route by granting operating rights to all who applied.

But would it? What about the character of the service rendered? And what about the cost of giving the service? That is where this reasoning falls down, for duplication of service in kind represents economic waste, and when there is economic waste in rendering utility service the user pays the bill, either in his fare or in being forced to put up with an inferior ride.

Bus operations may be considered in their own right without regard to existing carriers only when the service rendered is of an entirely different character at rates high enough to insure maintenance of the quality. When the bus service offers a different *character* of service at distinctive rates it represents an addition to transportation facilities and not a duplication. Under such conditions the bus creates its own patronage instead of drawing from the riders on the existing carriers. *And the rate of fare charged is the key to the situation.* With the rate of fare sufficiently higher than railway rates and with both regulation and competition operating to keep the character of service rendered up to the level of the rate charged, then the bus, even when operated parallel to an existing carrier, seems to have some claims for being considered a transportation agency in its own right.

The bus men cite the example of telephone and telegraph service as precedent on which to base their own case. Consideration for a moment of the difference in the character of these services and of *the rates charged* shows the situation in its proper light. Though these are both communication services the telephone has not attempted to duplicate the telegraph, but provides a service that is entirely different in character at an entirely different rate. The bus has before it a wonderful future, provided that its own advocates rise to their opportunity. It is high time that bus men stopped thinking in terms of railway passengers, railway rates and railway replacement and devote themselves to building what they claim to represent—an industry in its own right.

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Plans for Next Year's Convention Should Be Made Early

NOW while the thoughts of the 45th convention are still fresh in mind, it is a good time to think about the 46th. In previous years, the location has been decided some time during the late winter or spring, leaving only a short time before active work commenced.

Many companies, both manufacturing and operating, are making their budgets for next year. The location of the convention has a decided bearing on such estimates. Then, too, the work of several committees of the association, such as that on membership, will find it advantageous to approach prospective members with definite plans.

Few people realize the great volume of work behind the preparation of a convention having the enormous proportions as that just witnessed in Cleveland by more than 8,000 delegates. That, of course, is a compliment to those who prepared it. Nevertheless, besides the work of the convention committee and the director, there is much necessary work on the part of manufacturers that could in a measure be better directed if focused on a definite objective.

Also, the date bears some thought. The first week of October has for years been chosen. The reason for this seems to be tied into the more or less stereotyped Atlantic City schedule, fitting in with hotel accommodations, etc., following the season's rush to that resort. In Cleveland these factors did not prevail. The accountants, principally, are affected, since the first of the month is obviously the busiest time for them and this has been a factor that has been responsible for preventing many delegates of this important association from attending.

With the ever-growing size of the annual convention and its increasing importance in this period of the industry's recovery it seems particularly advisable to plan earlier that we may plan better.

Make Better Use of Existing Streets Before Spending Money to Widen Them

IMMEDIATE widening of roads in and about the large cities of the United States is being vigorously urged by the American Road Builders Association as a means of relieving traffic congestion. The enormous expenditure necessary for such an undertaking is justified, it is claimed, because the cost of traffic delays is greater than would be the cost of widening and improving the roads. Despite the plausibility of this argument considerable uncertainty exists as to the actual measure of relief that would be afforded by simply increasing roadway areas. So far as city traffic is concerned, experience shows that additional street space is absorbed as rapidly as it is provided without any marked diminution of congestion. Before spending vast sums to widen the streets, careful consideration might well be given to the possibilities of making better use of those we already have.

Observation clearly shows that the actual capacity of existing streets has by no means been reached. The volume of traffic that can be moved over a given route in a given time depends on the effective width of the roadway and the average speed of vehicles. Generally speaking, both can be increased with comparative ease.

On our busiest streets parked automobiles often occupy anywhere from a quarter to two-thirds of the roadway. Angle parking and double parallel parking are permitted in the very cities where the gravest concern is felt concerning the traffic situation. Huge vans back up to the curb and spend hours loading or unloading regardless of the extent to which they block the movement of other vehicles.

To make matters worse the average speed of vehicular movement in many streets has become so slow that the horse is replacing the automobile for certain kinds of trucking in our large cities, because the cost of waiting is thereby reduced. A tremendous number of unnecessary delays occur. Time and again a single vehicle making a left-hand turn blocks two or three lines of moving traffic. Policemen frequently exercise poor judgment in controlling traffic at busy intersections. On the other hand, automatic synchronized signal lights often hold large numbers of vehicles motionless although there is no cross traffic moving.

Whether or not a program involving wholesale widening of roads is desirable is not for the electric railway industry to say. In the cities, however, results are likely to be disappointing if it is undertaken on the theory that traffic congestion will thereby be substantially relieved. Unless provision is made to restrict the use of widened streets to traffic movement rather than the storage of vehicles, there will be an increase in storage space but little real improvement in facilities. Making more efficient use of the existing roadway, rather than building more roadway to use inefficiently, offers a quicker and better solution of the problem.

Light for Electric Railways in Professor Ripley's Criticisms

THE latest article in the series by Prof. W. Z. Ripley on corporate finance published in the *Atlantic Monthly* appears in the November issue of that magazine and undertakes to throw light on the financial practices occasioned by the rapid growth of the power and light industry. Approaching this question from the standpoint of the public's interest, Professor Ripley confines his discussion to the holding company. After setting up what he considers the weaknesses and dangers attending the rapid growth of these organizations, the author deserts his customary high plane of scientific inquiry and yields to the temptation of becoming rhetorical. This is done by inferring that some of the conditions described are sufficiently general to warrant federal investigation. That is obviously unfair. To an industry which has made such phenomenal progress there is bound to be attracted the speculator who stretches the limits of sound practice. There is ample evidence—and the author cites some of it—to indicate that those engaged in building for the future as well as the present have decried some of the very practices which are criticised.

Although discussing primarily the power and light industry, and particularly the situation of the holding companies, the article touches a few points of interest to electric railway men. Little cause to quarrel can be found with the professor in contending that sale of stock direct to customers carries with it the assumption of increased responsibility by the utility and that this activity should be properly safeguarded in the public interest, as well as in the interest of the utility itself. But in the case of the electric railways there is little danger for some time to come of "overselling" securities direct to the public. At the present time the principal problem of the electric railways is that of re-establish-

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ing their credit. However, this is a good time for the industry to fix in mind the responsibilities as well as the advantages that attend the sale of stock to its patrons.

Electric railways have had considerable experience with the evil results of inadequate provision, during a period of adequate rates and profits, for depreciation and obsolescence. During periods of prosperity, when there is no question of increased rates involved, there is a natural disposition on the part of regulatory authorities to permit adequate reserves to be set up. The precedents thus established are extremely important to the preservation and development of the industry in leaner years. There is now a growing realization in the electric railway industry that failure to set aside adequate depreciation allowances in the past is responsible for the large amount of obsolete equipment on its hands today. Now that there is strong evidence of steadily improving conditions it is important that a definite policy be adopted as rapidly as possible looking to the establishment of adequate renewal reserves. Only in that way can the industry hope so to preserve its plant and equipment as to meet effectively the conditions set up by modern transportation requirements.

New York Five-Cent Referendum Act Defective

ELECTION day in New York, Nov. 2, will not see the question of a 5-cent fare referendum submitted to the voters. The Court of Appeals has effectually squelched any such proposal. The matter had been passed upon before by the lower courts, but only as to the regularity of the proceeding, not on any of the technical points involved.

So an end has been put to an obnoxious piece of legislation sired by former Mayor Hylan and nurtured by former Comptroller Craig. Although these gentlemen were anathema or worse one to the other in office, they appeared in the rôle of Damon and Pythias in this little piece of hokum, which fixed the citizens' attention upon the 5-cent fare alone. The unrevealed effect, however, would have been to prohibit action by the authorities, thus making transit contracts immune to change.

The opinion of the court was to the effect that if there was a shred in the law that could be saved, it was not worth saving. Consequently it declared it to be folly to submit this "maimed and worthless thing" to the voters. In other words, as it now stands revealed the legislation was an attempt to fool the public into the belief that a vote was merely a vote for or against the 5-cent fare. This deceit was continued even in the form of the question to be printed upon the official ballot which mentioned only the fare.

In New York there has never been a clean-cut expression of public opinion on the vitally important questions of an independent subway system and municipal operation. By this bill a neat trap was laid to trick the people into a vote that (without their knowing it) meant an independent system and municipal operation, because with agreements between the city and the existing companies practically prohibited, no other course than municipal operation would be possible. The bill that the courts have scotched by their action would have perpetuated the present transit conditions in New York, made intolerable by the very people who, not content with their work of opposition while in office, sought by this impudent means to bedevil things still further.

All the Noise Is Getting Nowhere

ANY disposition, if such there really be, by the two major steam railroads of Pennsylvania to enter into competition in kind by the operation of buses in territory already served by the electric railways or by other legalized carriers deserves to be condemned, but it does seem that the over-zealous Governor Pinchot, in refusing to sanction charters for subsidiary bus companies sponsored by these railroads, has gone out of his way to malign the Public Service Commission. The Governor pretends to foresee the steam carriers swallowing up the present highways to their own aggrandizement, and then proceeds intemperately to lash the Public Service Commission.

Off hand, the correspondence between the Governor and the commission over the matter might make it appear that the controversy is a purely local one, grounded in a manifest disapproval of the personnel of the commission as now constituted, but it really goes deeper than that. It is an indirect attack on regulation itself. The commission appears to be cognizant of the need on its part to protect the existing carriers from encroachment one upon the other. The Governor says, however, that if he were to sign the railroad bus subsidiary charters, the commission could grant certificates of public convenience without anybody's being able to stop it. There has, however, been no evidence of this. Any such action on the part of the commission would probably be in direct violation of the rights of the existing carriers, provided, of course, that these carriers are prepared to meet their contractual obligation.

Still the fear that the Governor purports to feel is shared in other quarters. This is made plain in a statement by Powell Evans, president of the Schuylkill (Electric) Railway, Girardville, published on Oct. 20. Reference to this statement is made elsewhere in this issue. It deserves careful attention not only in Pennsylvania but in other states. Mr. Evans says that the electric railways urged the facts upon the steam railroads patiently and temperately before the bus programs of these companies were finally adopted, but without effect, "whereupon protest was made to the Governor, the Public Service Commission and the courts, with the result that the charters were denied." He says that the electric railways throughout the state "propose to resist to the utmost the unjustifiable aggression initiated by the steam lines against established, responsible and equally legitimate local competitors."

In other words, here is a situation in which a Governor pretends that the members of the Public Service Commission cannot be trusted to protect the rights of the small against encroachments by the large corporations, in which the commission says that each applicant for the right to operate must prove his case, and in which the electric railways have been unable to impress the steam railroads with a point of view they rightfully regard as reasonable. With due respect to all the parties involved, it certainly would seem that nothing can be gained by further blind adherence, particularly on the part of the steam railroads, to the policies that have so far marked the progress of this controversy. The very mutuality of their interest ought perforce to bring the steam railroads and the electric railways together to devise a plan eminently fair to each. It is not the first time this has been found to be the only adequate way to avoid consequences terrible alike to the carriers and the public.

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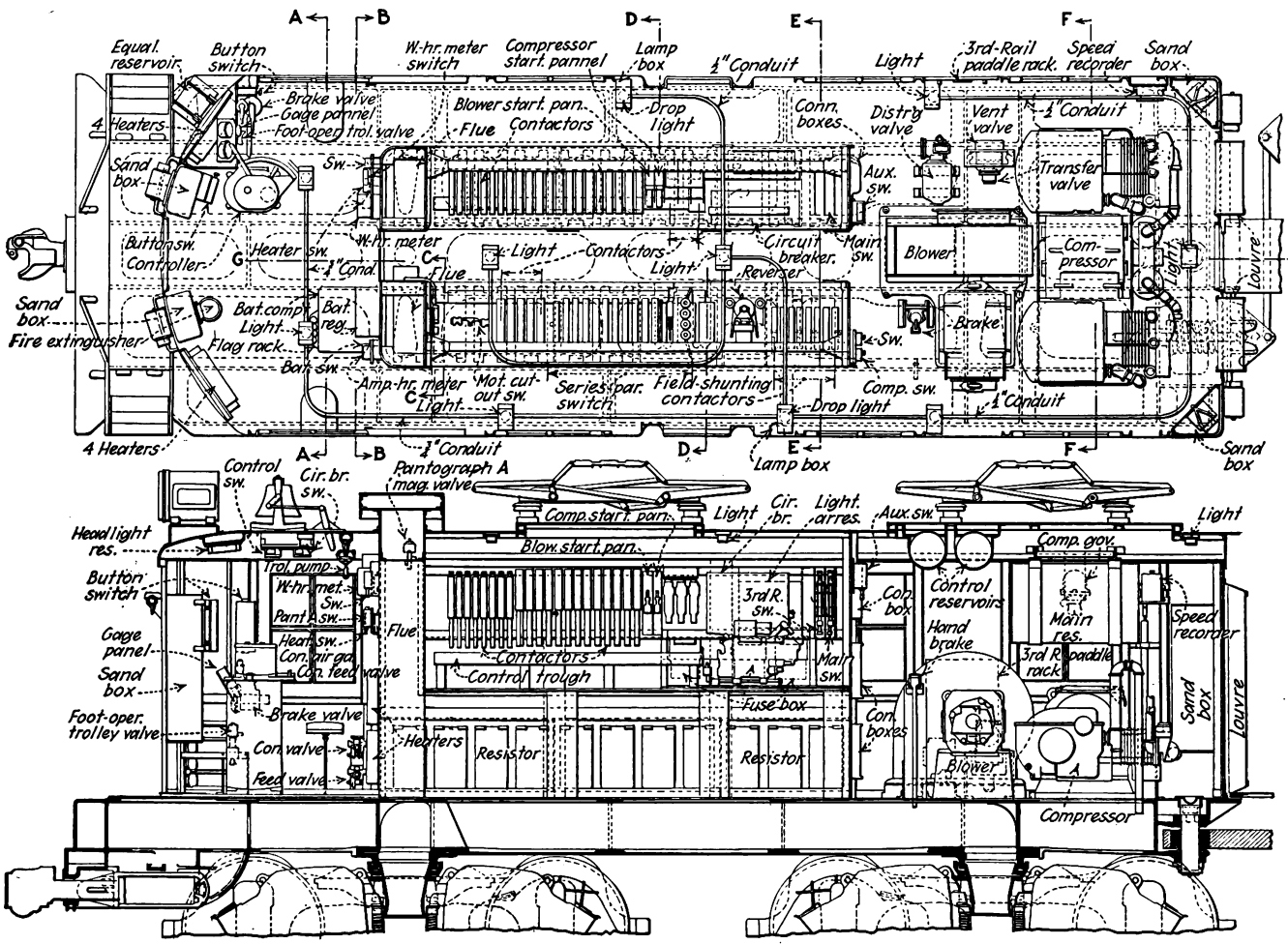
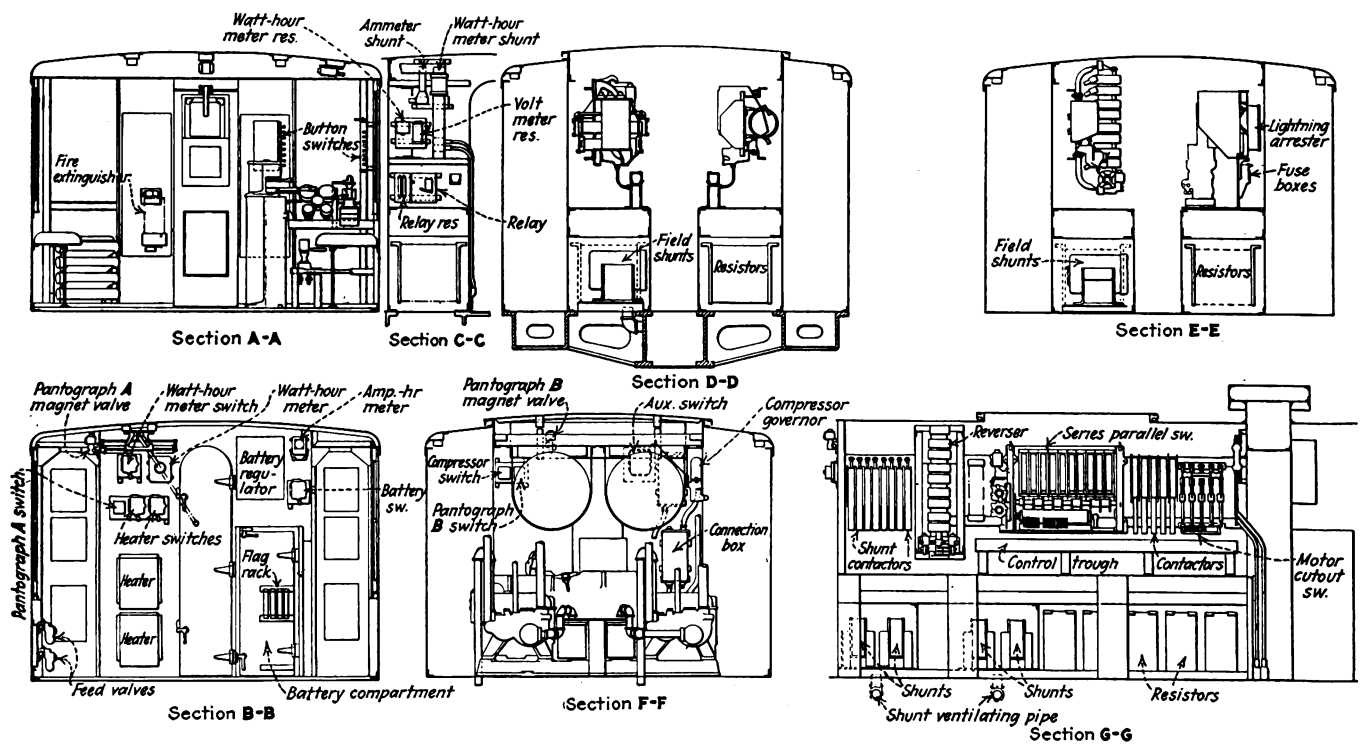
New Electric Engines Weighing More than 170 Tons Placed in the Freight Service of New York City



Floor Plan, Above, and Sectional Elevation, Below, Show the Layout of Equipment that Is Mounted Above the Cast-Steel Floor Frame of This Latest New York Central Electric Locomotive. Air Ducts Between Blowers and Propulsion Motors Built In as Integral Parts of the Floor Frame



Five Cross-Sections Shown Above Illustrate the Compact Grouping of Apparatus. In the Lower Right-Hand Corner Is a Partial Longitudinal Section Showing the Control Assembly

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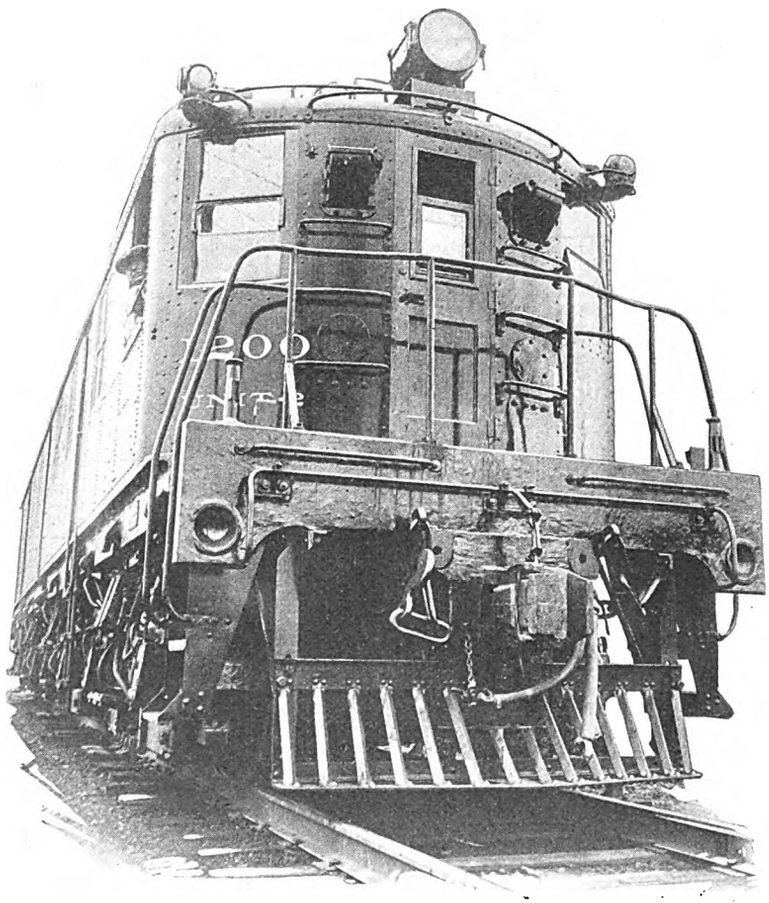
New Electric Freight Locomotive Placed in Service by New York Central

Two Units Just Received Perform Well Within Specification Limits—Designed to Operate from Third Rail or Overhead Construction of Present Type or that Contemplated on West Side Tracks—Three Running Connections Are Provided with Two Steps of Inductive Field Shunts, Allowing Nine Running Speeds with Full Load Varying Between 4 M.p.H. and 24.8 M.p.H.

By Edwin B. Katte
Chief Engineer Electric Traction, New York Central Railroad

THE New York Central Railroad's new electric freight locomotives are designated as Class R and will be used for hauling through freight on the electric division and west side freight tracks in New York City and vicinity.

These engines, two of which have been purchased, differ from any previous electric locomotives of the company in that they are built in two nearly identical units. The units are connected by a special coupling and can be separated for shop purposes, but are numbered alike and will not be separated in service. The designed weight was 170 tons, the actual scale weight of the first locomotive is 353,600 lb., all on the drivers. In an illustration is shown the general outline of the locomotive and the principal dimensions.



More than 100 Cars Weighing 3,000 Tons Were Hauled by This New Engine Between New York and Harmon at Varying Speeds up to 34½ M.p.H.

Each unit consists of a box type cab mounted on two four-wheel swivel trucks, not articulated. The floor frame is a single steel casting, as shown in an accompanying illustration. This use of large steel castings for underframes and truck frames is the most notable mechanical feature of this locomotive and simplifies the construction by eliminating great numbers of bolts, nuts and small parts. Extending longitudinally through the middle of the underframe casting is a large duct for conveying air from the blower above, through the centerplates to the traction motors. Lugs for lifting the cab from the trucks, buffer beams with push pole pockets, convenient attachment for couplers, for truck safety chains, etc., and side steps are cast integral.

The truck frame is an integral steel casting and embraces side frames, end frames and transom. The transom is cast hollow, to conduct the air which passes downward through the large centerplate opening to the motors. Lugs for spring nose suspension of the motors are cast on the transom. The cast frame is supported at the middle of each side on a semi-elliptic spring, the ends of which are carried in cast steel spring hangers, swung between two equalizer bars. The equalizer bars are cushion-supported on each journal box by a nest of helical springs, which adds very materially to the good riding of the locomotive. The journal boxes are made of cast steel with brackets projecting from the under side for the support of the third rail shoe beam. The wheels, which are all drivers, have cast steel spoke centers and steel tires. The journals are 7 in. x 14 in.

PRINCIPAL DIMENSIONS AND WEIGHTS OF NEW YORK CENTRAL LOCOMOTIVE

Length over coupler faces	68 ft. 2 in.
Length of each cab	29 ft. 0 in.
Truck centers	16 ft. 0 in.
Spread of third rail shoes	49 ft. 0 in.
Height of floor over rails	5 ft. 4¼ in.
Height of roof over rails	12 ft. 7⅞ in.
Height of trolley retracted	14 ft. 7 in.
Width over cab sheets	9 ft. 10 in.
Width over all (over eaves)	9 ft. 11½ in.
Wheelbase, total (both units)	55 ft. 3 in.
Wheelbase, each unit	24 ft. 3 in.
Wheelbase, truck	8 ft. 3 in.
Weight, total	353,600 lb.
Weight, per axle	44,200 lb.

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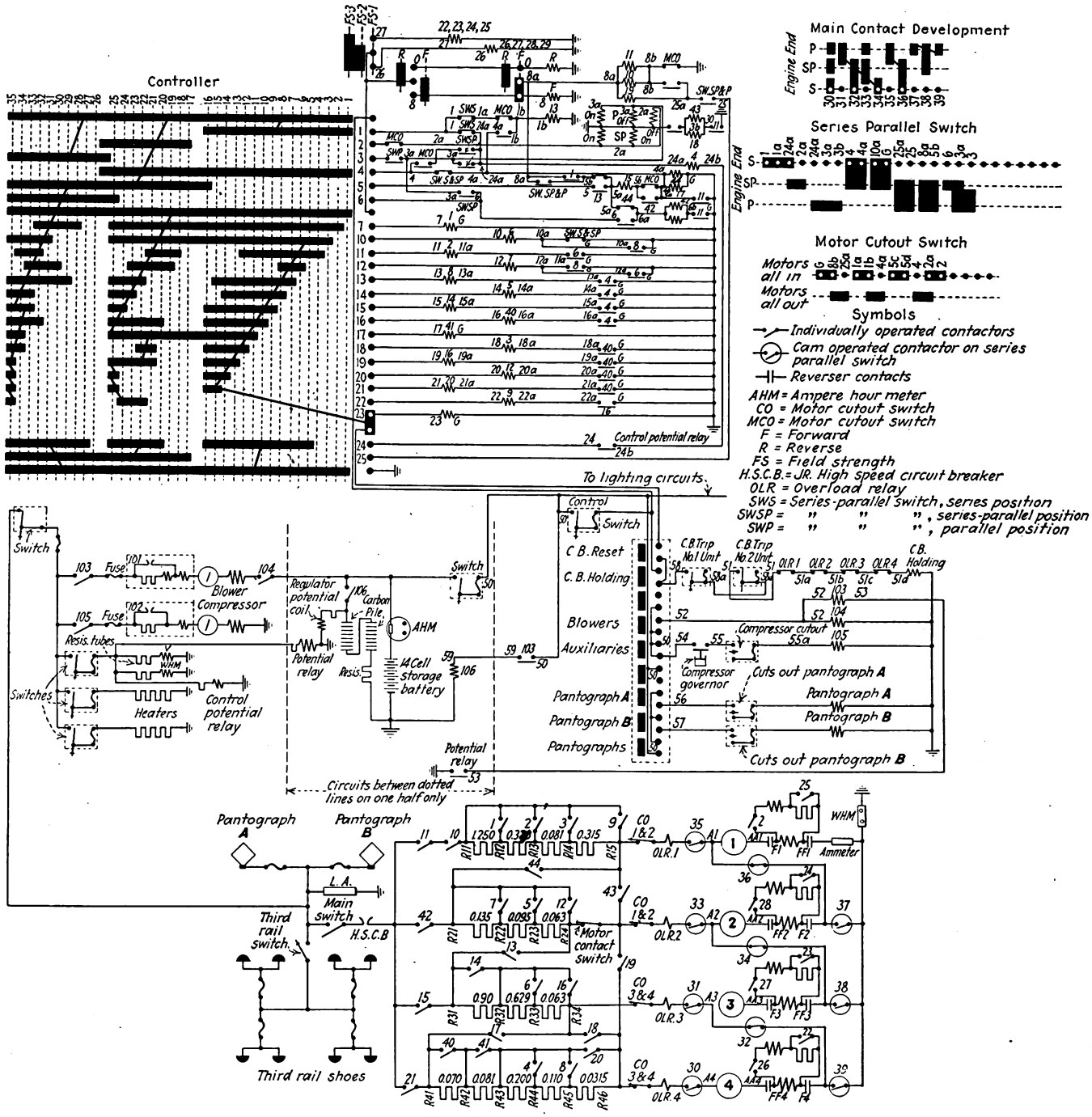

Controller Development and Wiring Diagram of New York Central Road Freight Locomotive, Two of Which Have Just Been Received

Eight traction motors of standard geared railway type, with commutating poles and forced ventilation, are mounted on the axles. The motors are designated as GE-286A and are identical, except for gear ratio, with those used on the Class Q switching electric locomotives. The same type will also be used on the oil-electric locomotives now under construction. The pinion on the armature shaft has twenty teeth and the spring gear on the axle 69 teeth, giving a ratio of 3.45, as compared with 4.235 on the Q locomotive. The motors are insulated for 1,500 volts for possible future use, two in series.

The four motors on each unit are connected in series, series-parallel and parallel, at successive controller positions. At any running position a separate handle on the controller can be moved to either of two positions, known as FS-2 and FS-3, to obtain higher speed by weakening the motor fields by means of inductive shunts.

The GE-286 motor is rated at 415 hp., 575 amp., on the standard one-hour basis, with a temperature rise of 120 deg. C. and a voltage of 600. The continuous rating is 332 hp. at 460 amp. The one-hour rating of the locomotive is 3,320 hp. At 20 per cent adhesion between wheels and rails, based on 170 tons weight, the locomotive develops 68,000 lb. tractive effort. The speeds to which this tractive effort can be exerted at 575 volts are: Series, full field, 4.0 m.p.h.; series parallel, full field, 9.6 m.p.h.; parallel, full field, 20.0 m.p.h.; FS-2, 22.5 m.p.h.; FS-3, 24.8 m.p.h.

Each motor was given a rigid shop test. The resist-

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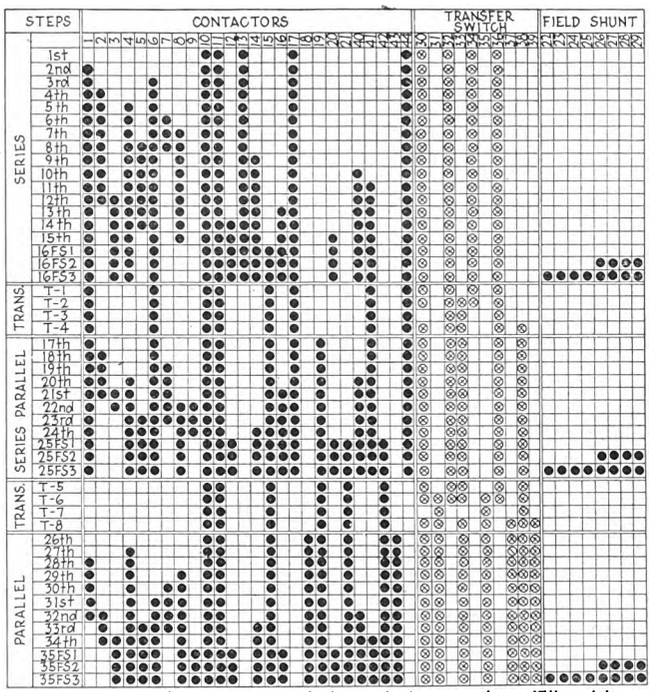
ances of fields and armature were measured. Two motors were coupled mechanically and run for two fifteen-minute periods in each direction, each machine running alternately as motor on rated current and as generator discharging into a water rheostat. Each motor was given a high potential test of 4,000 volts. Sample motors were also run at various loads and voltages to check the characteristics. Commutation was practically sparkless at all loads. Heat runs were made under various conditions, blown and unblown, full and shunted field and voltages running from 300 to 750 volts to check the ratings. The characteristic curves of the motors and the tractive effort curves of the locomotive are shown herewith.



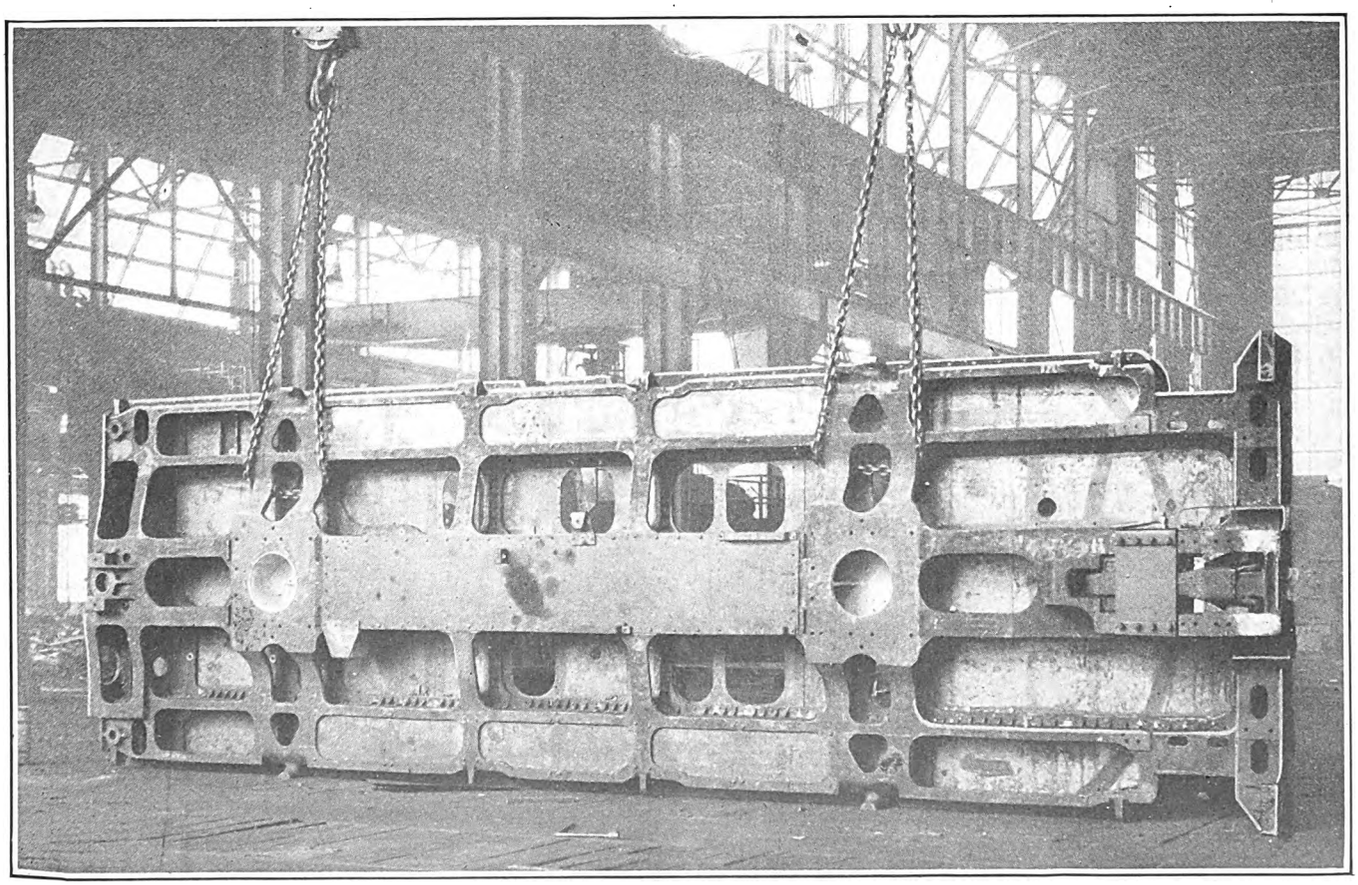
When operating with motors cut out, line contactors come in on 17th notch

Sequence Diagram Showing Operation of Control and Contactors for New York Central New Road Freight Electric Engine

The cab of each unit is divided by a transverse partition into an operating cab at the outer end and an apparatus space occupying the remainder of the cab. An aisle extends along each side from a door in the partition to a middle door at the other end for communication between units. The blower for the traction motors, the air compressor, hand brake, air brake apparatus, etc., are located on the floor between these aisles. The control apparatus, including contactors, circuit breaker, relays, reverser, series-parallel switch, fuse boxes for auxiliaries, etc., is arranged in two rows in a compartment next to the operating cab and is accessible both from the outer aisles and from a short center aisle opening into the operating cab. The grid rheostats are located just above the floor, below the control apparatus, in this compartment and are ventilated through flues to the roof. The estimated height of the center of gravity is 59 in. above the top of the running rails.

Both units are wired alike except for the battery and battery accessories, as illustrated in the schematic diagrams reproduced herewith.

The control apparatus is of the PCL electro-pneumatic type. The contactors, reversers and series-parallel switches are operated by air cylinders. The air for operating each cylinder is controlled by a magnet valve



One of the Innovations in This Electric Locomotive Is the Cast-Steel Floor Frame Type of Construction. This Eliminates an Expensive Assembly Job Using Structural Shapes and Rivets

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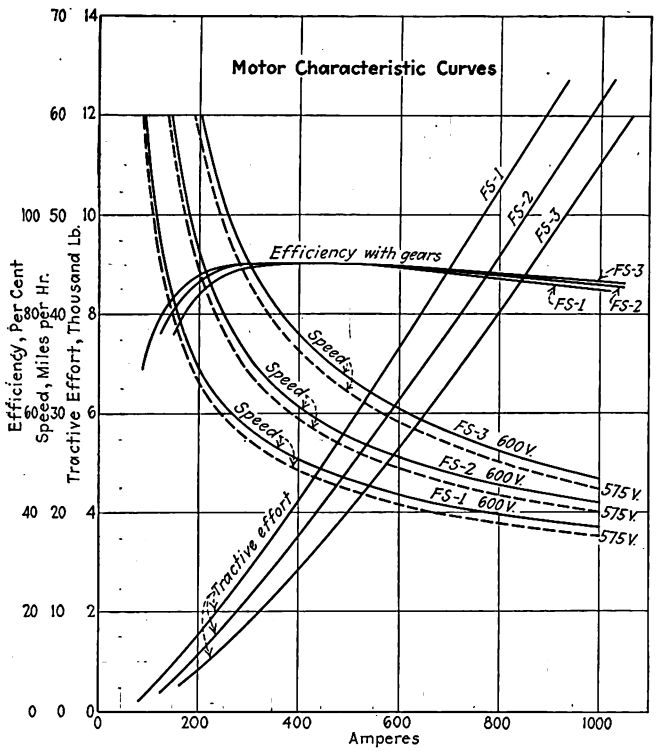


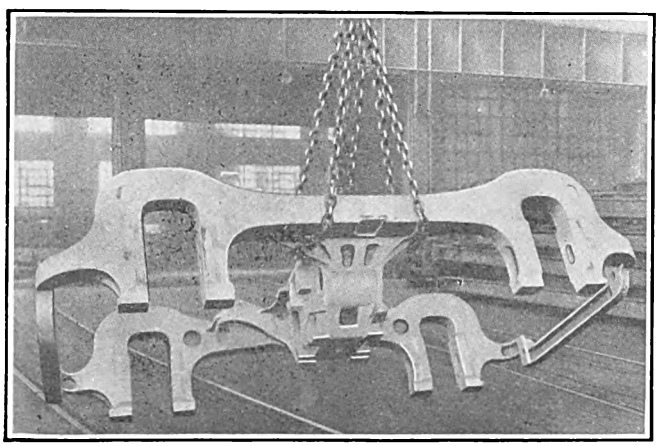
Characteristic Curves of the General Electric 286 Motors Rated at 415 Hp. on 575 Volts. Eight Motors on Each Complete Locomotive Are Used, Making the One-Hour Rating of the Engine 3,320 Hp.

energized from the master controller. The series-parallel switch consists of a group of ten contactors operated by a camshaft controlled by four magnet valves. A 32-volt, 150-amp.-hr. storage battery, charged in series with the blowers, is used to furnish current for the motor control circuits, lights and control of all auxiliaries.

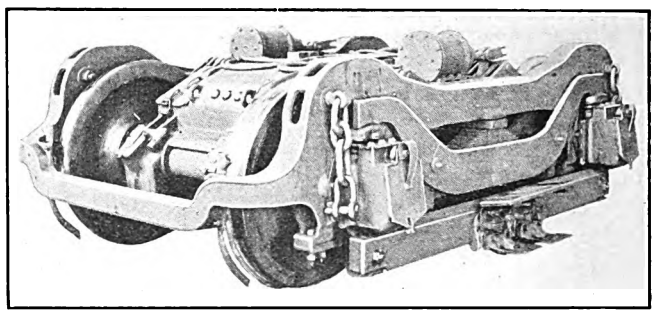
All auxiliaries, including pantographs, blowers, compressors and lights, are controlled by push button switches located convenient to each engineer's position.

A blower to provide forced ventilation for the traction motors is located on each unit. Also on each unit is a two-stage air compressor, having a displacement of 150 cu.ft. of free air per minute that supplies air for the air brake system, motor control and auxiliaries, including pantographs, whistles, sanders, etc.

Each locomotive is equipped with eight third-rail shoes on each side for operation on the standard New York Central third-rail. In addition four pantographs are provided which will collect current from either the overhead third rail at a height of 15 ft. 3 in. or on the contemplated overhead construction on the west side tracks at a height of 17 ft. 4 in. A bus line between units was not considered necessary.



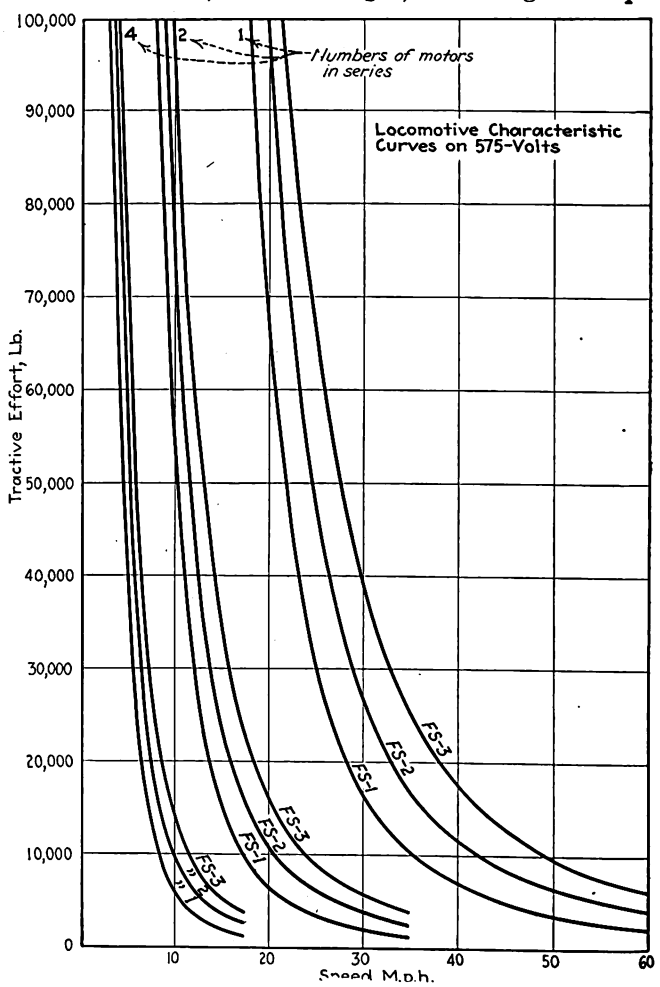
Cast-Steel Truck Frames Ready for Assembly. New York Central Has Just Received Two Road Freight Locomotives Equipped with These Trucks



Cast-Steel Truck Frames Are Used with Two 415-Hp. Motors Mounted on Each. Two Trucks Non-Articulated Comprise a Half Unit of the Locomotive and Two Units and Four Trucks the Complete Assembly

The locomotive is protected from lightning by an aluminum cell lightning arrester. The motor circuits are protected by a high-speed circuit breaker which opens on excessive current and can be tripped by an overload relay in each motor circuit or by a switch placed convenient to the engineman.

The locomotive is capable of operating with a train on a curve of 230-ft. radius and of running at a speed of 60 m.p.h. Under test with special gears this unit has been run at 86 m.p.h. The locomotive is designed to haul a train of 3,000 tons weight, consisting of 75 per



Tractive Effort Curves of New York Central New Road Freight Engines. Nine Running Points Are Provided by Use of Motor Connections and Field Shunts. Under Test One Engine Has Made Speeds of 86 M.p.H. with Special Gears

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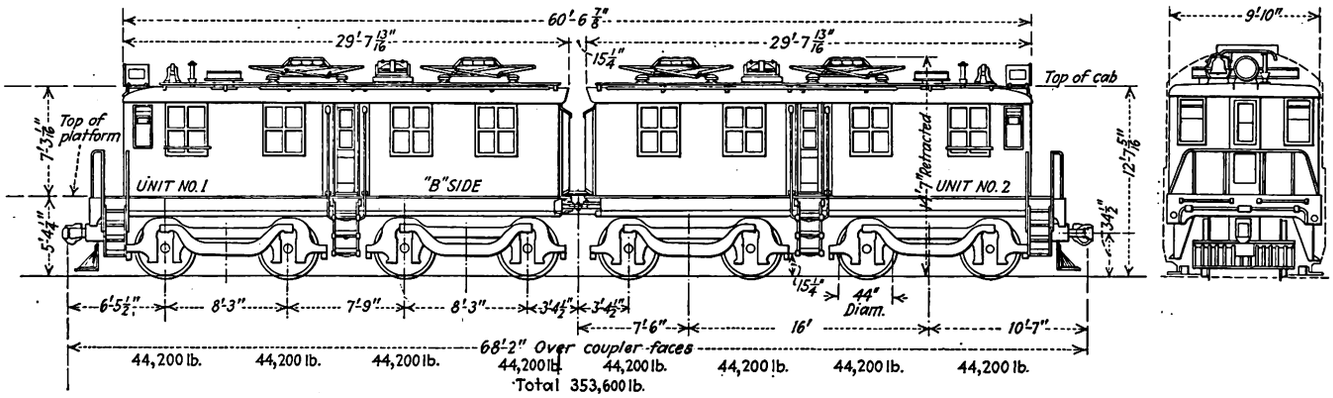


All Weight Is on Drivers and Evenly Distributed, as Shown in This Drawing of the First of Two New Electric Road Freight Locomotives Recently Received by the New York Central

cent empties and 25 per cent 50-ton loaded cars, at a speed of 32 m.p.h. and with 575 volts at the motors.

The service capacity of the locomotive was defined in the specifications by a requirement that in a continuous series of runs between 79th Street (west side) and Harmon, hauling the train just mentioned, making four intermediate stops of two minutes duration on each trip, accelerating at 20 per cent adhesion and having a layover of twenty minutes at each terminal, with voltage at 575, the temperature rise in the motors should not exceed 140 deg. C. measured by change in resistance or 120 deg. C. by thermometer.

Acceptance Tests Well Within Specifications

An acceptance test of one of these locomotives was run recently to ascertain whether the locomotive conformed to the requirements of the specification. A train of 108 cars, including cabooses, with the proper proportion of loads and empties, weighing 3,006 tons, was assembled. A caboose containing instruments to indicate and record voltage, amperes and speed was coupled to the locomotive and the instruments connected into the locomotive circuits by cables carried temporarily over the roofs. It was intended to run three round trips with this train in about 7½ hours, but due to accidental uncoupling of cars and other operating delays the test was terminated after nine hours, near the end of the second round trip, after making 95 train-miles. The number of stops, exclusive of terminals, was seventeen. The maximum speed was 34½ m.p.h. The amount of energy consumed by this locomotive in hauling the 108-car train under the described test conditions was 26.3 watt-hours per trailing ton-mile.

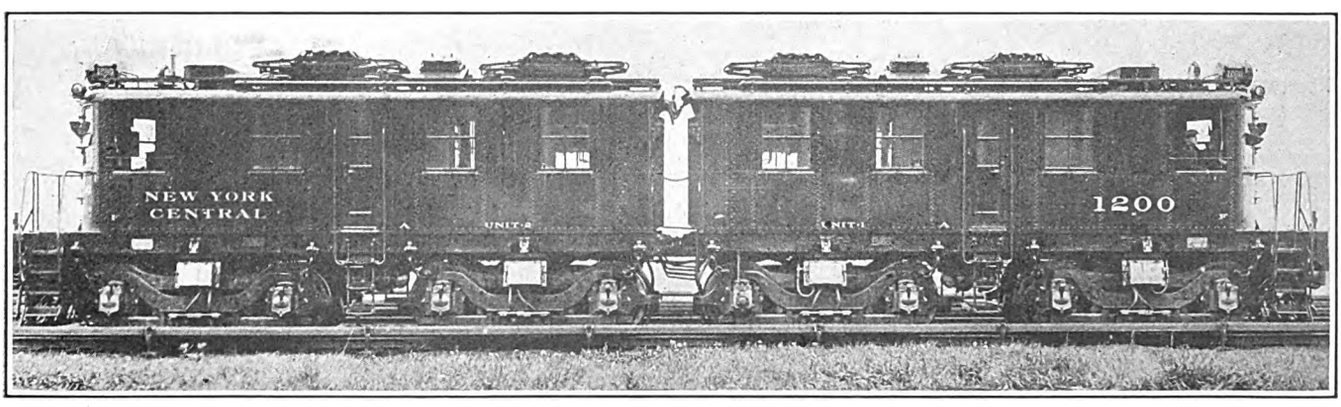
The maximum motor temperature rise observed was 90 deg. C., which, taking into consideration all the conditions of the test, indicates that the temperature rise would be well within the limit of the 140-deg. requirement in the specification.

Changes in Passenger Traffic in London Since 1913

COMPARISON of the numbers of passengers carried by the rapid transit lines, buses and tramways of Greater London in 1913 and 1925 discloses an interesting change in the relative importance of these three modes of transport. The volume of traffic carried by each of the three has greatly increased during the interval of twelve years, but the growth has been uneven and the buses and rapid transit lines have overtaken the tramways, which in 1913 occupied the first place.

	Passengers Carried	Per Cent of Total	Rides per Capitum
Tramways, 1913	812,000,000	36	110
Tramways, 1925	979,000,000	27	128
Buses, 1913	736,000,000	32	100
Buses, 1925	1,671,000,000	45	218
Rapid transit lines, 1913	725,000,000	32	98
Rapid transit lines, 1925	1,049,000,000	28	137

From 1913 to 1925 the total volume of traffic increased by 63 per cent, but the tramway passengers increased only 21 per cent. The bus passengers increased by the phenomenal figure of 127 per cent, while the rapid transit passengers increased by 45 per cent. The result has been that the tramways have fallen to the bottom of the table while the buses have risen to the top. Meantime the rapid transit lines advanced to the second place.



Side View of the New Electric Engine That Will Haul 3,000 Tons of Freight Consisting of 100 Cars Between Harmon and New York City

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Educational Opportunities for Philadelphia Employees

MANAGEMENT representatives of the Philadelphia Rapid Transit Company, Philadelphia, Pa., will devote much time this fall and winter to educational courses designed to give to P.R.T. employees opportunity for a broader understanding of the principles underlying the co-ordinated transportation system and its varied activities. The courses are under the direction of men who are not only versed in the theories of their subjects but in their practical application as well.

Courses 1 and 2 at the William Penn High School are open to all. Courses 3, 4 and 5, applying more specifically to P.R.T., are held entirely under P.R.T. auspices at company locations.

1. *Public Relations with a Background or Transportation and Public Utility Economics—J. M. Shaw.* Held at William Penn Evening High School, Fifteenth and Wallace Streets, 7:30 to 9:30 p.m., Tuesday evenings, from Sept. 14 to Dec. 14, inclusive. Topics will include:

1. Origin and development of co-ordinated transportation as a public service.
2. Owner, manager, worker, consumer — four wheels whose alignment is necessary to progress.
3. Monopoly vs. competition.
4. Relation of fares to service.
5. Production and participation—the heart of the industry.
6. The new science of public relations.
7. Developing public contacts.
8. Service as a molder of public opinion.
9. Public ownership of public utility securities.
10. The technique of complaint adjustment.
11. The newspaper.
12. Some advertising mediums for a co-ordinated transportation system.
13. General review.

2. *Handling Men—E. J. Benge.* Held at William Penn Evening High School, Fifteenth and Wallace Streets, 7: 30 to 9: 30 p.m., Monday evenings, from Sept. 13 to Dec. 13, inclusive. Topics will include:

1. The problem of handling men.
2. Stimulating subordinates.
3. Control.
4. Discipline.
5. Appeals for better work.
6. Rivalry and other incentives.
7. The force of habit.
8. Training insures careful work.
9. The supervisor's job.
10. Difficulties with subordinates.
11. Combating negative traits.
12. Difficulty with superiors.
13. Responsibility and authority.

3. *Electric Railway Industry*—Held at Luzerne Auditorium, 7: 30 to 9: 30 p.m., Thursday evenings, from Oct. 7 to Jan. 6, inclusive.

1. Development of street railway industry, W. K. Myers.
2. Public relations, J. M. Shaw.
3. Importance of employees in public utilities, A. A. Mitten.
4. Transportation and traffic, W. J. Beadle.
5. Generation and distribution of power, H. G. Werner.
6. Maintenance of equipment, G. H. Stier.
7. Construction and maintenance of way, J. H. M. Andrews.
8. Materials, W. E. Scott.
9. Finance and accounting, C. E. Ebert.
10. Legal, C. J. Joyce.
11. Claims, J. J. K. Caskie.
12. The motor bus, J. A. Queeney.
13. General discussion, J. E. Whiting.

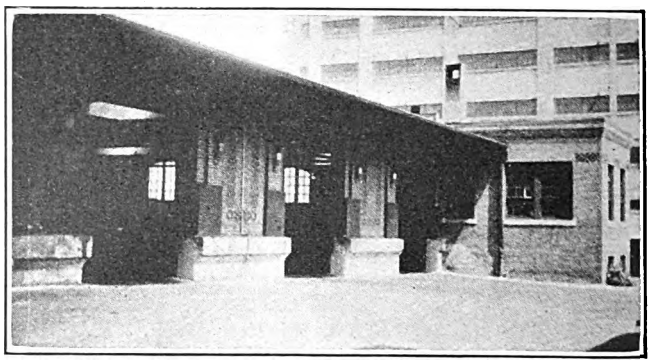
4. *Supervisory Problems—Messrs. Andrews and Beadle.*—A discussion group open only to superintendents, foremen, supervisors, department heads and others in equivalent positions. Held at 1520 Spruce Street from 7:30 to 9:30 p.m. on alternate Wednesday evenings. Six meetings: Sept. 22, Oct. 6, 20, Nov. 3, 17, and Dec. 1.

5. *Public Speaking and Parliamentary Procedure—Mr. Holt.*—A practical group consisting of ten meetings at Luzerne Auditorium, 7: 30 to 9: 30 p.m., Monday evenings, from Sept. 20 to Nov. 22.

Express Station Converted Into a Garage

SEVERAL years ago the Union Street Railway, New Bedford, discontinued its electric express business when connecting trolley lines leading to two of the principal shipping points, Boston and Providence, were discontinued. The general increase of motor trucking also proved to be too great a competitor. A centrally located modern freight station, representing a large investment, then yielded no income.

With the establishment of the motor coach service by the railway a garage where the coaches could be suitably housed and repaired had to be provided. As this express station was located less than ¼ mile from the



Union Street Railway Now Uses This Former Freight Station to House Twelve Buses

New Bedford terminal of the New Bedford-Fall River-Providence motor coach line, it was considered an excellent location for a garage. Little remodeling of the building was necessary. As about two-thirds of this building had been previously leased to a local distributing agency, only the remaining third was converted into a garage. Should the company deem it advisable to increase motor coach operation at any time the remaining part of the building can be remodeled as a garage extension.

Reconstruction consisted mainly of installing garage doors, laying a concrete floor with safety bumpers, providing a washing and draining system and piping and wiring for heat and light. Air pumps, machines and benches were also systematically installed. The office at the end of the building was converted into a combination office and stock room.

Railway Information Published in Cincinnati Telephone Directory

IN CINCINNATI, OHIO, a city and suburban telephone directory is no longer complete without information on the street railway companies. The summer, 1926, classified directory, with valuable information of the railway and bus routes of the Cincinnati Street Railway is proof of this innovation. A full page map shows the co-ordinated service as of April 1 and a second page contains data on car lines, route numbers, fares and transfers, as well as diagrams of boarding and alighting points. For the resident of the city of Cincinnati this directory will be helpful, but for the strangers in the city it will serve as an invaluable guide.

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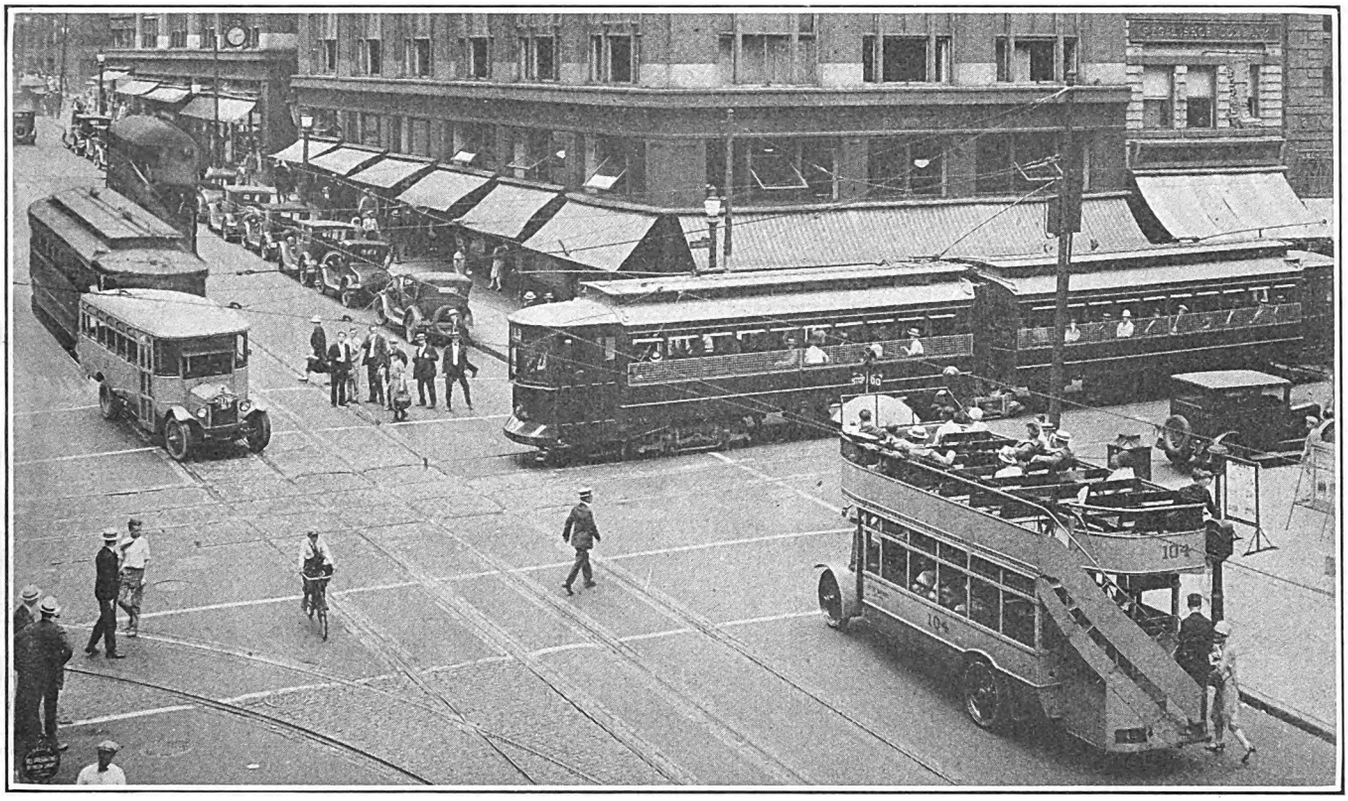

This View Shows an Articulated Car, a Single Car, a Single-Deck Bus, a Double-Deck Bus with Open Top and a Double-Deck Bus with Closed Top, All About to Make the Crossing at Sun Square, One of the Oldest and Busiest Cross Roads of Baltimore

Baltimore in Campaign to Increase Traffic

Many Notable Improvements, Including the Addition of Modern Rolling Stock and Methods for Making Higher Schedule Speed, Have Won Increased Patronage—The Company Has Also Actively Participated in Civic Movements to Improve Street Conditions

LOCAL public carrier transportation is sometimes called a monopoly, but the United Railways & Electric Company of Baltimore realizes that the modern story of a street railway is a story of competition. It believes that only by popularizing the service and making the public realize the necessity for favorable operating conditions can an electric railway do its full share in local transportation.

During 1924 and the early part of 1925 the company suffered a decrease in revenue passengers carried, as compared with the previous year, and while changes in zones made this decrease appear greater than it really was, predictions were not wanting from persons hostile to the company that street cars were becoming obsolete and that Baltimore's mass transportation would be handled before long entirely by buses.

Today the situation is quite different. Since January, 1926, both gross revenue and revenue passengers have not only exceeded the figures for 1925 but those for 1924, before the changes in zones already mentioned were made. March, April and May were the most profitable months the company had had since 1920, the peak year in the street railway industry in the country. For the six months ended June 30, 1926, revenues increased 2.5 per cent over a corresponding period for 1925 and revenue passengers increased 3.6 per cent. What is equally, if not more, important, suggestions in the daily newspapers that street cars are out of date have disappeared, and the public attitude toward the company has greatly changed. The most important factors, in the opinion of the company, for this change are:

1. Open and vigorous advocacy by the company of the interests of the car riders of Baltimore in all traffic discussions.

2. Proof by the company of its sincerity in this advocacy by actual diligent attention to the car rider's comfort and convenience when on the cars or buses; in short, painstaking service.

3. Getting rid of old-fashioned cars and substituting bigger and better ones, substantially increasing bus

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operations, practical and successful work on the rush hour problem; in brief, "new service for old."

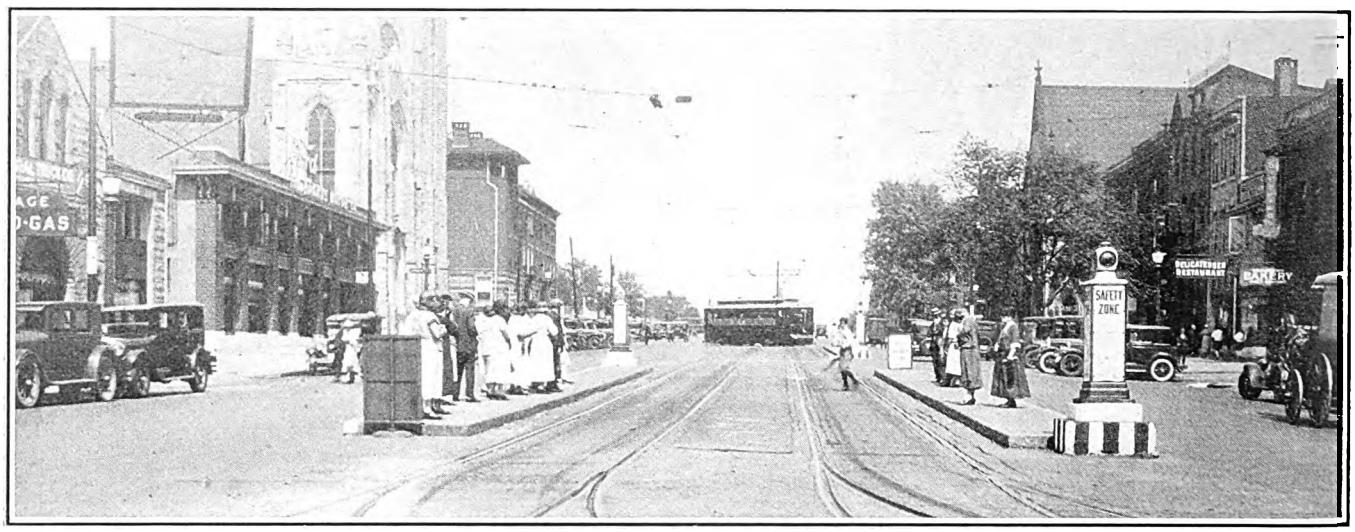
4. Frankly selling this service in the open market against competition by newspaper advertising on a large scale.

5. A definite policy of self-criticism and consistent co-operation with public criticism for the good of the service.

6. Constant reiteration to the public of the principle that the good street car system, properly augmented by buses, cannot be improved upon for public transportation; earnest efforts to prove this by service, and publication of the proof whenever possible.

7. More than ordinary eagerness to co-operate with the Baltimore people and groups—to be a part of the life of the city — to put the whole car system on the side of sound movements involving the general public welfare.

Some steps in this campaign, such as the advertising campaign, which was distinguished by a series of very striking full-page advertisements in the Baltimore local papers, have been described in the ELECTRIC RAILWAY JOURNAL, as in the issue of March 27, 1926, page 551. This article touches briefly on other steps in the program, as mentioned in the company's brief in the Coffin award contest.



Some of the Streets in Baltimore Are Equipped with Raised Platforms. The Entering End of the Platform Is Protected with a Safety-Zone Light Post, with Conspicuously Marked Base, and the Leaving End with a Substantial Frame Containing a Safety Poster. This View Is on North Charles Street

SUPPORTING THE INTERESTS OF THE CAR RIDERS AND PUBLIC POSITION OF THE RAILWAY

This is the first factor mentioned in the list and is perhaps best illustrated by action taken on the conclusions given by Kelker, De Leuw & Company in a traffic survey report for Baltimore made by them during the early part of 1926. One of the recommendations in this survey was the elimination of parking, both partial and complete, in congested districts. This conclusion was attacked by the traffic committee of the Baltimore Association of Commerce, which was composed of business men and industrial interests and included a representative of the railway. The majority report of the committee opposed prohibition of parking on the ground that customers of the local stores used automobiles in their shopping trips rather than the railway. The representative of the railway presented a minority report, pointing out that the merchants would oppose their own interests if they adopted the majority report, since most of the shoppers shopped by street cars, and speedier street car service was more necessary than the right to park automobiles indiscriminately.

To prove this contention, the company arranged to make a check of the customers arriving at three prominent downtown stores—one of the largest department stores in the city and two smaller stores. This check showed clearly that for three days less than 5 per cent of the customers of the big department store came by automobile, and on one day the percentage was only a little more than 3 per cent. The result of this survey and other data which the company was able to offer was that the board of directors of the Association of Commerce voted unanimously to reject the report of its own traffic committee and to support the recommendations of the traffic survey as far as possible.

INCREASED EFFICIENCY IN OPERATION

This is the factor mentioned second in the list given. It is obvious that the company's success in gaining public good will in Baltimore would not have been possible without, first, proof of its sincerity in advocacy of the car riders' rights by substantial improvement of its service and, second, frank and vigorous efforts to sell this service in the open market against competition. Proof of improvement in the service is shown by the fact that since September, 1925, a total of 95 more or less obsolete cars have been dropped from the company's equipment, and as a result of an intensive car construction program, coupled with a scientific study of each of the company's 36 lines, there have been:

1. Substitution on one important line of cars seating 47 passengers for cars seating 36 passengers.

2. Substitution of 36-seated cars for 30-seated cars on two important lines.

3. Doubling of the number of 60-passenger trail cars on one important line.

4. Adoption of a system of interline operation during rush hours which the company believes to be unique, resulting in ability to make double use of many cars when most needed, less crowding of riders during peak periods, greater frequency of service, decreases in deadhead or "light" mileage and increases in receipts per car-mile.

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5. Increases in speed on many lines.

6. Adoption of express service on suburban lines, materially reducing the difficulties presented by requirements for long and short haul service on the same line.

7. Completion of 26 articulated two-car, three-truck trains, a boon during peak hours, since they double the capacity of the lines on which they operate, and are a popular improvement with riders.

8. Greater use and increase in the number of permanently coupled two-car trains, which have proved invaluable, especially for heavy movements to and from places and events that attract crowds.

Of the 95 cars dropped as obsolete, 87 were single-truck closed cars, seating 30 passengers each; one was a single-truck convertible car, seating 28 passengers, and seven were single-truck one-man cars, seating 22 passengers each. In all cases the substitution of bigger cars for smaller ones meant semi-convertible cars with cross seats in place of double-truck closed cars with longitudinal seats. One line on which this was done runs through a territory largely occupied by automobile owners, and the old cars did not attract them, while the new ones did. In the first five months of 1926 this line showed an increase in earnings of 7 per cent over the corresponding period in 1925.

How Greater Speed Has Been Obtained

The adoption of the recommendations in the traffic survey will help to increase the speed of both street cars and automobiles in Baltimore. In the meantime the company has introduced several other changes which help in this direction.

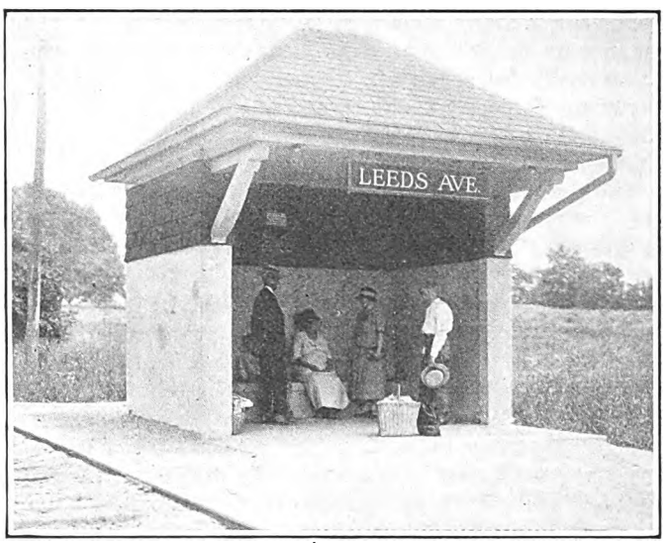
Its service includes that by both single cars and two-car trains, but it was found that during the rush hours the two-car trains, whether made up of motor car and trailer or multiple-unit cars, were slower than the single cars because of the larger number of stops made to receive and discharge passengers. In consequence, a skip-stop plan for these trains was put in effect during rush hours so that the two-car trains were at once put on an equal footing, as regards schedule speed, with the single cars. Decreases in running time resulted, the amount saved on one line between the center of the city and the line's northeastern terminus, a distance of approximately 6 miles, being six minutes. The adoption of the plan only during rush hours seemed to avoid many of the objections to the old-fashioned plan of "skip-stop." In fact, so successful was the change that beginning June 1, 1926, the company has used its "limited stop" plan on three other lines, whose operation was not complicated with the mixture of two-car trains and single cars. In these cases, stops are skipped during rush hours only. Stop poles in Baltimore carry a white circle, as is usual, to identify them, and under the new plan the poles not used during rush hours have a distinctive marking to distinguish them from those where stops are made at all hours.

Sequel to the Traffic Survey

It might be appropriate here to mention briefly the sequel of the extended traffic survey, completed last March and published in abstract in the ELECTRIC RAILWAY JOURNAL for May 22 and May 29, 1926. The opposition against the parking recommendation in this survey, brought by the traffic committee of the Baltimore Association of Commerce, has already been mentioned, but, as explained, this opposition later was withdrawn. Other opposition developed to certain of the rerouting recommendations, and the recommendations as a whole are now being considered by the Public Service Commission. The company is helping to assist in the adoption of the improvements recommended in the survey by stressing its willingness to bear the initial cost of changes in its track required, by the supply of pertinent data and in other ways.

Car Fare Carriers Improve Speed

A small but effective step which has resulted in improving an increasing car speed is the issue of a small metal container to hold the tokens used for fare in Baltimore. These containers have a capacity of fourteen tokens each and are sold with thirteen tokens for $1. They cost the company 4 cents each, and since the token fare is 7½ cents, their price to the public under this plan is 2½ cents. The carriers are well advertised and their help in speeding up the boarding of passengers is considerable. It is expected that this effect will be even more marked as the distribution of carriers increases.



Neat Waiting Stations Have Been Erected for Passengers on Suburban Lines

The number of banks, business houses and stores at

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which tokens are sold has been increased. There has also been an increase in the number of uniformed men stationed at busy loading corners, theaters, baseball parks and railroad depots, who offer car checks for sale to riders before they board the cars.

CHANGES IN TRANSFER METHODS

Two other methods for increasing the speed of cars adopted during the past year are the elimination of the rule that junction points must be punched on transfers during rush hours and allowing transfer passengers to board their cars at either front or rear doors. When presented at the front doors motormen accept the transfers. Since conductors have ceased to punch junction points on transfers issued during rush hours and have been relieved of much transfer collection, they have been able to shorten the length of passenger stop.

Another gain in speed has been secured by establishing express service on some of the long suburban lines, namely, cars which do not stop on the outbound trip until a certain point has been reached except to receive passengers or inbound beyond a certain point except to discharge passengers. Still another type of "express" service inaugurated last year is known as the "two-fares-as-you-enter" plan on a line that carries many riders well into the second fare zone in the country. On these cars all riders pay both the city fare and the first country fare on entering. This automatically excludes all city riders and leaves these cars to the homegoing suburbanites.

ARTICULATED CARS FOR RUSH-HOUR SERVICE

One of the most popular improvements in the equipment adopted by the company recently is the articulated car—a two-car, three-truck train, motorized throughout. Fourteen cars of this type were constructed during the past year, making a total of 26 now in service, and six more were being built at the company's shop and were to be ready for service in September. Each articuated car seats 87 persons and an account of it, as well as of the multiple-unit train of the company, appeared in the ELECTRIC RAILWAY JOURNAL for April 11, 1925.

The articulated car is operated as a single "pay-as-you-pass" unit, the conductor standing at the front end of the rear half of the unit where he controls all exit doors.

These cars are operated during rush hours on two very heavy traffic lines, and as the schedules on these lines at the extreme peak call for a 3 to 1 ratio or more, there is no waste of cars. The practice followed is for the base crews on certain single cars used during the day to change to the articulated cars as they pass the operating carhouse. This essentially doubles the capacity of the line with no increase in platform men. The single cars turned in by the base crews are then used by the tripper crews, tripling the capacity of the line.

Steam and Electrics Co-operate in Indiana

FREIGHT shipments, both carload and less than carload, are being handled by the Union Traction Company of Indiana between all points on its line and all points on steam railroads south of Louisville, Ky., and the Ohio River, according to F. D. Norviel, general passenger and freight agent for the company. He stated that this means that shipments might be routed by electric railway and reach their destination in from one to four days less time than by an all-steam routing. An example of the fast transit afforded by the interurban line occurred recently when a shipment from Indianapolis was only four days in transit to Atlanta, Ga. According to Mr. Norviel, the electric railway handling to Louisville greatly expedites freight movements between Indiana and the Southern states.

Bus Legislation in Victoria, Australia, Proves Effective

JUST as almost everywhere throughout the world, the arrival of the motor bus in Australia was followed by a weed-like growth and attempts to encroach upon established rail services in preference to developing new areas. In the case of the Melbourne & Metropolitan Tramways Board, the management had been forewarned by its close knowledge of bus and jitney operations in Great Britain and America. Hence less than two years elapsed before effective legislation was secured.

In December, 1923, during the fiscal year ended June 30, 1924, when the board reported losses from wildcat buses, it also secured the right to operate motor buses for "aiding or relieving" traffic on the tramways, in addition to the original right of operating motor buses for "stimulating or developing the traffic of any tramways." This change gave the board the opportunity to discourage wildcat operators and also to start services other than those of the thankless pioneering kind.

At that time the maximum license fee for a bus was about £10; buses paid no road maintenance charges; buses could run over tramway-maintained paving if they chose; nor were they subject to the wage and working conditions imposed on the board as a tramway operator.

These inequalities have been wiped out to a degree by Act 3378 of Dec. 30, 1924, and Act 3439 of Dec. 31, 1925. Buses are now required to pay an average fee of £3 10s. (approximately $17) per seat per annum, yielding about £115 (approximately $558) from a 33-seater. This money goes into the "Metropolitan Roads Fund" for the "Metropolitan Area," which means the city of Melbourne and the vicinity within 8 miles from the corporate limits.

Buses may ply only on routes which are approved by the Minister of Public Works. Such routes are not granted where he considers that adequate tramway or railway facilities exist, or where the roads cannot withstand motor bus traffic. Before deciding upon an application the route is reported upon by an advisory committee of five members, representing the railways, the tramways, the municipalities, the provincial government and the bus proprietors.

The board now operates 56 buses, including those which are used while cable routes are being electrified. Such temporary operation in a wildcat bus territory was inaugurated on Jan. 3, 1925, from the first fleet of 45 buses. These buses pay the prescribed taxation just like those owned by private operators.

By July, 1926, there were only 80 privately owned buses. These compete with the tramways and railways to a very small extent. As the cost of maintaining these buses is increasing, no new ones are being put on the roads. With the present high cost of bus operation and maintenance and the rather strict regulations now in force, it seems certain that in the future the use of the bus in Victoria will be confined to routes and service for which it is especially adapted.

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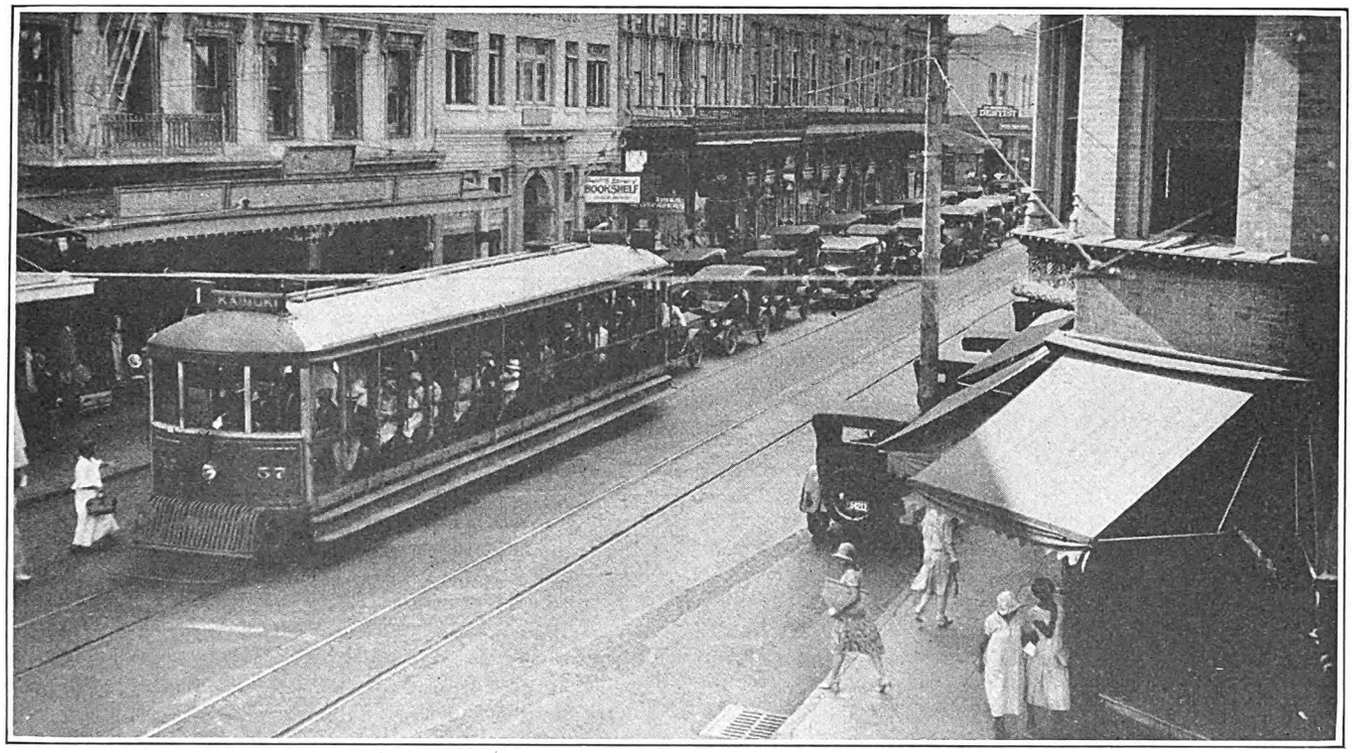

Latest Type Open Car of the Honolulu Rapid Transit Company with Center Aisle Has a Seating Capacity of 56

Railway Prospects Bright in Honolulu

Earnings Are Good and the Operating Ratio Is Low in the Metropolis of the Mid-Pacific—Buses Are Used as Feeders to the Rail Lines —System Dates Back to Grant from the Kingdom of Hawaii

By A. E. Kirk
Assistant Manager Honolulu Rapid Transit Company

IN HONOLULU all classes of the population are street car riders. It is not unusual to see a car carrying Americans, Hawaiians, Japanese, Chinese, Portuguese, Filipinos, Koreans and negroes. No racial distinctions are made, and the various nationalities travel together without friction. Transportation service in this thriving city of 105,000 people is rendered by the Honolulu Rapid Transit Company, which operates some 35 miles of electric railway track and 6.5 miles of bus line. In almost every year since its organization the company has been able to pay its stockholders an 8 per cent dividend.

In 1894 the Hawaiian Tramways Company began operation of a horse car system under a franchise granted by the Kingdom of Hawaii. The horse cars were operated on headways of 20 and 30 minutes, which at that time were deemed sufficient. No effort was made to increase the service as the city grew, and in a short time people began to demand some faster and better means of transportation. In 1898 the Legislature granted a franchise to the Honolulu Rapid Transit & Land Company, which began operation of electric cars on Aug. 31, 1901. As the horse car company had rights for the use of all the more important streets, the Rapid Transit Company in 1903 bought out the franchises, property and other interests of the Hawaiian Tramways for $300,000.

Ever since the purchase the company has endeavored to keep pace with the growing community. In 1923 a large improvement program was undertaken. The lines to Waikiki Beach, Kaimuki, Fort Shafter and on Lilliha Street were double tracked, using 122-lb. grooved girder rail. This has made it possible to give better service on these lines and has enabled the company to handle large crowds very expeditiously.

Four years ago the company's name was changed to the Honolulu Rapid Transit Company. A new franchise placed it under jurisdiction of the Public Utilities Commission of Hawaii. Appeals from the decisions of the commission, however, may be taken to the territorial courts. The property was valued at $3,219,000 and capitalized at $2,500,000, all common stock, every share of which is owned in the territory. A return of 8 per cent is allowed by the commission, and until 1924 this was paid regularly. In that year 3 per cent was paid, and in 1925 the dividend was 7 per cent. The Legislature of 1925 abolished the former 2½ per cent tax on gross revenue for a period of four years, with the proviso that an increase in the dividend rate will automatically restore the tax.

Prior to October, 1924, the fare was 5 cents cash and 2½ cents for school children. After the valuation referred to in the preceding paragraph the rate was increased to 7 cents cash, 6¼ cents token, and 3½ cents for

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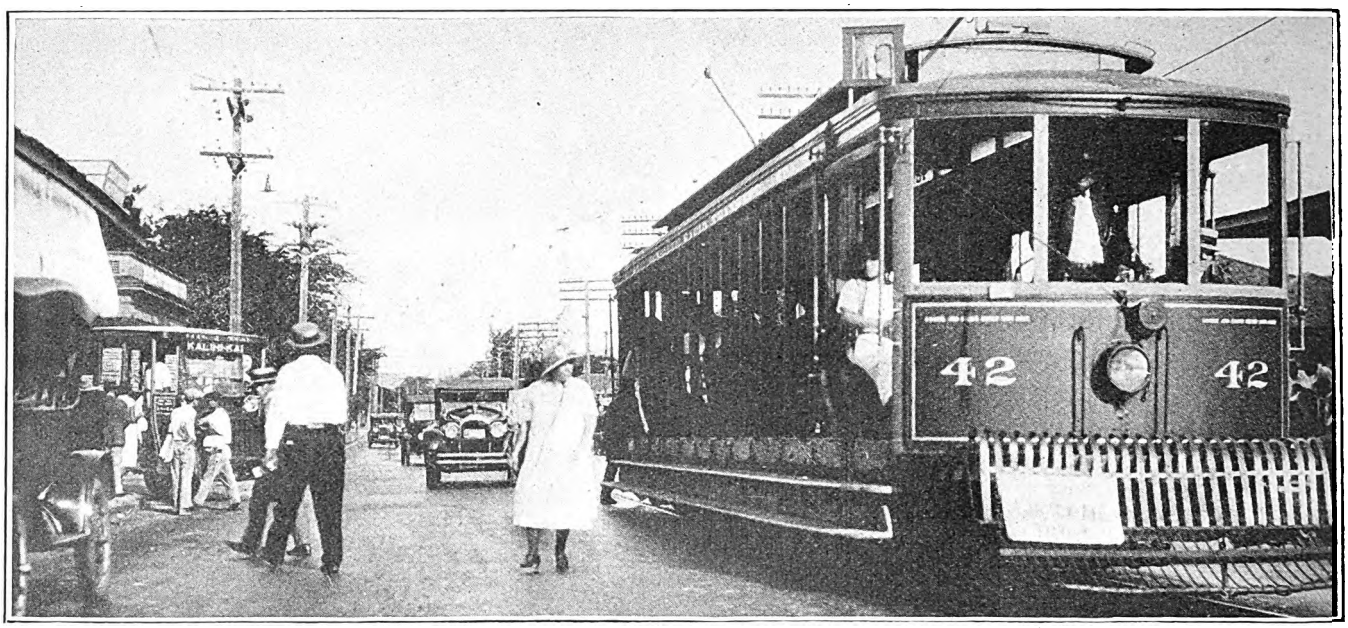


Connecting Point of the Kalihi Bus Line and the Fort Shafter Street Car Line

school children. The average fare is now 6.09 cents per revenue passenger. Earnings of the system are 42.28 cents per car-mile, and expenses are 27.72 cents, making the operating ratio 65.55 per cent.

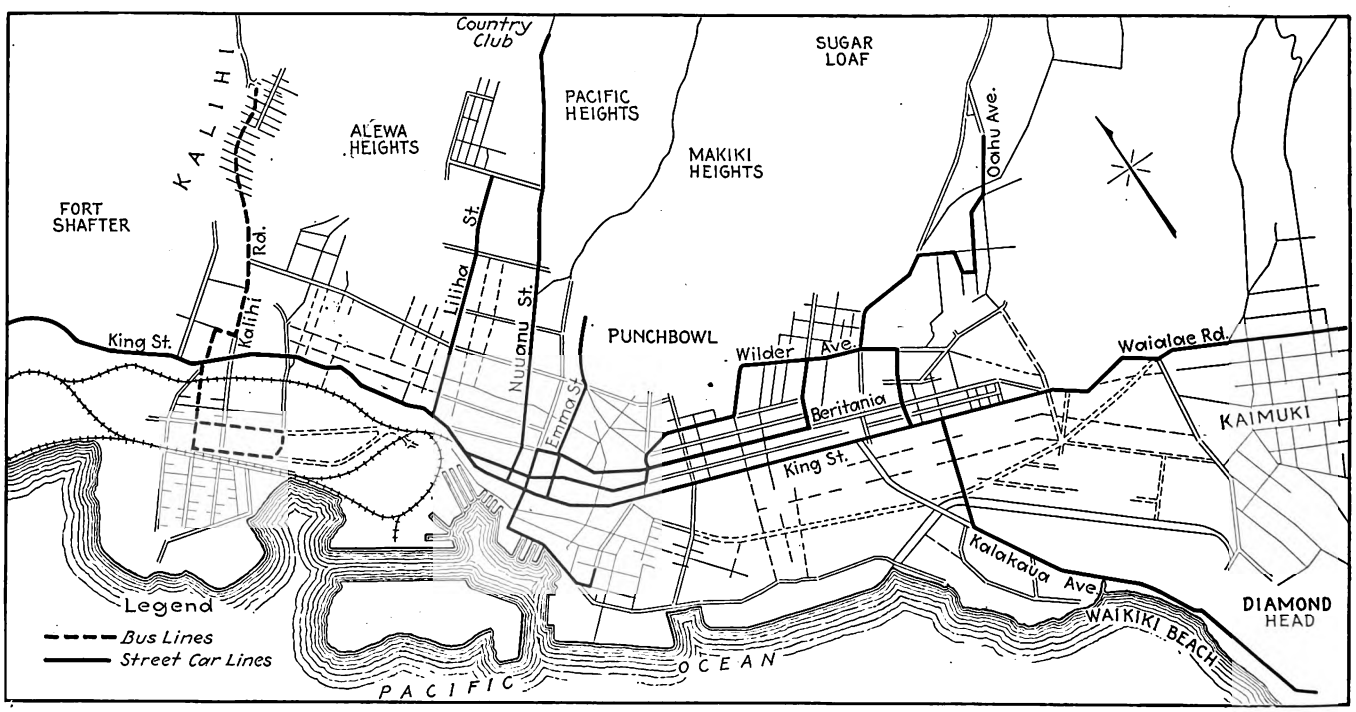
Railway equipment of the Honolulu Rapid Transit Company consists of 71 cars, of which six are semi-closed pay-as-you-enter type, and the remainder are open cars with center aisles, having an average seating capacity of 56. One-man operation is already in effect on one line, and it is expected that this will soon be extended to about half of the system. Bids have been asked for on twelve one-man two-man cars.

For six months in 1915 the company attempted bus operation, but was forced to give it up because of the poor condition of the roads. Packard buses were used at that time. In 1923 bus operation was resumed with Federal buses. Later, a Reo bus was added.

Bus operation was undertaken primarily to give service to outlying districts not reached by the car lines. In 1925 this feeder service netted a profit of $88. The company has carefully considered the bus question and does not contemplate the substitution of buses in place of cars. Future extensions, however, will probably be made with buses, and the feasibility of sightseeing tours is being studied.

Serious operating difficulties are met in some places, as the streets are so narrow that an automobile cannot pass between a parked vehicle and a street car where there is double track. The average schedule speed of cars is 10 m.p.h. and that of the buses 12 m.p.h. The bus operation, however, is outside of the congested district.

Automobiles, of which there are 17,000 in the city of Honolulu alone, have made considerable inroads in the revenue. The number of passengers carried in 1925 was 17,607,737, a decrease of 2,200,000 from the num-



Transportation Needs of Honolulu Are Well Served by 35 Miles of Electric Railway Track and 6.5 Miles of Bus Route

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ber carried in 1924. The first half of 1926 showed a further decrease. Traffic checks show an average of 1.98 passengers per automobile during rush hours, while the street cars average about 70 passengers. The management believes that the low ebb of traffic has been reached and that an increase may be expected in the near future.

Energetic methods are used by the company to encourage riding. Attractive advertising folders have been prepared and placed on all steamers touching at Honolulu as well as in the tourist hotels. The pamphlets point out the advantages of the street car in reaching various points of interest. When the United States fleet was in port in 1925, more than 20,000 folders were distributed to the sailors. Concessions are made for the convenience of tourists. For example, on days when Canadian Pacific steamships are in port, the company accepts Canadian money at par.

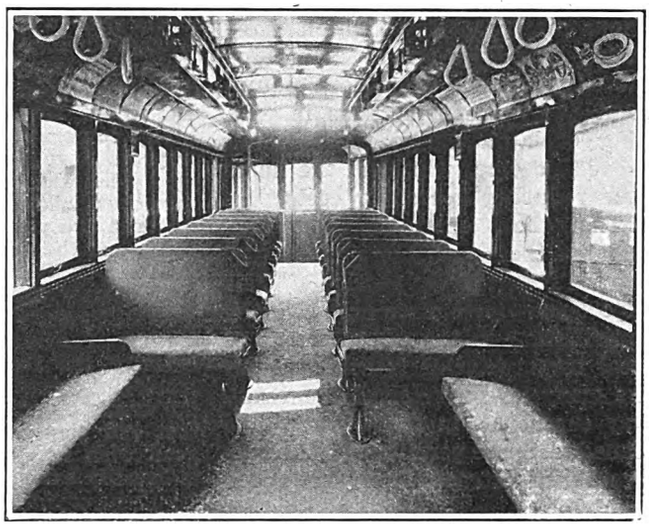
In spite of the large number of automobiles, and the fact that much of the equipment is of the open running board type, the Honolulu Rapid Transit Company has one of the lowest claims and damage ratios in the United States. The amount paid in 1925 was only 1.68 per cent of the gross income. This is the highest it has ever been and may be attributed to the increasing street congestion.

The company has enjoyed remarkable freedom from labor difficulties, in spite of the fact that the employees belong to a wide variety of races, including Americans, Hawaiians, Hawaiian-Chinese, Portuguese and Hawaiian-Japanese. All employees are covered by group life insurance to a maximum of $2,000. Disputes are settled by an employees' council, composed of nine employees from all departments, elected yearly. The employees have a benefit association, to which the company regularly donates substantial sums.

Gratifying evidence of the sound condition of the property is found in a recent report by Richard Sachse and Bruce W. Campbell, consulting engineers, Los Angeles, who made an extensive survey of the system. Their investigations showed a relatively high operating efficiency and a sound and satisfactory financial condition.

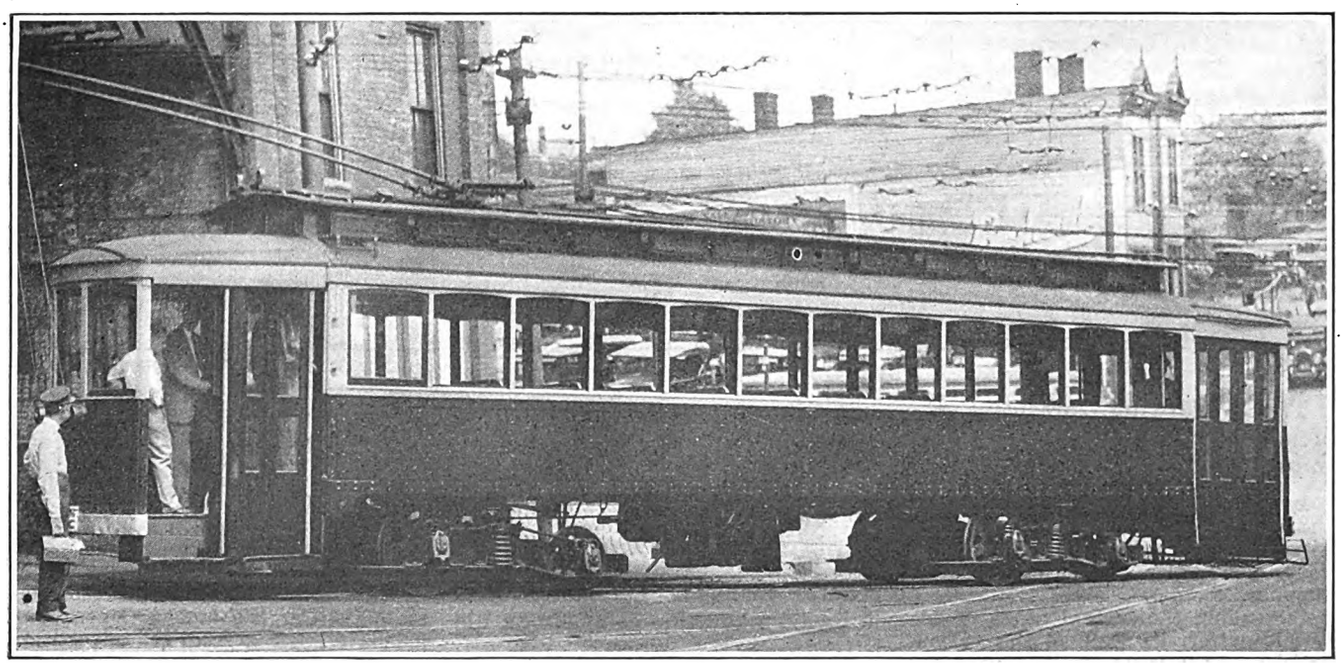
Cincinnati Rebuilds Cars for One-Man Operation

AUTOMATIC treadle exits at both front and rear ends are features of a group of single-end cars recently rebuilt by the Cincinnati Street Railway for use on Route 43, operating between the Central Union Railroad Station and the hotel and business district. Full safety and interlocking devices have been installed. Other improvements include electric heaters, window wipers and a new lighting system. The latter consists of twenty frosted lamps so wired that each is independent of the others. Seats are attractively upholstered in washable suede.



Seats of the Rebuilt Car Have Been Upholstered in Washable Suede

Outside the cars are finished in the new standard colors of this company—burning brush orange below the belt rail and locust cream above, applied by the Duco spray process. Bumpers are made of single pieces of pressed steel, and the rear bumper is painted with aluminum for the express purpose of giving increased visibility.



Single-End Car of Cincinnati Street Railway Equipped with Automatic Treadle Exits at Both Ends

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Prominent Executives Commend the New Spirit Annual Convention Issue of

THE Annual Convention Issue of ELECTRIC RAILWAY JOURNAL, dated Sept. 25, was entirely devoted to the subject of "Making Transportation Pay." Most of the articles in this issue were written by executives in charge of the operations on properties which have demonstrated by actual experience the effectiveness of modern equipment and modern methods in winning back patronage through improved service, while at the same time reducing operating costs.

That these operators, who contributed their valuable time to giving the industry the results of their experiences, have made a noteworthy contribution to the advancement of local transportation is evidenced by the many letters received from railway executives in this country and Canada. Space permits only the publication of extracts from these comments.

Harry Reid, president Interstate Public Service Company, writes as follows:

I have read the Annual Convention Issue of ELECTRIC RAILWAY JOURNAL with a great deal of interest and find it contains much advance and comparative news, showing much time and thought had been given to editing.

The articles are varied and interesting. The advertisements are not only attractive but full of up-to-date knowledge. I surely congratulate you upon this issue, and not only this issue but all issues.

From **F. G. Buffe,** vice-president Kansas City Public Service Company, came this letter:

Please accept my hearty congratulations on the excellent Convention Number of the JOURNAL.

Inasmuch as I was unable to attend the convention, it was doubly interesting to me. The advertising pages were exceptionally interesting, and I do not believe I ever saw a better prepared and more attractively designed and printed advertising section in any magazine.

T. H. Tutwiler, president the Memphis Street Railway, comments in part as follows:

It is a pleasure to me to acknowledge the valuable contribution and stimulus to the electric railway industry which your Convention Issue of Sept 25 supplies.

In reading the several pages of editorial matter, as well as the various articles of the issue dwelling upon the value of proper equipment as agencies for promoting street railway traffic, my impulse is quickened by the thought that we should strive the more zealously to make street car riding more attractive; and that, with lines and rolling stock thoroughly modernized, we should seek to merchandise our service through intelligent sales effort.

"Surely," as your opening editorial states, "the road opens ahead" for us; and we of the industry who are so vitally concerned with its success and progress have reason to feel encouraged that the gloomy clouds which have overshadowed our business during the past five years or so are breaking away, and the dawn of a brighter day seems to be at hand.

Your very worthy journal has been a distinct agency in bringing to the attention of executives throughout the industry the facts upon which more successful operation may be based, and the means by which policies looking to that end may be carried out. Every good wish for your continued success is heartily extended.

Arthur W. Brady, receiver Union Traction Company of Indiana, had this to say in part:

I have carefully examined the Convention number of the JOURNAL, just received. It is an unusually valuable one, dealing as fully as it does with what is being done throughout the country to make travel by electric railroad more inviting and at the same time to reduce costs and improve service. The industry is indebted to the JOURNAL for having so thoroughly covered the field.

C. D. Emmons, president the United Railways & Electric Company of Baltimore, says:

I wish to congratulate you on the Annual Convention Number of the ELECTRIC RAILWAY JOURNAL, which I have looked over from cover to cover and find much of interest, not only in the reading matter but in the advertising matter itself. It is a most attractive publication and you are entitled to great credit for it.

A letter from **J. K. Punderford,** president and general manager the Connecticut Company, reads in part:

This issue is particularly useful and informative both in the articles and advertising showing the trend. The JOURNAL staff deserves much credit for its contribution to the industry through this useful publication.

D. W. Pontius, vice-president and general manager Pacific Electric Railway, made this comment in his letter:

There is a great deal of interest to the industry in each issue of your publication, and it appears that the Convention Number contains some particularly good material.

I am unable to offer any suggestion which would be of any assistance in making the JOURNAL a better paper, because my judgment is that you are now furnishing a first-class, up-to-date publication.

F. D. Burpee, vice-president and manager the Ottawa Electric Railway, Ottawa, Canada, writes in part:

I have thoroughly enjoyed the Convention Number of the ELECTRIC RAILWAY JOURNAL. I have taken great pleasure in showing it to several of my friends who have dropped into my office, as an example of how well the street railway industry is looked after by its technical press. I particularly enjoyed the advertising matter. In fact, I am at a loss to suggest any means by which the Convention Number could have been improved. Please accept my sincere congratulations. I am sure I am only one of thousands of street railway men who find the JOURNAL a constant help in their every-day work.

A letter from **H. J. Sheeran,** president New York Railways Corporation, contains this comment:

To my mind this issue is the best and most comprehensive number ever published of this extremely interesting and efficient magazine. The articles, without exception, are splendidly written and well illustrated. That entitled "Surely the Road Opens Ahead" is most encouraging to those of us who have been confronted with varying degrees of adversity in recent years.

We are particularly interested also, at this time, in the comment on better results obtained through the use of up-to-date equipment, as well as in the news pertaining to buses.

Calvin A. Owens, president Florida Interurban Rapid Transit Railway, has this to say about the issue:

Permit me to congratulate you on your latest Annual Convention Issue of the ELECTRIC RAILWAY JOURNAL, which is a real contribution to the industry.

It is unfortunate that in the present era of prosperity constructive organizers are compelled to devote their attention to the subject of "Making Transportation Pay." Your splendid handling of the problem is set forth in a very interesting manner and I have no thought or criticism to add in any connection. I think you are to be congratulated in the amount of support you have secured from the advertisers, as most of their copy is enlightening to the reader, regardless of it being paid space.

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of the Industry Reflected in the the JOURNAL

A. R. Myers, president Erie Railways, writes as follows:

A copy of the Convention Issue has just come to my attention, and after a hurried perusal I can have nothing but praise for the efforts you have put forth, and the results obtained in building an issue that is not only attractive but filled with inspirational material that should be of great value.

The manufacturers are to be complimented on the ingenuity displayed in the presentation of their message, and I believe this issue could well be filed as a catalog of the products used in the industry.

Letters from many other executives contain similar comments regarding both the articles and advertising in this issue. Excerpts from some of these are printed below:

Walter H. Burke, manager Northern Texas Traction Company:

I want to congratulate you and the members of your staff on the 1926 Convention Issue of the JOURNAL. In my opinion it is the best of the many good issues you have published.

There no longer is much doubt in the minds of transportation men that "modernizing, popularizing and merchandising" offer the way out of the troubles the business has been through in the past ten years. This issue of the JOURNAL, along with the very successful convention at Cleveland, will surely go a long way to give added impetus to this idea.

S. B. Irelan, vice-president and general manager St. Joseph Railway, Light, Heat & Power Company:

Your Annual Convention Number this year of the ELECTRIC RAILWAY JOURNAL is, in our opinion, one of the best issues you have ever put out.

The featuring of the single subject "Making Transportation Pay" and making that the keynote for all of the comments and discussions of the various leaders of the industry in all parts of the country gives recognition to its importance and is impressive.

Today the transportation problem is perhaps in a little more critical state for all medium-sized cities than it is in the larger cities. It is our hope that you will continue to treat of the particular phases of the transportation problem in these cities as well as the larger systems.

R. R. Smith, vice-president and general manager Chicago, South Bend & Northern Indiana Railway:

Each year I look forward with anticipation to the receipt of the Annual Convention Number of the JOURNAL. I have never been disappointed in it.

This year the convention issue is exceptionally interesting and the outstanding problem of the day, "Making Transportation Pay," is presented in a very striking manner. The whole industry is indebted to you for this issue.

H. A. Nicholl, general manager Union Traction Company of Indiana:

This year's issue is a masterpiece and you have certainly handled the subject of "Making Transportation Pay" in an able manner. The men who wrote the various articles for you are all high-class operators and know what they are talking about, and if those executives who are in a position to follow the examples set for them do not take advantage of the situation they are not doing all they should for their properties.

The advertising matter in this issue alone contains a liberal education on electric railway and bus operation.

J. J. Coleman, operating vice-president and general manager Scranton Railway:

You have put out a splendid issue, and I think any railroad man will find his time profitably spent in going over it carefully.

A. C. Spurr, general manager Wheeling Traction Company:

You are certainly to be complimented on the Convention Issue of the ELECTRIC RAILWAY JOURNAL. It is indeed a handbook on making transportation pay and a ray of hope to many of the operators struggling with a collection of antique facilities.

My sincere hope is that you have a large circulation among those financially interested and responsible for street railway transportation.

I have no suggestions to offer on the make-up of the JOURNAL, as I believe you are doing an outstanding work in revivifying an industry that for a time lost its confidence. You are indeed builders of morale.

V. R. Powell, general manager the Peoples Railway:

You are indeed to be complimented on the thorough manner in which the industry is exploited in this Convention Number.

We think so much of the ELECTRIC RAILWAY JOURNAL that we have recently interested our company in buying three additional subscriptions in order that each head of a department may be favored with a free subscription. We find that this is money well spent. With these three additional subscriptions we now have six subscriptions, each department head receiving a separate copy. We find that these are passed out to pivot men and foremen and that they are pretty well worn by the time they are returned for filing, which would indicate that those receiving them were very much interested and took advantage of the opportunity to acquaint themselves with the different angles of the industry in which they are employed.

John F. Collins, vice-president and general manager Michigan Electric Railway:

I think the issue is A-1 in every respect and I greatly enjoyed reading it. I have no suggestions to make regarding improvements.

W. H. Evans, manager of railways East Penn Electric Company:

Your Annual Convention Issue of the ELECTRIC RAILWAY JOURNAL is the best ever. While I have not had time to look at it from cover to cover, I assure you that it has been a great pleasure for me to read several of the articles which appeared in this issue.

It has also been an extreme pleasure to note how well the advertising pages have been prepared, and I wish to congratulate every member of the ELECTRIC RAILWAY JOURNAL staff, as it surely does show that some wonderful work has been done with untiring efforts.

G. W. Comfort, general manager Poughkeepsie & Wappingers Falls Railway:

While I have not as yet had an opportunity of reading this issue over thoroughly, I have glanced through same and herewith wish to compliment you on its compilation. It certainly is an issue which is a real inspiration and deserves commendation.

W. W. Foster, general manager Rochester, Lockport & Buffalo Railroad:

I have received a copy of your Annual Convention Issue and consider it a work of art, and as an ordinary layman can find no fault with it and cannot see where it could be improved, and I wish to congratulate you.

ELECTRIC RAILWAY JOURNAL takes this means of publicly thanking those railway executives who made this issue so successful by contributing of their time to tell the industry the results of their own experiences in "Making Transportation Pay." At the same time the JOURNAL wishes to acknowledge these many letters of friendly comment and to thank its readers for this evidence of interest and co-operation.

Charles Gordon
Editor

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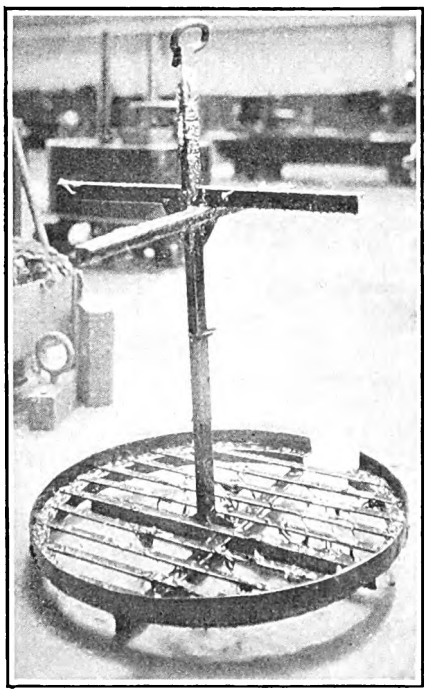
Maintenance Notes

Handy Tree for Dipping Small Coils

VARIOUS devices have been used to facilitate the dipping of a large number of small coils at one time. A device which has been found to work out very successfully in the department of electrical repairs of the Brooklyn-Manhattan Transit Corporation is shown in the accompanying



Field and Other Small Coils Are Dipped Conveniently by Using a Device as Shown

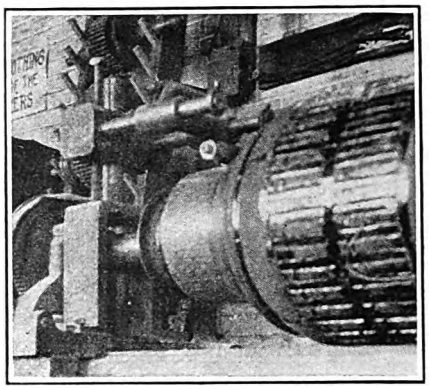
illustration. This consists of a circular base with straps across to support small pieces of equipment and a vertical post with two cross-arms arranged so that coils can be hung on these. The circular bridge is constructed with two 1½-in. x 1½-in. angles as the outside supporting ring. Cross-straps 1 in. wide x ¼ in. thick are riveted to the circular rim. As a further support two 1½-in. x 1½-in. angles are placed underneath and the upright, which is a 2-in. x 2-in. angle, is riveted to this. The cross-arms at the center part of the upright are 1½-in. x 1½-in. angles and are 3 ft. long. The opening in the outside rim of the base, as seen in the illustration, is so that this will fit over a pipe connection inside the tank as the various equipment is being dipped. In ordinary operation coils are hung on the cross-arms and other coils are placed on the bottom circular support. A ring at the top provides for convenient handling with overhead hoist or crane.

The rattle of the armature windings, like the rattle of a snake, should be a warning. "Operators, why not 'dip and bake'?"

Old Lathe Bed Serves as Base for Commutator Slotter

SLOTTING commutators with a home-made apparatus has proved very satisfactory in the shop of the Berkshire Street Railway, Pittsfield, Mass. Possessing an old lathe bed and a small motor of fractional horse-power it was decided to rig up a slotting mechanism which could be adapted to commutators on any of the armature sizes in use by the railway. The motor is accordingly mounted on the wall directly in the rear of the slotter and connected thereto by a flexible shaft which transmits the torque from the motor to the shaft on which the slotter is mounted.

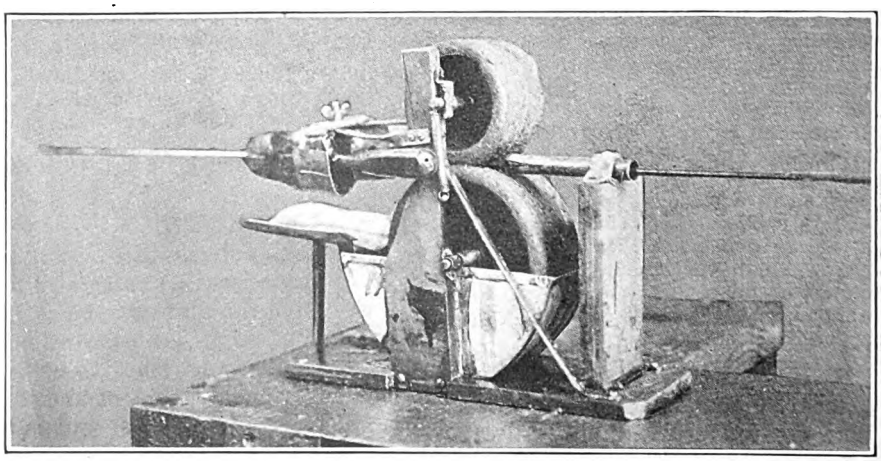
As indicated in the accompanying illustration, both horizontal and vertical adjustment in the slotter may be accomplished, the first by moving the collars on the rods shown above the slotter blade back and forth in a direction parallel to the armature shaft, while the latter is effected by simply raising or lowering the slotter mechanism on the vertical shafts shown directly above the end of the armature shaft. Movement of the slotter is easily controlled and it is possible to slot an entire commutator in a very few moments.



Slotter Is Here Shown Suspended Directly Above a Commutator Which Is Ready for Slotting

Window Stripping Quickly Varnished in Cleveland

SMALL wood strips used for molding or for holding the glass in place in car windows are quickly stained or varnished by the machine illustrated, which was recently constructed in the Harvard shops of the



Window Strip Quickly Painted by Machine in Cleveland Railway Shop. Felt-Covered Wheels Cover the Strip with Stain or Varnish as the Material Is Pushed Through

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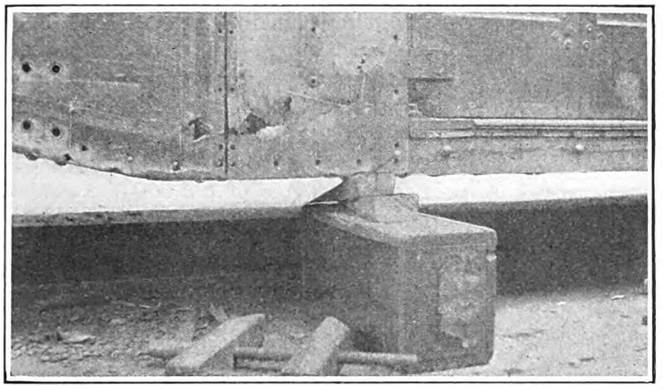
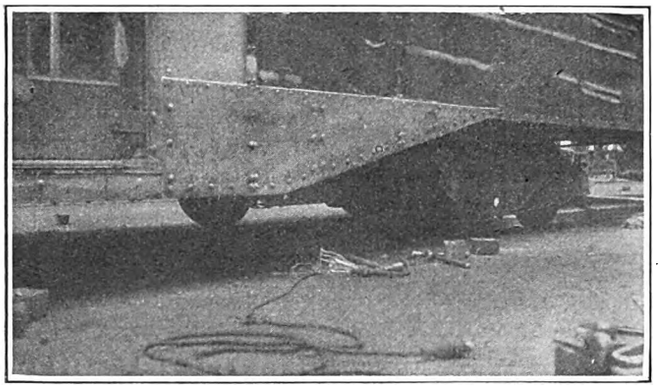


This Car Side Has Been Entirely Rusted Through by the Water Encountered in Operation



The Unsightliness of the Rusted Side Is Obviated Through the Use of Steel Plates Similar to the One Pictured Here

Cleveland Railway. The strip to be painted enters through the core of the machine from the right-hand side and passes through two felt-covered wheels, one of which dips in a tank of stain or varnish at the bottom. When the strip emerges from these rolls the paint material is thoroughly rubbed in by the brushes supported on the left in the view. This also removes the surplus material, which drops into the trough below and then runs back into the supply tank.

While the brushes used are of the ordinary commercial type, it is planned to have one specially constructed to do this work.

Repairing Car Sides Which Have Become Badly Rusted

CONSIDERABLE difficulty has been experienced by the Portland Railroad, Portland, Me., with rusting out of steel car sides. Unusually severe water conditions are encountered in Portland and it is also necessary to use a large amount of salt in keeping the switches clear. Thus a continual spray of semi-frozen brine is thrown upon the car sides, particularly between the sills and the car floors. This results in a severe rusting of the steel sheathing from the inside.

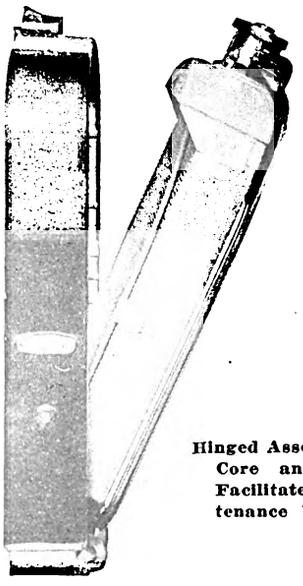
To meet this condition the railway uses four steel plates, similar to the one shown in the right hand illustration, to cover the rusted portions of the car sides. The most serious rusting always occurs near the middle of the car and it is seldom necessary to do more than to add the triangular plates at each side of the center doors. If it is necessary to attach a single plate the three other sides are similarly equipped regardless of the degree of rust at those points. This is done to preserve the general well-balanced appearance of the car. Steel plates of ½ in. to ⅝ in. thickness are used for this purpose.

New Equipment Available

Radiator Core Easily Removable

EXHIBITED on the chassis of the Liberty Motor Vehicle Company at the Cleveland convention was a specially designed Perfex radiator, built by the Racine Radiator Company, Racine, Wis. Several newly developed features were incorporated in the design of this radiator.

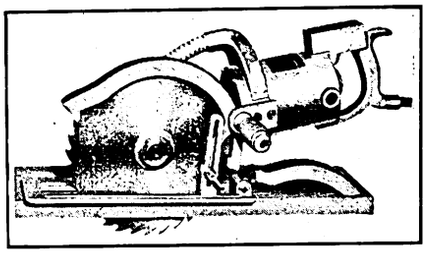
The shell is permanently bolted directly to the dash and fits snugly up against the hood. The core and tank assembly is hinged at the bottom, so that the core may be quickly and easily removed by taking off two nuts at the top and two at the bottom. It is not necessary to disturb the shell at all. Both top and bottom tanks are cast material, built to withstand every vibration and road shock to which a bus might be subjected. The core is a standard bronze unit design used by Perfex. The shell is cast duralumin, polished and enameled to withstand corrosion and wear.



Hinged Assembly of Core and Tank Facilitates Maintenance Work

Convenient Electric Hand Saw

PORTABILITY is the feature of an electric hand saw weighing about 24 lb. that has been brought out by the Wodack Electric Tool Corporation, Chicago, Ill. The motor with which this tool is equipped is sufficiently large to drive an 11-in. circular saw and yet may be operated from the ordinary electric light socket supplying 110 volts. The saw is capable of cutting a 4-in. x 4-in. timber in less than two seconds and is of particular value in doing rough carpentry work where speed is the primary requisite.



This General Utility Power Saw Saves Much Time. It Is Readily Adjustable

The saw is fitted with a depth gage, so that it is necessary only to cut through a timber to the depth required. In addition to regular carpentry work the saw is well adapted, due to the depth gage feature, for use in opening shipping boxes and crates, it being possible to saw the exact depth of the board or box cover, thereby preventing any injury to the contents of the box.

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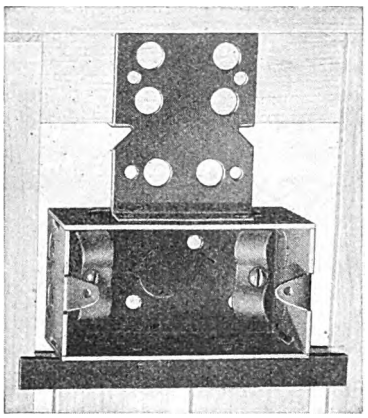
Switch and Receptacle Boxes

FOUR-INCH switch and receptacle boxes, suitable for wall bracket outlets due to their larger size, have been developed by the Chicago Fuse Manufacturing Company, Chicago, Ill. These boxes are obtainable in both the "Gem Locktite" and "Gem Bracket" types.

The Gem 4-in. Locktite box has the same steel supporting bars as the standard boxes of this type developed heretofore. This makes it well adapted for quick, secure mounting. It may be installed in



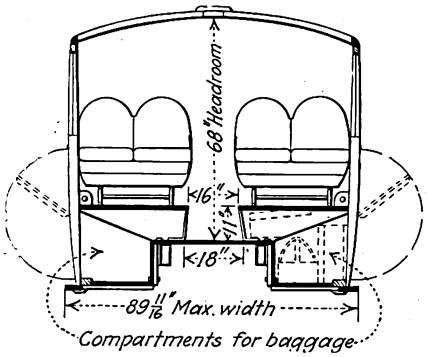
Four-Inch Locktite Box

either the perpendicular or horizontal position and is provided with knockouts for loom, sheathed cable, flexible and rigid conduit. It has a provision for a fixture stud in the bottom of the box.

The 4-in. bracket boxes are similar in design. The bracket attachment makes installation easy and quick, no mounting bars being required. The ears in both these boxes are turned in so that the center distance between the drilled and tapped holes is the same as for standard boxes, and all switch and receptacle plates may be used.

Bus Body with Baggage Compartments Under Seats

CONVENIENCE of entrance, ease of walking down aisle and provision for storage of baggage below the center of gravity of the chassis feature a new intercity bus body the Lang Body Company, Cleveland, Ohio, has just brought out. This provides space so that some 40 pieces of baggage can be carried in receptacles under the seats which are in locked, water-proof and dirt-proof compartments controlled by the operator and easily accessible at all times. The over-all height of this



Cross-Section Showing Compartments for Baggage and Seating Arrangement

bus is less than that of similar bodies with baggage racks, and this construction insures a comfortable seat in all positions of the bus with a clear and pleasing road vision.

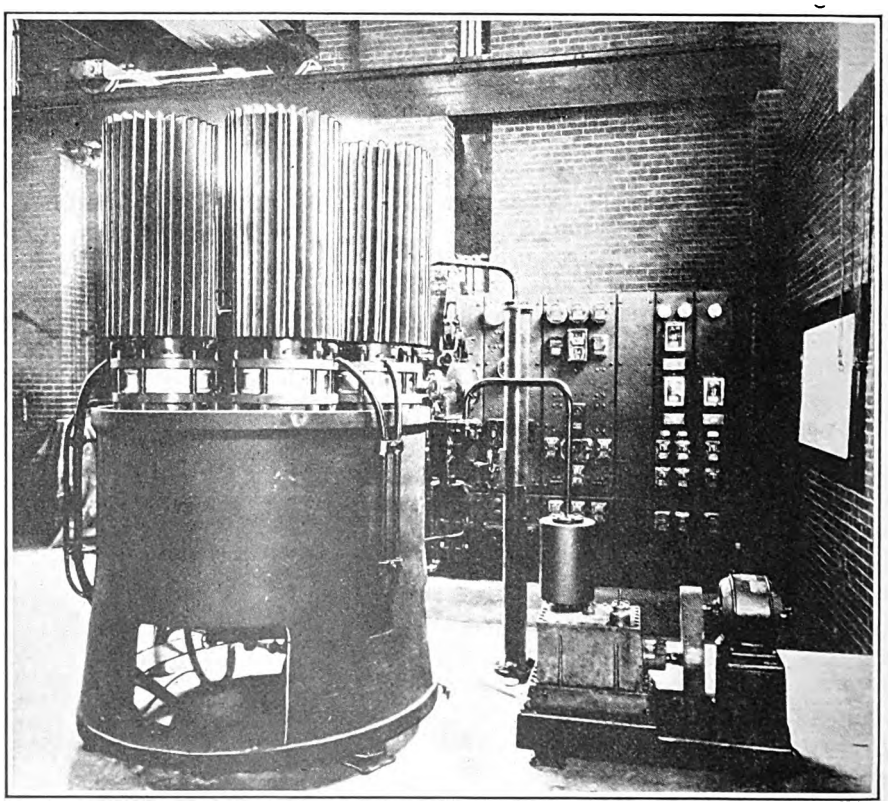
The body has been built for and is mounted on a new Mack AL six-cylinder chassis.

Another Type of Mercury-Arc Rectifier

THE appearance of a new design of mercury-arc rectifier in the booth of the Westinghouse Electric & Manufacturing Company at the Cleveland convention marks the first time that this company has put forward this equipment to the industry. The design of the Westinghouse company in outward appearance resembles those of other manufacturers of arc rectifiers. It operates on the same principle as the glass mercury-arc rectifiers which have been used for battery charging and similar applications for a number of years. The inner steel tank is vacuum tight and capable of retaining a degree of vacuum of 1/1,000,000 atmosphere. Vacuum pumps and gages form a part of the equipment.

The unit shown in the Cleveland exhibit was an exact duplicate of the unit which has been placed in service in substation No. 16 of the Cleveland Railway, as shown in the accompanying illustration. Rectifiers of this design are commercially practicable for power conversion for voltages of 500 d.c. and over and for currents of 500 amp. or greater. They are thus particularly practicable for railway service. The same unit can also be applied for a wide range of voltage applications when used with the proper ratios of transformers. The current capacity decreases slightly with higher voltages, but the efficiency raises as the voltage increases.

The rectifier holds some advantages over the synchronous converter, such as improved full load efficiency, correspondingly higher efficiencies at low loads and the absence of moving parts except in the motor-driven pump, which is operated intermittently. The lighter weight of the rectifier generally will permit economies in substation construction.



Mercury-Arc Power Rectifier in Service in Substation No. 16 of the Cleveland Railway

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Association News and Discussions

Utility Commissioners Meet Nov. 9-12

WILLIAM A. PRENDERGAST, chairman New York Public Service Commission, will deliver one of the principal addresses at the 38th annual convention of the National Association of Railroad and Utilities Commissioners, to be held at Asheville, N. C. Mr. Prendergast is chairman of the association's public utility rates committee, and in addition to delivering an address to the convention will submit the report of his committee. Regulation of interstate motor vehicle carriers will be one of the chief topics of discussion at the convention this year. Water power and its regulation, which, when the association was formed, was considered far beyond its jurisdiction, also will be a leading topic for the consideration of the convention.

The convention will last from Tuesday, Nov. 9, until Friday, Nov. 12. There will be special addresses by Commissioner John J. Esch of the Interstate Commerce Commission, M. H. Aylesworth, former chairman of the Public Utilities Commission of Colorado; John A. Small, president of the National Rivers and Harbors Congress; Alexander Forward, formerly a member of the Virginia Corporation Commission; C. C. McChord, former chairman of the Interstate Commerce Commission, who will speak on the subject of "Regulation of Interstate Motor Vehicle Carriers"; Edward W. Bemis, public utility expert of Chicago, and H. A. McKeown, K. C., chief commissioner of the Board of Railway Commissioners for Canada, who will speak on the subject of "Regulation in Canada."

The convention sessions will be held at the Battery Park Hotel, which is also to be the headquarters of the association.

S.A.E. to Discuss Bus and Truck at Meeting Nov. 16-18

TRANSPORTATION — the latest methods of passenger and freight carriage by motor—will be delineated in the national meeting of the Society of Automotive Engineers to be held on Nov. 16-18 in Boston, Mass., at the Copley Plaza Hotel.

The meeting will be divided into five technical sessions, at which some of the most interesting subjects to railway men will be the presentation of the following: "Economics of Co-ordination of the Railroads and Highways" by W. J. Cunningham, professor of transportation of the Graduate School of Business Administration of Harvard University; "Motor Coach and Railroad Operation, Co-ordinated" by A. P. Russell, president of the New England Transportation Company of Boston; and "Economics of Motor Vehicle Transportation Correlated with Steam and Electric Railroads" by G. L. Wilson of the Wharton School of Finance and Commerce of the University of Pennsylvania.

Another session will be devoted to freight handling. F. I. Hardy, assistant to the chairman of the executive committee Boston & Maine Railroad, will discuss "Co-ordination of Railroad and Trucking Operations." W. P. Kellett, consulting engineer of Brantford, Ontario, will talk on the "Co-ordination of the Container with Rail and Road Transportation Facilities." At the motor coach and truck operation session, G. T. Seely, vice-president of the Chicago Motor Coach Company, will talk on "Modern Motor Coach Operation."

American Association News

Committee on Education Urges Co-operation

EDUCATIONAL directors of electric railway properties are urged to cooperate with the committee on education of the American Electric Railway Association by sending in their names to Edward Dana, the newly-appointed chairman of this committee, who is compiling a directory of such data. In order that every railway company may be represented in this new compilation, this information is requested promptly.

Replies should be directed to Edward Dana, general manager Boston Elevated Railway, Boston, Mass. Information is desired in the following form: name of director, name of company, address, title of director.

Public Service Section Opens Season

WITH more than 400 railway men of New Jersey attending, the Public Service company section of the American Electric Railway Association held its first fall meeting Oct. 21 in the auditorium of the Montgomery Street carhouse in Jersey City. The A.E.R.A. members were the guests of the Boosters Club, a get-together organization of railway men in the Hudson Division of Public Service. Robert Hoos, president of the Jersey City Chamber of Commerce; Joseph F. Autenreith, president of the State Board of Public Utility Commissioners, and Edmund W. Wakelee, vice-president in charge of law, Public Service Corporation, were the speakers.

David Alberts, president of the Boosters Club, opened the meeting and then turned it over to A. T. Warner, president of the company section, who presided and introduced the speakers.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Nov. 5—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.

Nov. 9-12 — National Association of Railroad and Utilities Commissioners, annual convention, Battery Park Hotel, Asheville, N. C.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

Nov. 17-18—Iowa Electric Railway Association, operating and maintenance section, annual convention, Fontanelle Hotel, Omaha, Neb.

Nov. 17-18—Central Electric Traffic Association, regular meeting, Fort Wayne, Ind., Keenan Hotel, 9 a. m.

Dec. 6-9 — American Society of Mechanical Engineers, annual meeting, New York City, Engineering Societies Building.

Metropolitan Section to Continue Activities

RELATIONSHIP between transportation and community development will be the subject of discussion at the second meeting of the season of the Metropolitan Section, A.E.R.A., to be held Friday, Nov. 5, at the Engineering Societies Building at 8 p.m. A Dutch treat dinner will be held at 6 o'clock at Friedlander's restaurant, on 39th Street opposite the meeting place.

The program for the evening includes addresses by L. S. Miller, president New York, Westchester & Boston Railroad, on "Team Work Between Transportation Companies and the Communities They Serve," and C. S. Ching, supervisor of industrial relations United States Rubber Company, on "The Transportation Man in Civic Affairs." High spots of the Cleveland convention will be the subject of remarks by Guy C. Hecker. Officers for the ensuing year will be elected at this meeting. The usual entertainment features will be part of the evening program.

Helpful Hints on Electric Railway Advertising

ELECTRIC railway men interested in advertising may get helpful suggestions from the 2,000 ideas presented in a looseleaf folder prepared by Labert St. Clair, director of advertising of the American Electric Railway Association. Complimentary copies of this booklet are available to each member company upon request. Non-member companies may receive them upon payment of a small fee. Mr. St. Clair points out that there are enough definite advertising suggestions in this compilation to last the average company at least five years.

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The News of the Industry

Franchise Discussion Renewed in Kansas City

About 50 petitions for a referendum on the extension of the present railway franchise were placed in circulation in Kansas City, Mo., on Oct. 22.

This action was started to nullify the approval by the City Council of an ordinance extending the present franchise for a period of twelve years in favor of the Kansas City Public Service Company, the successor under foreclosure to the Kansas City Railways.

The petitions, to become effective, must bear something over 12,000 signatures of voters.

In the meantime, a committee of the Council appointed to consider plans for an entirely new franchise is meeting at intervals with William G. Woolfolk, president of the new company, or with his representatives, in an effort to complete the tentative draft of the new franchise document within the next 30 days, if possible.

Chicago Traction Ordinance May Be Made Political Issue

The first real indication that a political issue will probably be made of the pending traction ordinance in Chicago came to light at a conference on Oct. 20 between the City Council and Chicago Surface Lines officials. Patrick J. Lucey, attorney for the Chicago Rapid Transit Company, insisted that the home rule provision in the proposed franchise be dropped.

"The traction referendum is coming very near a mayoralty election, and if we drop the home rule feature it will be the issue of every candidate for Mayor and the Council," Alderman Jacob Arvey explained to the elevated lines' representative.

Asked by other Aldermen if he thought any ordinance would be passed if it left control of the transportation companies with the Illinois Commerce Commission, Mr. Lucey replied that, in his opinion, local regulation was passing and the public did not care so much about who runs the street cars as it did about good service.

D. S. McKinlay, chairman of the traction sub-committee of the City Council, declared that the city was approaching a settlement by agreeing to a terminable permit. He believed, however, that the provision for home rule by a city commission must be adopted in the ordinance in spite of the risk that the Legislature may fail to pass enabling legislation and so nullify it.

At another meeting, on Oct. 22, Leonard A. Busby, president of the Chicago City Railway, submitted figures showing that the companies have spent $1,700,000 in the twelve years ended Jan. 31, 1926, for track changes due to street widenings and regradings. He held this to be an unjust burden on the car rider.

Corporation Counsel Francis X. Busch held, on the contrary, that it should be retained in the ordinance. If the division of costs is left to the courts, he said, the resultant legal red tape would jeopardize all future street improvements.

In the new ordinance, a draft of which is now being prepared by Mr. Busch, two controversial points are to be left open, namely, the evaluation of the systems and the amount to be allotted for maximum capital expenditures.

Eight-Cent Cash Fare in Duluth

Litigation between the Duluth Street Railway, Duluth, Minn., and the city of Duluth took on a new turn recently when the Minnesota Railroad and Warehouse Commission issued an order increasing fares in Duluth from 6 cents straight to a cash fare of 8 cents with the option of purchasing tokens good for one ride at the rate of five for 35 cents.

The fight for an increased fare on the part of the company began in 1921 when it sought to boost a 5-cent fare to 6 cents. The Railroad and Warehouse Commission granted the 6-cent fare, but provided that if tickets were purchased the rate should be five rides for 25 cents. The company obtained an injunction from the federal court against the enforcement of that portion of the order which called for a 5-cent rate for five rides. The appeal of the city and the state from the decision of the federal court is now pending in the United States Supreme Court.

Cleveland Welcomes Its New Traction Chief

The directors of the Cleveland Railway chose the logical man to succeed the late John J. Stanley as president—logical not so much because Joseph H. Alexander was next in line for the office as because the new chief by character, training and hard experience had specifically fitted himself for it. Both in private practice of his engineering skill and in war service Alexander has shown his ability to handle the kind of problems that the directorate now give him to solve.

With Stanley passed the old régime in local transportation. The new comes in with Alexander. The late president, climbing by the ladder of hard knocks, made himself a figure in the community. His successor, with more training on the technical side, has an even better opportunity. Cleveland welcomes the new traction chief.—*Cleveland Plain Dealer.*

Five-Cent Fare Referendum Barred in New York

The proposed referendum on a 5-cent fare cannot go on the ballot in the coming New York City election on Nov. 2. The Court of Appeals so decided in an opinion handed down on Oct. 22. This decision reversed the opinion of the lower courts.

The 5-cent fare referendum was adopted as a local law by the Municipal Assembly under the city home rule law and signed by Mayor Hylan on Sept. 17, 1925. The local law made it illegal for the Board of Estimate to authorize or effect any change in rapid transit contracts for the purpose of increasing the fare above 5 cents, or to grant any bonus or subsidy, or to consider such a proposal until after it had been submitted to the voters upon a referendum and had been approved by a majority.

The law also provided that such a referendum could not be submitted to the voters unless a petition had been filed signed by 15 per cent of the voters at the last previous state election.

It had been hoped to place such a referendum before the voters at the 1925 elections, but Frank J. McCabe, a taxpayer, the relator in the suit just decided, brought a similar action in 1925 for the same purpose and the court decided there were not the required 90 days between the date of the passage of the referendum resolution by the Municipal Assembly on Sept. 17, 1925, and election.

The latest action was an application for an injunction restraining the Board of Elections from submitting the proposed referendum to the voters at the coming election.

Birmingham Goes After Coffin Award

Officers of the Birmingham Electric Company, Birmingham, Ala., through the *Buzzer* announce the impression made upon them by the exhibits at the recent convention of the American Electric Railway Association of the railway companies which competed for the Charles A. Coffin award, won by the Pennsylvania-Ohio Electric Company. H. E. Cox, assistant general manager at Birmingham, states that the existence of cordial relations with employees, public and management went far in aiding the company to win the honor of being the most distinguished contributor to the industry in 1925-26.

Mr. Cox recommends a union of efforts in Birmingham in co-ordinated teamwork so that next year the record of the Birmingham Electric Company will be foremost among the competing companies. He urges all alike to make a good job of it and thereby help to win the Coffin award.

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Mass Carriers Found Supreme in Chicago "Loop" Traffic Check

In a report following a ten months study of street traffic conditions recently completed by Miller McCormick, director of the Albert Russel Erskine Bureau for Traffic Research, and submitted on Sept. 24 to the Chicago Association of Commerce it established that the downtown streets of Chicago carry 846,753 persons and 314,610 vehicles on an average week day, a greater traffic density than in any other city in the United States.

This congestion is made worse, Mr. McCormick points out, by horse and buggy parking practices, a lack of wide streets and high speed arteries, too much jaywalking, and archaic traffic laws.

In co-operation with the department stores, banks, restaurants, and other business institutions, a cordon count of the "loop" district was made last June. More than 96,000 shoppers were interviewed on a typical week day to secure information on the transportation which these store visitors utilized in coming to the "loop." The check-up showed that only 8 per cent drove their cars into the central business district and a bare 1.57 per cent left their cars at the curb to add to the disastrous street conditions which now prevail in the "loop." In other words, the practice of parking accommodates only 15 out of every 1,000 shoppers, while the overwhelming majority of 985 are, as a result, jammed at street intersections, delayed on street cars and buses and otherwise so discommoded as to drive them to the neighborhood stores.

In no loop business house did the percentage of car-parking patrons exceed 3.2 per cent, said Mr. McCormick, in commenting on the talley. He said:

> From this study the conclusion is warranted that curb parking is not supplying a considerable part of the patronage of business houses in downtown Chicago. As a matter of fact, interviews with 96,082 patrons show that more than 19 per cent came to the "loop" on suburban trains, 33.8 per cent on elevated trains, 26.2 per cent on street cars, 11.4 per cent on buses, and slightly more than 1 per cent arrived in taxicabs. From these figures it will be seen that the largest feeders of loop patronage are the mass carriers and not private automobiles.

Among the recommendations for relief which the Association of Commerce contemplates making to the City Council as a result of this $50,000 traffic survey are drastic curtailments in, if not entire elimination of, parking, new arteries, more light controls and other traffic regulations.

Seattle Recommendations to Become Effective

Mayor Bertha K. Landes of Seattle, Wash., has instructed David W. Henderson, superintendent of the Seattle Municipal Street Railway, to put into effect, as soon as practicable, recommendations in the Jackson street railway report which it has been estimated will result in reducing expenses approximately $100,000 a year. The report was prepared by Clark R. Jackson, superintendent of utilities, and deals mainly with elimination or curtailment of shuttle car service. No conclusion has been reached, the Mayor said, regarding the proposal to establish a loop system, the chief recommendation in the report, which it is estimated would save $500,000 a year. The Mayor states that more time will be devoted to a study of the loop plan, and that while it might not be possible to adopt the proposed program in its entirety, it may be used as a working basis in making changes that would materially reduce operating costs.

Kansas City Valuation Discussed

Approximately a $25,000,000 Price Put on Properties by Dean Riggs—Service-at-Cost Plan Recommended

Dean H. E. Riggs of the University of Michigan, appearing on Oct. 22 before the special Council committee at Kansas City, Mo., placed the value of the properties of the Kansas City Public Service Company at approximately $25,000,000. He said that if Kansas property of the local company were to be included the valuation should be set at $28,000,000.

Having valued the railways property for the federal court in 1925, Dean Riggs was invited to appear at the committee meeting. He said that he had not been in touch with the property for several months and that he had been admonished by the federal court not to state his personal opinion of the valuation of the property, but to consider the situation from all angles, submitting reports of valuations based on the various theories used by engineers in making previous valuations.

Mr. Riggs pointed out that while his report had been submitted to the court in August, 1925, it was based on the value of the property as of Dec. 31, 1924, and that he was not in a position to discuss the matter of property additions since Jan. 1, 1925.

The valuation at that time, made on bases of historic cost at the time of initial investment, cost of reproduction at the latter date and on various intermediate bases, ranged from $24,216,884 to $48,985,402 for property in Missouri only.

In replying to a question as to what valuation he would suggest be written into the new franchise at this time, Mr. Riggs said:

> For these negotiations the figure would lie between $20,500,000 and $34,500,000, or about $25,000,000 to $26,000,000 for rate-making purposes. This includes only the property in Missouri, but as this will have to carry the burden of the property in Kansas, that also should be taken into consideration. In that event, I would place the value at somewhere in the vicinity of $28,000,000.
>
> If the property in Missouri is put into good shape it should be able to carry a valuation figure of about $25,000,000.

Professor Riggs recommended the service-at-cost plan as beneficial in arranging a new franchise grant. He expressed himself averse to the indirect taxation features of the present Kansas City franchise, providing for the paving between car tracks and the payment for use of viaducts and for street cleaning by the operating company. He intimated the exclusion of such demands in the new franchise might tend to reduce fares under a service-at-cost plan.

An ordinance which excluded these provisions from the franchise was killed by the local Council previous to the passage of the twelve-year extension of the present franchise. At the time the view was expressed that the operating company should continue to pay such assessments or charges.

Dean Riggs warned that to fix the valuation of the property at a figure too high would, in his opinion, merely cause the company to revert to receivership at some later date. He thought a minimum return of 8 per cent fair.

William G. Woolfolk, president of the Kansas City Public Service Company, and Timothy F. Mullins of Chicago represented the new company at the hearing. Mr. Mullins was appearing in the absence of Bennet C. Clark, who was ill in St. Louis at the time.

The committee meeting was adjourned until Oct. 28.

More Antiquated Cars Burned

Ten obsolete cars of the Key System Transit Company, Oakland, Cal., have been burned on the Key Mole and 31 more are to follow. These cars have been replaced by an equal number of modern type on the lines of the system. They were removed from active service some time ago.

The metal parts, motors, headlights and other useful portions were removed before the cars were towed to the Keel station on the mole, where the torch was applied. Thousands of people watched the unusual sight of the burning vehicles. As the cars were towed to their final destination on their own wheels wreckers tipped them off into the marsh where they were burned one after another.

No ceremony attached to the cremation, but one enterprising East Bay newspaper took movies that were later shown at an Oakland theater.

Increase in Fare Asked in St. Louis

Early action is expected by the Missouri Public Service Commission on the application of Receiver Rolla Wells of the United Railways, St. Louis, for permission to raise fares from 7 cents pending an audit of the company's books. This latest application for higher fares does not stipulate the rate desired, but suggests a rate that will enable the company to meet operating expenses and pay a fair return on at least the 1919 valuation.

Receiver Wells filed his application on Oct. 23. He asserted that since June, when the company filed a prior application for an increase in fares to 8 cents, or two tokens for 15 cents, the company has lost $506,000 and that revenue will fall about $116,000 short of expenses of operations each month the present fare of 7 cents is continued.

The new petition further sets forth that in 1925 the company earned less than 5.2 per cent on the valuation of $51,781,348 as of Jan. 1, 1919, fixed by the commission, and that since that time $4,948,787 had been spent for additions and betterments. For the year ended on Aug. 31, 1926, the railway system earned less than 5.4 per cent on the 1919 valuation.

Mayor Victor J. Miller and other city

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officials are expected to oppose any immediate increase in fare. When the application was filed last June the city insisted that the commission defer hearings on the petition until an audit had been made of the company's books. The request was also made that the accounts of the city and county lines be separated.

Recently Mayor Miller is said to have informed company officials that he would not consent to an immediate increase in fares even of a temporary nature, but would insist on delay until the audit had been completed. Auditors of the state commission are now at work on the company's books.

It has been the policy of the commission to grant temporary relief where losses are apparent.

St. Petersburg Road Up to Date

Small Municipal Line a Model, but Is Run at Loss—Large Sums Spent on Improvements—Bus Lines Supplementing Railway Service

ST. PETERSBURG'S railway system has entered the eighth year of public ownership under supervision of Director R. E. Ludwig, head of the public utilities department. Additional improvements in the plant, rolling stock, rail extensions and general equipment, authorized in the sum of $400,000 by the bond issue voted last fall, are now under contract and construction.

During the seven years that the railway has been under municipal operation the receipts have amounted to $1,410,236. The record of receipts follows:

1919-20	$89,302
1920-21	127,628
1921-22	151,582
1922-23	179,114
1923-24	218,570
1924-25	270,819
1925-26	373,218

During the last fiscal year, ended June 30, 1926, the railway showed operating profits of $54,397, an income of $373,218 and assets of $855,477, but an actual net loss of $19,405 was caused as the result of costs of extensions and improvements and deductions for interest on bonds which amounted to $73,803.

Details of New Bond Issues

At the original sale of the old lines, the St. Petersburg & Gulf Railway was taken over for $165,000 by a group of Northern capitalists who held mortgages on the property amounting to $250,000. Under an agreement with an option to purchase, the city of St. Petersburg began operation of the lines July 1, 1919. By a vote of 350 to 103 on a referendum election, citizens authorized a bond issue of $250,000 for the purchase of the railways Aug. 30 of that year. They bought eight street cars, four of which are still in use as work and repair cars, and lines to Gulfport, the Jungle, Big Bayou and the North Shore, with cars operating on a two-hour schedule, compared with the ten and twenty minute schedules now adopted. Of the original bond issue voted for the purchase and reconstruction, $22,000 was devoted to equipment, $28,500 for repairs to roadbed and tracks and $175,000 for the right and title to the old railway.

During the first five months of operation by the city, other bond issues totaling $480,000 were voted for the purchase of rolling stock, construction of extensions, double tracking and general improvements. Since that time many other improvements and extensions have been made.

All general improvements and operation of the railways have been handled as direct charges against revenue funds without taxes and with no increase in the fare of 5 cents. In addition the municipal railways division of the public utilities has provided for a sinking fund, depreciation charges and interest on bonds.

Provision for further improvements in the local municipal railways system were made in a bond issue voted last November which authorized an expenditure of approximately $400,000. Much of the work has already been completed, while the balance is either in the course of construction at this time, as at the new carhouse adjacent to Ninth Avenue north, or in preparation under specifications now being drawn up.

The new improvements include:

The purchase of eight double-truck cars, $100,000.

Reconstruction and extension of tracks, including special work and passing tracks for necessary improvement of schedules, replacement of light rails by heavier, $19,650.

Extension on Ninth Avenue north, $59,230.

Erection of carhouse, including paint shop and offices, together with repair pits and equipment, $105,284.

Construction of track from Ninth Street north to shops, $55,739.

Tracks in yard at carhouse for material storage and track usage, $31,977.

Extension of tracks to create a loop up First Avenue north to Ninth Street, $15,000.

In addition to the amounts voted for actual railway improvements $235,000 was allowed for the purchase and installation of two new units at the municipal power plant.

During the last three months the transportation system has been supplemented with two lines of buses operating eight 21-passenger coaches north and south through the main traffic lanes of the city not reached by the electric cars.

The railway as now run comprises 27 miles of line.

Railway Seeks to Justify Refunds

A special hearing was held at Kansas City, Mo., on Oct. 16 before three federal judges on the application recently filed by the receivers of the Southwest Missouri Railway, Joplin, Mo., for a restraining order to prevent the Interstate Commerce Commission from enforcing its order issued against the company last August.

The commission's order forbade the receivers of the railway paying fees to truckers hauling ore from mines to the cars of the company. The commission in issuing the discontinuance order contended that the payment of such fees amounted to a rebate to the mines of a portion of the freight charges, a practice forbidden by the commission.

The receivers of the railway contend that payment of the fees in question is necessary to the prosperity of the road, much of the revenue of which comes from ore shipped from lead and zinc mines in Missouri, Oklahoma and Kansas.

"Two-Bit" Football Tickets for Pittsburgh's Sixteens

What does it matter that the day of the 5-cent shave has gone forever, when a new era has dawned in 25-cent football games. In Pittsburgh, boys and girls who are sweet sixteen and proud possessors of quarters are sitting on top of the world, namely, Forbes Field, yelling

PI-TT-PITT
PI-Double T
PITT

While Baltimore debates over the propriety of donning spats to welcome a queen, New York shakes the greasy hand of its latest aquatic marvel and Philadelphia cogitates the practicability of a 1927 Sesqui, Pittsburgh has suffered the little children to come unto it and they have found the Kingdom of Heaven. Their good fortune came about through a plan developed by the Pittsburgh Railways, the Pittsburgh *Post*, the University of Pittsburgh and the Carnegie Institute of Technology to make the school-less Saturday a real holiday. The idea embraced transportation to the football games and back home, as well as admission into the huge athletic bowl reserved for their exclusive use, and all this for 25 cents.

The special football-street car pass is good on all lines of the Pittsburgh Railways except the interurban lines (Washington and Charleroi) between the hours of 1 p.m. and 6.30 p.m. on Saturdays. It is available at all offices and news agencies of the *Chronicle Telegraph*, the Pittsburgh Railways' 30 ticket agencies and the Equitable Sales Company offices. More than 3,500 youngsters swamped offices to procure combination pass and admission tickets for the Tech-Adrian game on Oct. 9. These grid fans swelled the receipts of the Pittsburgh Railways by $450. On Oct. 16, when the University of Pittsburgh played Colgate, it is estimated that the youthful fans turned in $800 to the local property. On this day the usual "kick-off" thrill was enhanced by the assigning of a corp of special cheer leaders recruited from the university staff to the children's sections. Records do not show how many of the youthful spectators decided on that day just what their life work would be, but judging by their enthusiasm for the art of cheering and their ability to translate their ardor into husky yells the universities will not lack for any such boosters when a few more autumn solstices come around.

Pitt Stadium will again welcome the juvenile members of the Post Athletic Club on Oct. 30, when Pitt meets Westminster, and again on Nov. 11, for the Tech-Juniata game, proving that in Pittsburgh, anyway, at least four thrills come in a lifetime. Of course, the same reservations hold good—you must be still sixteen if not sweet, and you must have that good old quarter or five nickels.

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Through British Eyes

A Recent Interested Observer of American Affairs Was Mr. Bellamy of Hongkong

L. C. F. Bellamy, a delegate from Hongkong to the convention in Cleveland, took advantage of his trip to the United States to visit a number of properties other than that at Cleveland. From Cleveland he went to Philadelphia to study co-ordinated transit, but more particularly to study the trackless trolley line in that city. There is agitation at Hongkong for transportation by bus, but Mr. Bellamy does not look with sympathy on that vehicle for use there. Many difficulties would attend the operation of gasoline passenger vehicles in public hire there, but the principal objection to the use of the bus is on the basis of the cost of petrol. The price of this fuel in Hongkong is about three times the price in England, and that price, as is well known, is much more than the price in the United States.

On the other hand, Mr. Bellamy is not completely sold on the trackless trolley, but he favors that form of transport under the conditions at Kongkong, and he may so report to his directors. His visit to the United States is a flying one and before the end of the month he expected to be on his way across the Pacific. His plan was to stop in Chicago to watch again the operation of the system there, but he did not intend to visit New York, in which conditions on transport are regarded by him to be abnormal—abnormal in that they do not represent average conditions.

Mr. Bellamy is very well informed on American political conditions, both national and local, and manifested the Briton's natural curiosity about the effectiveness of prohibition enforcement with all its anomalies. As a boy he visited the United States with his father, who was then a British municipal tramway operator, but he remembers distinctly that at a meeting at that time at which his father spoke surprise was manifested that politics was not allowed to enter into consideration in the operation of the municipal undertaking. He is interested in the operation of the Detroit and Seattle municipal systems, and was curious to know how such operation, unusual in the United States, was working out.

He was greatly impressed with the exhibits at Cleveland, particularly the car exhibit, and he carried away with him many new thoughts on modernization. Of course, modernization is with him more an economic study than an actual problem, but he is not without economic problems, although the making of money is not one of them. His system has no securities outstanding except common, or ordinary shares, as the English say, and last year paid a dividend of 20 per cent. The operating ratio at Hongkong is much less than 50 per cent. The platform labor problem does not bother him much. but about a year ago, at the time of the Hongkong uprising, he was required to recruit a new operating force. Along these lines Mr. Bellamy said that he was following with great interest the attempts being made by Mr. Mitten to mutualize the Philadelphia system. He expects to report personally to his board in London next year. This he does every third year.

Rail and Bus Fares Increased in Norfolk

The Norfolk, Va., City Council passed two ordinances on Oct. 26 granting the Virginia Electric & Power Company, subsidiary of Engineers Public Service Company, increases in bus and trolley fares to a 10-cent cash fare, 8¾-cent ticket rate and $1.50 weekly pass. The ordinances also provide for partial rerouting of the transportation system for the purpose of unification and improved operating economy.

Seattle Survey Report Nearly Ready

The financial survey of construction costs of the proposed project of linking the municipally owned lines of Seattle, Wash., with a system of rapid transit is now nearing completion, according to a report of the transit committee of the Seattle city planning committee. Engineers of the Seattle Municipal Street Railway are also engaged in checking figures of the original report which was compiled by the transit committee after more than a year of exhaustive research into nation-wide street railway transportation conditions. Members of the committee point out that while the plan of Superintendent of Utilities Jackson has its advantages, such as cutting down expenses in elimination of certain duplicating routes and non-profitable lines, it cannot assist in building up patronage. Superintendent Jackson's plan calls for turning cars back at Pike Street.

White Car in Joliet Urges "Safety First"

In the hope of lessening the number of street accidents, Joliet, Ill., has launched a "safety first" campaign, and is constantly operating a street car, painted white, which carries numerous safety slogans, calculated to arouse adults and children to the necessity for thinking before crossing a street, or taking any other step in which the element of danger enters. It is believed that this campaign has had excellent effect.

Cash for Suggestions on Puget Sound Property

As a result of the interest taken by employees of the Puget Sound Power & Light Company, Seattle, Wash., in the suggestion contest which closed on June 30, it has been decided again to offer prizes aggregating $1,000 to be completed for during the period from Oct. 1, 1926, to May 1, 1927. This competition will be open to every employee.

The prizes will be awarded by a committee consisting of the vice-president, the seven district managers, the manager of the auxiliary operations, the manager of securities company and the personnel officer. The prizes follow:

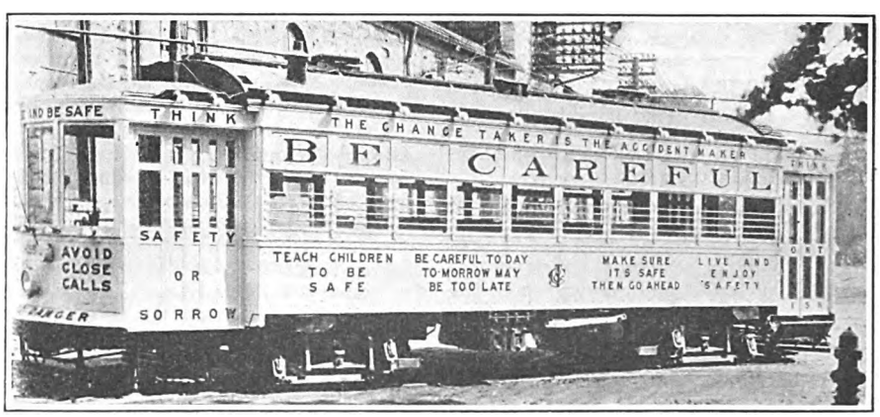
First prize	$400 in cash
Second prize	250 in cash
Third prize	200 in cash
Fourth prize	100 in cash
Fifth prize	50 in cash

Suggestions or plans submitted are to cover subjects which are of such a practical nature that adoption by the company would probably result in an increase of gross earnings or a decrease of operating expenses, or a well-defined company policy which will clearly indicate increased efficiency throughout the organization or better relations with the public in the territory served.

City Rehabilitates Phoenix Railway

Gradually the railway system in Phoenix, Ariz., is finding itself again. The system, now under municipal control, is to be improved, both as to rolling stock and schedules, just as soon as possible. The policy of the city administration is to furnish the very best service possible commensurate with a policy of economy, according to City Manager Rieger. The system is now being operated on a 5-cent fare.

The entire property, including rolling stock, right-of-way, machinery, equipment and real estate, was purchased outright by the city from the former owners for a lump sum of $20,000, which has been paid in full. The purchase followed appraisals made by the city and the then owners of the railway. The sale was the climax to a long, perplexing period in which no solution could be found for putting the railway, loaded down with paving and other requirements, on its feet. The problems in that city and the subsequent sale were referred to previously in the ELECTRIC RAILWAY JOURNAL.



Joliet's Harbinger of Safety in White Garb

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Car Line to Toronto Island Favored

Although the stage has been set for some time for the taking over of the Island Ferries by the Toronto Transportation Commission, Toronto, Canada, the Board of Control is in favor of a continuation of the service furnished by Lawrence Solman until the end of the year. Meanwhile how to make the Island of Toronto, across the bay, more accessible to the people living in the city is one of the questions being debated along with radials and one-man cars. Several representatives of public affairs in Toronto have approved of an electric railway line, although there is a difference of opinion over the question of admitting buses through the construction of a proposed boulevard. It is maintained by some that the proposed extension of the Lake Shore Boulevard to the island would be too costly and that motor traffic would impair the safety and quiet of the resort. Comptroller Joseph Gibbons favors the operation of street cars if the government constructs a bridge at the channels. George Wilson, president of the Board of Trade, is of the opinion that a railway and a boulevard around the island should be constructed in the future. John O'Connor, at one time a member of the Harbor Commission, says that discontinuance of the ferry service would take away from the island one of its greatest attractions.

Rules for School Tickets at Ottawa Reiterated

To guard against the abuses which tend to rob every privilege of its value, the Ottawa Electric Railway, Ottawa, Ont., has been compelled to insist on the fundamental condition under which school tickets are issued, namely, that there be an adequate certificate to the fact that the intending passenger is a pupil at a recognized school and under fourteen years of age.

The company reminds its patrons that the person best qualified to give this certificate is the teacher at the school, but there are occasions when it is more convenient for one of the parents to call for the ticket. The company will in future accept the certificate of the parent in lieu of that of the teacher.

School tickets at Ottawa are valid only between the hours of 7 a.m. and 5 p.m. At all other times the regular fare must be paid, according to the height of the passenger.

Advantages for Employees in Insurance Plan

Co-operation between the management and the personnel of the New York Railways Corporation, known as the "Green Lines," New York, N. Y., has resulted in the adoption of a program which is expected to cover between 2,000 and 2,500 employees of the company for more than $2,000,000 of life insurance, as well as health and non-occupational accident protection. Each employee participating in the group plan receives $1,000 life insurance. In case of sickness from any cause, or injury while away from work, he will receive, under the health and accident policy, a weekly benefit. These payments will start on the eighth day of disability and will continue for a maximum of thirteen consecutive weeks. The life insurance also creates a temporary fixed income for the employee himself if he becomes totally and permanently disabled before age 60. Such employee will receive the full amount of his insurance in monthly installments. During the disability period premiums will be waived by the Metropolitan Life Insurance Company, which is underwriting the group plan.

Progress on Everman Plan Made in Dallas

The Dallas Railway, Dallas, Tex., has completed practically 50 per cent of its improvement program, ordered under the Everman Plan. Started only five months ago, the work of relaying tracks, extending car lines and carrying out other improvements has already been accomplished. The improvement program, recommended by Mr. Everman, city supervisor of public utilities, calls for an expenditure of $1,450,000.

News Notes

Fund Will Pay for Route Changes.—The United Railways & Electric Company, Baltimore, has provided a fund to pay for the construction work necessary to carry out the route changes which have been recommended by the Baltimore Traffic Survey Commission and approved by the Maryland Public Service Commission. The cost of construction work will be about $15,000. The changes are embodied in the first group considered by the commission. Five additional groups, each involving numerous changes, are to be acted upon later.

Men Protest One-Man Cars in Montreal.—Employees of the Montreal Tramways, Montreal, Que., have registered a protest against the new one-man system and have authorized the business agent of the Montreal Tramways Employees' Union to draw upon union funds, if necessary, for a campaign in the press and elsewhere against the cars. The protest is being sent to the company.

One-Man Cars in Heart of Berkshires.—The Berkshire Street Railway began the operation of one-man cars between Pittsfield and North Adams, Mass., and north to Bennington, Vt., on Oct. 16.

Rapid Transit Over Steam Tracks Under Consideration. — The Boston Elevated Railway, Boston, Mass., is considering plans to operate a rapid transit line over the tracks of the Boston & Maine Railroad from North Cambridge to Somerville Junction. This is the present right-of-way of the Central Massachusetts branch of the Boston & Maine, which is being diverted to another route. The idea is similar to the arrangement now in use on the Shawmut branch of the New York, New Haven & Hartford Railroad through Dorchester and Ashmont. The system suggested would operate from Somerville Junction through Somerville to connect with the main line of the Boston Elevated at Lechmere Square.

Damage to Havana Railway Negligible.—Speyer & Company, New York, have received advices from Frank Steinhart, president of the Havana Electric Railway, Havana, Cuba, that the company is again in full operation. Only negligible damage to the railway was caused by the hurricane.

$10,000 Music Appropriation Goes for Transit. — Mayor Kendrick of Philadelphia, Pa., will get the $10,000 he requested to engage J. Rowland Bibbins as expert in transit matters to advise him in the proposed negotiations with the Philadelphia Rapid Transit Company for a lease of the Broad Street subway. The finance committee has approved the appropriation and reported a bill to the session of Council. The $10,000 was found nestled in an item of $34,925 unused for music the past summer by the Park Commission. The Park Commission wanted all the money transferred to other park needs, but the finance committee appropriated the $10,000 and let the commission have the remaining $24,000 for uniforms, supplies and labor.

Terminable Permit Hearings to Be Resumed.—Senator Richard J. Barr, chairman, has called a meeting of the Illinois legislative terminable permit investigation committee to convene at the Palmer House, Chicago, on Nov. 8 to resume its hearings.

Grade Crossing Elimination Work to Start.—Immediate steps are to be taken by the Board of Public Works in Louisville, Ky., looking toward the elimination of grade crossings in that city. Members of the board have been in conference with Mayor Will discussing plans for speeding up this work. Edward J. Miller, chairman of the board, said that the board was becoming impatient at the long delay in action on the part of those who are blocking the work. Disagreement over rerouting of cars of the Louisville Railway has been partly responsible for the delay.

Course in Traffic Management. — A course in "Traffic Management" has been started by the Pacific Electric Railway, Los Angeles, Cal., under the tutorship of E. W. Hill, educational director. Each Wednesday from 7 to 9 p.m. a limited number of employees will learn the principal phases of traffic management, including classification, tariffs, rates and claims, with the practical side expressed by the men engaged in that work. As planned the course will run to June next.

New Edition of Boston Guide Book. —A new edition of the familiar and useful Guide and Information Book, issued originally in 1924, is being prepared by the Boston Elevated Railway, Boston, Mass. The general plan of the new edition is the same as that of the old one, but the cover and maps are in colors. The use of different colors for the several kinds of transportation lines will make it easier for employees to explain to patrons how to get from place to place.

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Would Cancel Franchise.—The Buffalo City Council has voted to revoke the franchise of the International Railway, Buffalo, N. Y., for the operation of cars in Grant Street between Hampshire Street and Military Road, a distance of almost 2 miles. The resolution for revocation of the franchise was introduced by Mayor Schwab because of the alleged failure of the company to repair its tracks and roadbed in the street as ordered by the Public Service Commission. The company questioned the authority of the state utilities board to issue such an order and now the International is questioning the authority of the City Council to revoke its franchise in the street. The legal department of the company indicated it would apply to the courts for an injunction if the city makes any attempt to remove the tracks. The city already has authorized contractors to start repaving the street. The present move is in effect merely another attempt by the Mayor to embarrass the company.

What Leaders Think of Georgia.—"A Welcome Awaits You in Georgia" is the assurance given by the Georgia Railway & Power Company, Atlanta, Ga., in a 60-page pamphlet expository of the public sentiment in Georgia toward new industries and citizens as expressed by business and industrial leaders, newspaper editors, public officials and others.

One-Man Cars Under Fire in Toronto.—Agitation is prevalent in Toronto, Ont., against one-man car operation, but D. W. Harvey, general manager of the Toronto Transportation Commission, says if one-man cars are not run fares must be increased to give a service similar to that now in effect. On the other hand, if service had to be reduced, as it would under two-man operation, there would be a corresponding decrease in revenue. He says that safer and more convenient service can be rendered with one-man cars than with two-man cars and that several recent fatalities with one-man cars were not indicative of their being dangerous to operate. Following his report, however, operators recited dangers encountered during rush hours. Members of the local division of the Amalgamated reiterated their opposition to the one-man car and executives were instructed to act to protect the interests of the men.

Starts Eight-Car Trains on Another Branch.—Eight-car train service, replacing four and six-car local expresses, during the rush hours on the Lake Street division of the Chicago Rapid Transit Company, Chicago, Ill., was started on Oct. 1. The change as effected will give residents of the adjacent communities of Austin and Oak Park faster elevated service than they have had since the line opened in 1893. The new service is a part of a program of speeding up on the entire Rapid Transit system, the longer train operation having been made possible by reason of the platform extension work which has been under way for several months. The first eight-car trains of the Rapid Transit Lines were placed in operation on the Evanston-Jackson Park division early last spring.

Foreign News

London Bus Restriction Held Invalid

By a vote of two to one the Ealing Bench of Magistrates, London, England, recently dismissed a summons against an independent bus owner for alleged failure to comply with the restrictions on operation along Uxbridge Road between Shepherd's Bush and Uxbridge. An account of the promulgation of these regulations by the Minister of Transport acting under powers conferred by the London traffic act of 1924 was published in ELECTRIC RAILWAY JOURNAL for April 10. The defendant acquired a bus in March, 1925, and was assigned to this route by the Ministry of Transport. Later, he was excluded by the new regulations. He admitted, however, that before commencing operation he had been warned that such an outcome was likely. Counsel for this operator, however, contended that the Minister of Transport had exceeded his authority in attempting to enforce these rules. The regulations, he said, were unreasonable, unjust and involved a gratuitous interference with the rights of citizens. After a short consultation, the magistrates announced their decision dismissing the summons. It is expected that an appeal will be made against the decision. Meanwhile, the independent bus owners have decided to continue operation of full service between Uxbridge and Shepherd's Bush.

Rome to Have Subway

Construction of 27 miles of subway lines will soon be under way in Rome. A commission appointed by the Italian government has just completed the plans, after a thorough tour by it of the city in order that archaeological ruins may be conserved for future generations. The first unit of this underground project will be completed within the next ten years. The two principal lines will cross each other at the Piazza Santi Apostoli, the first one running in an east-westerly direction from the railway station quarter of the city to the Prati and the St. Peter Square and the other one from the Via Flaminia to San Paolo, the starting point of the electric railway to Ostia. In the future a line to cover the south of Rome will start from St. Peter Square to Janiculus and Trastevere, crossing River Tiber at the Sublicius bridge and extending by way of San Paolo, the Square of Laterans and the Porta Maggiore to San Lorenzo and the Cemetery.

Electrification in Switzerland Progresses

Operation of the new electric road connecting the four Swiss cities Basle, Brugg, Baden and Zurich will begin in November. The time for the express trains between Basle and Zurich will be reduced by eighteen minutes and that of local trains by 29 minutes as a result of the change from steam to electricity.

Approximately one-third of the Swiss railroad system is now electrified, or 590 miles out of a total of 1,828 miles. This is following out a still more extensive program which has been discussed in earlier issues of this paper. One of the chief factors for transition of systems is shown in the following table of increase in traffic during the last few years:

	Freight, Metric Tons	Passengers Carried
1925	16,436,630	101,827,814
1924	16,599,201	96,486,306
1920	15,829,742	86,080,314
1913	14,614,781	91,649,336

Railroad Electrification Work in Austria Progressing

Progress is being made with the electrification of the Austrian Federal Railways. Freight trains at the present time travel at a speed of 20 m.p.h., compared with 9½ miles in the era of steam transport. Great acceleration of traffic has also been accomplished in the case of passenger trains, although electricity has not yet been fully used owing to the short lengths of the lines which so far have been electrified. The Innsbrück-Bludenz line, for example, is only 85 miles long and the changing of locomotives causes a considerable loss of time. The lines that are now being constructed are Salzburg-Worgl, Kufstein-Worgl and Innsbrück-Brenner, which measure a total of nearly 190 miles (double track), with the exception of the single track Kufstein-Worgl line (9 miles). Current is supplied to these lines by the Mallnitz and Stubach electrical power stations. Some 47 electric locomotives have so far been ordered, all from Austrian firms.

Railway Progress in India.—The Great Indian Peninsula Railway has completed its harbor branch from Victoria Terminus to Thana. Progress is reported, too, on the main line running between Sandhurst Road and Kalyan, which will be completed by the end of next year. It will provide through electric service from Victoria Terminus to Kalyan. The plans as outlined provide for electrification of this line as far as Poona by 1929 and to Igatupuri in 1930.

Manchester's Anniversary Shows Many Improvements.—Since the first electric car ran in Manchester, 25 years ago, there have been put into service 903 cars and 58 buses. To house 230 of these cars the City Council is erecting a new shed which will cover 4¾ acres and is estimated to cost £170,000. During the last six years an increase of 38 miles of track has been made to the 212 miles of the tramway system.

Shops for Liverpool.—Liverpool City Council is now constructing tramway repair shops at a cost of £385,000 to occupy 9 acres.

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Recent Bus Developments

Steam and Electric Road Opposed

Proposal of Railroads in Pennsylvania to Run Buses in Electric Railway Territory Brings Protest

Powell Evans, president of the Schuylkill Railway and the Schuylkill Transportation Company, Girardville, Pa., published a statement on Oct. 20 in opposition to the plans of the Pennsylvania Railroad and the Reading Company for establishing bus service in 55 and 24 counties, respectively. Besides putting out of business existing transit and bus lines, Mr. Evans points out, the railroads will probably increase their rates.

According to Mr. Evans steam railroads in Pennsylvania are prohibited by state laws from operating directly or indirectly either passenger or freight service over the public highways. He says that if the Pennsylvania Railroad and the Reading Company are permitted to carry out their programs for operating bus lines in a large number of counties in the state, the result will be the absorption by the steam lines, on their own terms and values, of virtually all competing local and bus transport throughout the state.

Mr. Evans' statement may be regarded as a spirited reply to a statement issued about a week ago by the Reading Company in an attempt to justify its ambition to run buses. Governor Pinchot recently refused to approve charters giving subsidiaries of the Reading Company and the Pennsylvania Railroad the right to operate buses on the state's public highways. In reply to this, the Reading Company declared that the railroads had just as much right as any one else to use these roads, inasmuch as they, the railroads, contributed to the support of the highways. In the meantime, the Reading Company is proceeding serenely with its plans for bus operation, apparently awaiting the day when Governor Pinchot shall have passed out of office.

In explaining the trolley and bus situation in Schuylkill County in particular, and throughout the state in general, Mr. Evans stated that the Schuylkill Company has experienced since the war a constant shrinkage in receipts and a constant increase in expense caused by automobile use and "below-cost railroad competition" from the steam railroads. The Schuylkill Company, he says, was established in 1892 and operates about 50 miles of trolley and bus routes through the upper two-thirds of Schuylkill County and serves about 180,000 population from Pottsville north. Its total capital is $2,500,000, or less than the appraisal accepted by the Public Service Commission for a rate basis, and it is almost entirely owned by residents of Philadelphia and eastern Pennsylvania, who receive barely 3 per cent per annum on their investment in the property. He declares that the trolley and bus lines both pay their full share of taxes and their security holders are as fully entitled to protection and support in their rights and investments as are those of the steam lines. Further Mr. Evans said:

> The steam lines are prohibited by Pennsylvania laws from operating directly or indirectly either passenger or freight service over the public highways, while to the contrary trolley lines are expressly empowered to do both. The Public Service Commission by its actions and decisions throughout its existence has consistently prevented unnecessary duplication of public service facilities and protected those it regulates from destructive competition; and the steam lines themselves have protested against such duplication in their own field, as witness the present fight against the proposed new Harriman steam line across this state, and their constant opposition to all bus applications.

In the next paragraph Mr. Evans calls attention to the fact that the Schuylkill Company in 1922 organized the Schuylkill Transportation Company as a bus subsidiary, and that the two companies have continuously provided throughout their community economic and efficient unified trolley and bus service of high quality and at reasonable rates. In fact, Mr. Evans adds, they have assisted the Reading Company upon request.

Finally, Mr. Evans says that the Schuylkill Company and generally the trolley and bus companies throughout the state "propose to resist to the utmost the unjustifiable aggression initiated by the steam lines against established, responsible and equally legitimate local competitors."

Councilmen Oppose Buffalo Bus Project

The City Council of Buffalo, N. Y., has failed to approve Mayor Schwab's plan for the extension of municipal bus lines. The commissioners indicated they would not vote for the expenditure of additional funds until the Mayor supplied detailed information regarding the costs and the terms of agreements he had proposed to make with various automobile companies and bus corporations.

The only information contained in the Mayor's municipal bus resolution called for the purchase of passenger buses from the Reo Motor Car Company at $5,525 each, buses from the White Motor Car Company at $10,887 each and also buses from the Dodge Company at $4,337 each. The contracts were to be somewhat similar to the Detroit rental-sale plan. The city was to pay the companies at the rate of 20 cents per bus-mile and guarantee each bus 100 miles a day, this sum to apply on the purchase price. In addition the city was to furnish gasoline and oil, pay for the driver and supply fire, theft and liability insurance.

A conspicuous opponent of the municipal bus plan was Commissioner Frank C. Perkins, the Socialist member of the Buffalo City Council, who for years has been advocating municipal ownership of all utilities.

Shore Line Would Purchase Calumet Coach Company

Permission for the purchase of the Calumet Motor Coach Company by the Shore Line Motor Coach Company, a subsidiary of the Chicago, South Shore & South Bend Railroad, is asked in a petition filed recently with the Indiana Public Service Commission by the railway subsidiary. The petition states that the coach lines operated by the two companies are in close proximity in the Calumet district and that "the interchange of traffic is such that public convenience will be served better if the operation of the routes is carried on by a single company." The purchase will make the Shore Line company one of the largest coach companies operating both interurban and city coaches in that section of the country. A total of 23 routes will be operated out of Gary, to Chicago and Grand Rapids, the northern terminus.

The capital stock of the Calumet Motor Coach Company was purchased last July from its former owners by the Midland Utilities Company, an investment company interested in other utilities in the district served. It holds a franchise to furnish motor coach transportation in Hammond. The Calumet company also operates two routes from Hammond, Ind., to Chicago. The Shore Line company operates through service connecting Chicago and Benton Harbor and Grand Rapids, Mich., also connecting Chicago and Gary and Valparaiso, Hammond and Chicago Heights and other northern Indiana points. The company has its headquarters at Gary. Both lines also operate an extensive chartered car service.

There will be no change in the personnel of the present Calumet company.

Combined figures of the unified coach company will show the following totals: 125 coaches, five garages, 318 employees, nearly 15,000 coach-miles operated daily, with approximately 25,000 passengers carried daily.

The petition also asks the right to issue no par value common stock to cover the cost of the motor coaches and equipment purchased by the Shore Line company. In a separate petition filed jointly by the Gary Railways and the Chicago, South Shore & South Bend Railroad, each of which already owns approximately half of the issued stock of the Shore Line Motor Coach Company, the two railroads ask the right to purchase equal portions of the new stock to be issued by the Shore Line Motor Coach Company.

The Place of the Bus Defined

Buses never will supplant street cars for mass transportation in St. Louis or any other city, in the opinion of the special committee on subways of the Board of Aldermen of St. Louis, which has been rendering all-embracing views upon subjects related to rapid transit for St. Louis, after a study of conditions in many large cities of the United States. In general the committee finds:

> The consensus of opinion seems to indicate that there is no place in any city, except possibly the few very largest cities,

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for the bus in competition with street railways, because such competition inevitably renders adequate service by the railway impossible, if it does not actually ruin it, while after the ruin takes place the bus cannot handle the load, particularly during the rush-hour peak. Competition might, however, be justified where the street railway is backward and will not keep up with modern developments.

There is a sociological question involved in the difference between a 7-cent car fare and a 10-cent bus fare. The difference between these two rates means an average increase for transportation of about $50 a year a family. No doubt in any community 5 or 10 per cent of the families can easily absorb such increase, but the great multitude of the families cannot contemplate or undertake with equanimity an increase of $50 in the family budget; to avoid that the cheaper means of mass transportation by street cars in the larger cities must be continued in full vigor and at the least cost. This cannot be done if they be subjected to unregulated competition of favored, subsidized motorbus lines.

The extent to which buses in St. Louis have been favored and subsidized is indicated by the fact that they are permitted to charge a 10-cent fare while the railways are limited to a 7-cent fare; the railway company contributes to the city about 12 per cent of its gross revenues in various forms of taxation and paving costs, the bus company approximately 4 per cent; the bus company is not compelled to provide any particular quantity of service during the rush hours, but is permitted to choose the number of passengers for which it is willing to provide seats; the railway is compelled to provide a fixed number of seats and a fixed area of standing room for all the passengers and carries the burden; the buses wear out pavements provided by others; the railway pays for pavements used by others. There is no obligation on the bus company to continue service on any line.

Bus Must Prove Its Right to Exclusive New York Street

The Park Avenue Association of New York City has announced the appointment of the engineering firm of Fisk & Roberts, New York, to report on bus operation proposed on Park Avenue by the Board of Transportation. This association, on behalf of its members, has consistently opposed the granting of a franchise for a bus route on Park Avenue and has now retained its own experts to analyze the advantages and disadvantages of the city's plan for a route between 45th and 96th Streets on Park Avenue.

Terminal Urged for Manhattan

The building of a terminal for interurban buses in New York City, many of which are now run into the Times Square area, to lessen street congestion, was urged on Sept. 19 by the Forty-second Street Property Owners and Merchants Association. According to a survey made of mid-town Manhattan there are about 50 interurban bus companies sending between 500 and 600 buses daily into the Times Square area and out of it.

The study revealed the fact that throughout the day there is generally a minimum of 50 buses standing still in the streets. At certain hours the number reaches to almost 100.

Edwin W. Forrest, secretary of the Forty-second Street Property Owners and Merchants Association, said that the interurban bus had developed to the point where, unless it were controlled, preferably by the bus companies, it would interfere with other interests, which would not be slow to object.

Football Followers Handled by Buses in Bethlehem

Roomy buses are being used at Bethlehem, Pa., to meet the need of congested traffic and suddenly mobilized crowds of passengers. Bethlehem is an old city with narrow streets. Its planners evidently missed the fact that future years were to bring an amazing volume of automobile and trolley travel. It happens also that Bethlehem is the seat of Lehigh University and is a collegiate and scholastic sports center of considerable renown.

Bethlehem is served by the Lehigh Valley Transit Company, which covers with its lines a great area in eastern Pennsylvania. When a hill-to-hill bridge was completed last year, with its spans extending octupus-like in five directions to touch important sections, the railway, lacking permission to lay tracks, organized the Lehigh Valley Transportation Company as a subsidiary and established a fleet of ten buses.

With the coming of the football season it was found that terrific congestion occurred every Saturday and Sunday afternoon between the hours of 1 and 6 p.m. Lehigh University stadium attracts its thousands, the Bethlehem High School field is the Mecca for additional thousands and professional Sunday football, played on the Bethlehem Fabricator field, in a somewhat isolated section of the city, and several blocks removed from the nearest trolley line, has many followers.

The Lehigh Valley Transit Company officials met with the executives of Bethlehem and offered a plan of running buses in place of trolleys during these rush periods. It met with instant approval. The Public Service Commission agreed to the proposal. As a result ten buses now serve the passengers whenever an event of any magnitude is held. They are diverted from the hill-to-hill bridge runs for the extensions to the playing fields, during periods when the crowds are going to the fields and returning. Traffic congestion is in consequence tremendously relieved. Patronage is always at capacity. When the main crowds have been taken care of the buses are returned to their usual runs. The ten routes are designed to cover every important part of the city.

Bus Service Arranged for Vancouver, Wash.

Bus service in Vancouver, Wash., will be operated by T. L. Lineham and associates, who have been granted an exclusive franchise by the City Council. A 30-minute schedule will be maintained. The fare will be 10 cents for adults, 5 cents for children under seven and 5 cents for school children on school days. The fare from any section of Vancouver to Portland by bus and street car will be 25 cents and by stage to Portland 30 cents.

Following favorable action by the State Department of Public Works on a petition of the Clark County Development Company to discontinue railway service between Vancouver and Sifton, the cars have been taken off this run. The order releasing the company has been signed by the Clarke County Commissioners. The franchises canceled were granted the Vancouver Traction Company on Jan. 15, 1909, and taken over by the present company on Feb. 15 of the same year. Service will be continued in the city until bus lines are established.

Both Companies at Lincoln Get Permits

The City Council of Lincoln, Neb., has voted to give each of its railways, the Lincoln Traction Company and the Omaha, Lincoln & Beatrice Railway, an interurban, what it wants. The interrurban made the first request, which included a loop that kept it within its old downtown business section boundaries. Later it amended this, at the request of business men, to make a wider detour, entering what the traction company officials say is the cream of its territory. The traction company then asked for permission to run bus lines into the suburb of University Place, which has just been taken into the city, and which is the starting point of the interurban buses. The interurban protested against this, saying it had not sought to invade traction territory, and the traction company replied with a challenge of this statement. The interurban has buses on the ground and started them, after permission had been granted, but without changing the downtown routing. The traction company received the permit and will have its buses in operation soon.

New Service to Picturesque Poconos

A drastic change will be made on Nov. 1 in the operation of one of the most unusual railways in the United States. This is the line run by its employees, who leased it a year ago from the Bangor-Nazareth Transit Company.

The road extends from Pen Argyl to Nazareth, passing through Wind Gap. It caters mostly to passengers who make short trips to the resorts in that section during the summer. The most notable of these places is Saylor's Lake, near Delaware Water Gap and the Poconos.

The employees now intend to discard the three trolley cars remaining in service and will install a bus line. Two buses have already been received for operation over the splendid cement highways spread over the entire region. Service will also be instituted to Bangor. The bus line will make connections with the Lehigh Valley Transit lines at Nazareth and transport passengers into the Pocono foothills on hourly service.

Bus Field Left to Railway

The petition filed with the Public Service Commission of New York by the County Transportation Company, Inc., for permission to operate bus lines in White Plains, the villages of Scarsdale, Elmsford and Tarrytown and the town of Greenburgh, Westchester County, has been withdrawn by the petitioner and the records closed with the commission.

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This company obtained local consents in all municipalities except in the village of Elmsford. Consents of the city of White Plains and the village of Scarsdale were not to become operative unless consents were obtained from all other municipalities and operation commenced within 60 days and in the village of Tarrytown within 30 days.

The proposed route would follow the line of the Westchester Street Railroad, and the application was opposed by the receiver of that company. Subsequently this line was acquired by the Union Railway, which also opposed the petition. Several hearings were held and on Sept. 15 the attorney for the petitioner withdrew the application.

Buses Into the Saucon Valley

A bus line may replace the trolley service of the Bethlehem Transit Company, South Bethlehem, Pa., across the Lehigh mountains and into the Saucon Valley. This particular branch of the Bethlehem Transit Company lines serves a widely scattered community, in which traffic at certain times is almost nil, so that the possibility of running trolleys on a faster schedule or providing better service by car are discounted. Private individuals are seeking permits from the Public Service Commission to serve this territory, but the Bethlehem Transit Company will doubtless file a petition of its own.

Weekly Passes on Lordship Bus Routes

The Connecticut Public Utilities Commission has granted permission to the Lordship Railway to institute a system of weekly passes on its bus route between Lordship and the Plaza, Bridgeport, with the limitation that the weekly passes will be issued for a trial period of one year. The finding of the Public Utilities Commission allows the company to issue weekly passes at $1 each for use on the bus route between the Plaza at Bridgeport and Lordship or Avon Park in Stratford, and passes at 50 cents for use between Hollister Bridge and Lordship or Avon Park. The new system will go into effect Nov. 1.

The Lordship Railway operates a bus line from the Plaza, Bridgeport, to Lordship in Stratford, or Avon Park in Stratford, a round trip to either point covering a distance short of 9 miles.

Would Consider Bus Request.—The Milwaukee Electric Railway & Light Company has taken under advisement the request of the West Racine, Wis., Business Men's Association asking for the extension of the railway's bus system to serve West Racine, a rapidly developing suburb now without any form of transportation service. The proposed line would also touch Mygatt's Corners, where 115 families have signed a petition signifying their intention to support bus service.

Service Increased in Evansville.—Bus service in Evansville, Ind., supplied by the Southern Indiana Gas & Electric Company for the past six months, has met with considerable success, so that the company has put on four new buses to connect with the city cars in remote sections of the city. The new buses have a capacity of about 35. They will not be assigned to any particular routes, but will be used to handle peak crowds.

Lines Extended Into New Territory.—Two suburban bus lines have been extended into growing residence districts by the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. The bus line which operates as a feeder to the Third Street line at the end of Green Bay Avenue now operates ½ mile beyond its former terminal. Under the new plan buses will operate until midnight instead of discontinuing service at 10 p.m. The Clement Avenue bus line, a feeder to the Oakland-Delaware line, has been extended from its former terminal at the Nash Motor plant to St. Francis and Second Avenues in St. Francis. The new areas served are sparsely settled.

Bus Line Planned. — The Gardner-Templeton Street Railway, East Templeton, Mass., is being discontinued and the directors have sold the rails and wire to a Gardner junk dealer. The management will put on a bus service to replace the trolleys.

Specific Stopping Places for Boston Buses Wanted.—Edward Dana, general manager of the Boston Elevated Railway, Boston, Mass., is seeking a revision of the city traffic regulations to designate specific stopping places for buses operated by the company. At a recent conference with the Boston Street Commissioners, Mr. Dana suggested that buses should be provided with certain exclusive stopping points for the convenience of patrons. At the present time there are points where it is almost impossible for the buses to take on passengers because of private autos parked in the way. It has been necessary for the buses to stop in the midst of moving traffic to allow patrons to alight.

New Bus Fare in Effect.—The fare on the Riverside Drive bus line of the Los Angeles Motor Bus Company, Los Angeles, Cal., was made 6 cents without transfer privileges, effective on Oct. 7. The former fare of 10 cents with transfer privileges to and from the Los Angeles Railway and Pacific Electric Railway lines remains the same.

Purchases Jitney Lines.—President W. Scott Eames of the New Haven & Shore Line Railway, Guilford, Conn., has announced the purchase of the operating rights of the Waterbury Jitneys & Taxis, Inc., operating a bus line between New Haven and Saybrook. The additional line will be absorbed in the regular operating schedule of the Shore Line. The New Haven & Shore Line Railway operates 37 miles of line.

Would Investigate Interurban Bus Status.—The St. Louis, Mo., Board of Public Service has instructed Director of Streets and Sewers Brooks to investigate the status of interurban bus lines now using the streets of the city. Numerous complaints have been made that many bus lines are operating without city permits. A city ordinance requires all bus lines to obtain city permits which specify what streets they may use. When this ordinance was originally passed seventeen bus line permits were taken out, the majority for the People's Motorbus Company. Several permits have been issued since that time, but many bus companies have come into the city without making an attempt to comply with the ordinance.

New Bus Service Started. — The Hamburg Railway has started the operation of five de luxe passenger buses between Buffalo and Hamburg, N. Y., under a certificate of convenience and necessity granted by the Public Service Commission. This is the first of three bus lines to be started by the Hamburg Railway between Buffalo and suburban points in western New York and is known as route A-1. Motor coaches will operate on an hourly schedule. No local passengers will be carried in the city of Buffalo. The buses have a capacity of 29 passengers. The round trip is 75 cents, with a one-way fare of 40 cents. Commutation books will be sold on a basis of 30 cents a trip.

Bus Routes Authorized.—The Scranton Bus Company, a subsidiary of the Scranton Railway, Scranton, Pa., has received a certificate from the Public Service Commission to operate buses from Dunmore Corners through Green Ridge Street to Providence Square. This is a crosstown bus line serving citizens of Dunmore and north Scranton. A certificate has also been secured to extend the bus line now operating from the Throop Boulevard section to the center of the city, through Wyoming Avenue to Lackawanna Avenue.

Prohibits Restraining Orders Against Independents.—A writ to prohibit Judge William Kittinger of the Circuit Court at Anderson, Ind., from issuing restraining orders, injunctions or contempt of court citations against four independent bus operators in Muncie, Ind., has been issued by Judge David A. Myers, chief justice of the Indiana Supreme Court. The petition follows a controversy between Arthur W. Brady, receiver for the Union Traction Company, and the Muncie bus operators. The traction officials asserted that the Muncie operators are running illegally. Attorneys for the bus men declare they carried the matter to the Supreme Court because they feel that court action should be in Delaware County, where the buses are operating, and not in Madison County, where the receivership was established.

Extension of Service by Buses.—The Northampton Street Railway, Northampton, Mass., has been granted authority by the towns and cities involved to run buses between Northampton and Williamsburg. Between Leeds and Williamsburg buses will be operated entirely and the trolley service will be abandoned. Between Leeds and Northampton buses will be used to cooperate with the railway service. The Aldermen of Northampton granted licenses after some dispute regarding the fare. The licenses issued also include an order for a reduction in fare between Northampton and Williamsburg as offered some time ago by the Northampton Street Railway.

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Financial and Corporate

Interborough Gross and Net Up

Increase in Net Corporate Income for Year Ended June 30 Was $2,278,253 —Earnings Statements Compared

Gross operating revenue of the Interborough Rapid Transit Company, New York, for the year ended June 30, 1926, was $61,708,815, compared with $58,418,991 last year, a gain of $3,289,824, or 5.63 per cent, the result of a gain on the subway division of $3,213,036, or 8.15 per cent, and a loss on the Manhattan Railway division of $76,788, or 0.40 per cent. The gain in the revenue from the transportation of passengers was $2,047,021 and the gain in the other street railway operating revenue $1,242,803, principally from advertising, which shows an increase of $1,227,328 over the previous year.

Operating expenses with maintenance and depreciation included on the basis of contractual provisions were $33,540,813, compared with $33,088,385 last year, an increase of $452,428, or 1.37 per cent, the result of an increase of $656,713, or 3.04 per cent, on the subway division and a decrease of $204,285, or 1.77 per cent, on the Manhattan Railway division.

The net operating revenue was $28,168,002, compared with $25,330,606 last year, an increase of $2,837,396, or 11.20 per cent, the result of a gain on the subway division of $2,556,323, or 14.32 per cent, and a gain on the Manhattan Railway Division of $281,073, or 3.76 per cent.

The total amount of taxes was $3,350,783, compared with $3,299,590 last year, an increase of $51,193, or 1.55 per cent; the subway division shows an increase of $79,877, or 9.56 per cent, while the Manhattan Railway division shows a decrease of $28,684, or 1.16 per cent.

Income from operation was $24,817,219, compared with $22,031,016 last year, or an increase of $2,786,203, or 12.64 per cent, the result of a gain on the subway division of $2,476,446, or 14.55 per cent, and a gain on the Manhattan Railway division of $309,757, or 6.17 per cent.

Non-operating income was $276,979, as against $292,200 last year, a decrease of $15,221, or 5.21 per cent, the result of a decrease on the subway division of $21,573, or 10.10 per cent, and an increase on the Manhattan Railway division of $6,352, or 8.08 per cent.

Gross income was $25,094,198, compared with $22,323.216 last year, an increase of $2,770,982, or 12.41 per cent, the result of a gain on the subway division of $2,454,873, or 14.25 per cent, and a gain on the Manhattan Railway division of $316,109, or 6.20 per cent.

Income deductions were $21,669,158, compared with $21,176,429 last year, an increase of $492,729, or 2.32 per cent.

The net corporate income was $3,425,040, compared with $1,146,787 last year, an increase of $2,278,253.

Some $10,899,889 was spent during the year for maintaining the railroads, power plants and the rolling stock in good operating condition. This amount was $981,346 in excess of the contractual provisions and when deducted from the net corporate income leaves a balance for the year of $2,443,695, compared with a deficit the previous year of $345,508.

The number of passengers carried was 1,130,484,647, compared with 1,089,544,225 last year, an increase of 40,940,422, or 3.76 per cent, the result of a gain on the subway division of 47,459,401, or 6.44 per cent, and a loss on the Manhattan Railway division of 6,518,979, or 1.85 per cent.

A net expenditure of $3,087,693 was made during the year for additions, betterments and replacements. This amount includes the company's contribution toward construction and equipment under Contract No. 3 with the city and the related certificates, balance of cost of 150 additional subway motor cars and additional shop and power facilities to provide for operation of additional subway cars.

The comparative income account for the years ended June 30, 1926, and 1925, is contained in the accompanying table.

The system is made up of 378 miles, of which 237 is elevated lines and 141 subway.

COMPARATIVE INCOME ACCOUNT OF INTERBOROUGH RAPID TRANSIT COMPANY

Year Ended June 30	1926	1925	Increase
Gross operating revenue	$61,708,814	$58,418,990	$3,289,823
Operating expenses†	33,540,812	33,088,385	452,427
Net operating revenue	$28,168,001	$25,330,605	$2,837,396
Taxes	3,350,782	3,299,589	51,193
Income from operation	$24,817,218	$22,031,015	$2,786,203
Non-operating income	276,979	292,200	*15,220*
Gross income	$25,094,198	$22,323,216	$2,770,982
Income deductions	21,669,158	21,176,428	492,729
Net corporate income	$3,425,040	$1,146,787	$2,278,252
Add:			
Surplus at beginning of year	$1,529,863	$391,534	$1,138,329
Profit and loss account—Net changes during the year	13,865	*8,457*	22,322
Totals	$1,543,728	$383,076	$1,160,652
*Surplus at end of year†	$4,968,768	1,529,863	$3,438,905

*Stated exclusive of accruals under Contract No. 3 and related certificates payable from future earnings but with full deduction for sinking fund on first and refunding mortgage bonds, the payment of which is under the "Plan of Readjustment," postponed for five years from July 1, 1921, provided an amount equal to such postponed sinking fund be expended for additions or improvements to the property.

†Stated exclusive of expenditures for maintenance in excess of contractual provisions.

Michigan Road to Discontinue After Foreclosure

The Grand Rapids, Holland & Chicago Railway went under the hammer before Judge Clarence W. Sessions in United States District Court at Grand Rapids, Mich., on Oct. 20, with the Hyman-Michaels Company, Chicago, the successful bidder. Its offer of $227,500 for the entire road and equipment was accepted when no other bids were made.

The railway went into the hands of receivers in June, 1924, on petition of the Continental & Commercial Trust & Savings Bank, Chicago, the trustee under a deed securing $1,500,000 of Grand Rapids, Holland & Lake Michigan Railway first mortgage 7 per cent bonds (extended) on which interest was defaulted on Feb. 1, 1924. The Grand Rapids, Holland & Chicago Railway was incorporated on July 19, 1904, as successor to the Grand Rapids, Holland & Lake Michigan Railway. It owns 76 miles of track. In 1916 the road was leased to the Michigan Railroad for five years. This lease was renewed for another five years at its expiration, but on Jan. 1, 1924, the lease was canceled and the road returned to the owners.

The sale is, of course, subject to the approval of the court. Meanwhile service will be continued, but the prospect is that after the successful bidder is fully qualified and title passes the road will discontinue.

New Kansas City Mortgages Filed for Record

The Kansas City Public Service Company, new owner of the railway at Kansas City, Mo., has filed a mortgage under which bonds will be issued in an initial amount of $12,465,200. The mortgage is on the properties of the defunct Kansas City Railways, title to which has been transferred to the new company and is of the type that may be enlarged at intervals as the need may arise.

The new owners of the property will distribute a total of $11,150,755 of the bonds among themselves. The remaining bonds of the new issue, having a total face value of $1,314,444, will be remitted to the group of personal injury claimants, for whom Senator James A. Reed arranged a settlement with the federal court at the time of the receivership litigation.

The issue of bonds is being arranged on the basis of a 30-year maturity, but they will be recalled and exchanged for eighteen-year bonds in the event the franchise extension fails if a public referendum is held.

Also on Oct. 18 a similar mortgage on the Wyandotte Railways, a subsid-

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iary operating in Kansas City, Kan., was filed there. The mortgage, which will be held by the Kansas City Public Service Company, provides for a bond issue of $1,750,000 face value on the Wyandotte County properties of the company. Thus the initial bond issue of the Kansas City Public Service Company represents a total face value of $14,215,200, secured by pledge of both the Kansas and Missouri properties.

Shall the Purchased Franchise Be Included in Property Value?

A hearing was held on Oct. 5 before the Court of Appeals of the District of Columbia in the case of the Public Utilities Commission against the Capital Traction Company, Washington, D. C. The case is on appeal from the decree of the Supreme Court of the District of Columbia fixing the fair value of the properties of the Capital Traction Company for rate determination purposes. F. H. Stephens appeared for the commission and George E. Hamliton and G. Thomas Dunlop for the railway.

An agreed statement of facts shows that the commission, after hearings made in 1919, found the value of the company's property as of 1914, and added thereto the cost of property acquired between that date and the date of valuation in 1919. This was conceded to be an error and the Supreme Court of the District of Columbia, having the entire record, revalued the property as of Jan. 1, 1925. On that date the court found the fair value to be $30,906,880, which included $5,150,000, the cost of franchise and other intangible elements.

The commission brought this appeal from the decree of the Supreme Court of District of Columbia, asking that the decree should be reversed and remanded with instructions to the court to eliminate the item of $5,150,000. The commission also sought consideration of historical cost or investment value and proper depreciation.

Counsel for the Capital Traction Company contended that the actual cost of the franchises and other intangible elements of value purchased from the Washington & Georgetown Railroad should be added to the reproduction cost new, as such actual expenditure was legal and necessary, and the stockholders had relied upon protection of such value. They contended, further, that there should be no allowance for depreciation as the sinking fund is adequate to care for it.

Year's Balance in Detroit Increases

The railway operating revenue of the city of Detroit Department of Street Railways, Detroit, Mich., for the year ended Sept. 30, 1926, was $23,064,009, against $21,736,795 for the year ended Sept. 30, 1925. The coach operating revenue for these two periods was $1,742,686 and $498,384 respectively. Railway operating expenses was $17,406,793, against $15,832,833 for the 1925 period. Coach operating expenses were $1,720,988 for this year, against $486,624 for 1925. The net revenue from all sources was $5,935,286 for the year ended Sept. 30, 1926, and $6,088,089 for the similar period in 1925.

After the consideration of deductions the net income was $3,249,252 for this year, against $3,462,897 last year. The balance for this year's period was $634,328 and for last year $531,285.

The total number of railway passengers for the year ended Sept. 30, 1926, was 495,946,976, against 465,694,211 passengers for the year ended Sept. 30, 1925. The total number of coach passengers was 22,569,423, against 6,811,112 in 1925. The report showed railway revenue car-miles to be 54,870,968, against 50,482,115 in 1925, and the coach revenue miles 7,503,988, against 2,056,587 in 1925.

Traffic on Decline in St. Louis

The United Railways, St. Louis, Mo., during the quarter ended Sept. 30 carried about 5,500 fewer passengers daily than in a similar period last year, according to a report filed with the City Register by Receiver Rolla Wells. It is revealed that during the quarter the company carried 61,989,925 cash passengers, compared with 62,097,861 for the similar month in 1925. In the quarter for which the report has just been filed the company operated on weekdays, except Saturdays, 1,308 cars, on Saturdays 1,104 cars and on Sundays 638. Last year 1,301 cars were used on weekdays, 1,091 cars on Saturdays and 612 cars on Sundays.

The reduction in traffic probably would have been much more pronounced but for the Greater St. Louis Exposition held in Forest Park during the last quarter and the little world's series baseball games between the St. Louis Cardinals and the Pittsburgh Pirates at Sportsman's Park late in August.

For the quarter ended June 30, 1926, the company reported 64,923,573 passengers, against 68,261,621 in a similar quarter of 1925.

Canadian Roads Doing Well

Canadian electric railways are showing an increase in business which is not only substantial but must be regarded as distinctly satisfactory by holders of their securities. For each of the seven months ended July, the increases in number of revenue passengers carried was from 2.46 per cent to 6.36 per cent higher than for the corresponding months of 1925. What is more, the improvement of the Canadian systems in 1926 followed a small improvement throughout the whole of 1925, shown at 0.19 per cent.

For the month of July the increase in revenue passengers carried by the seven Canadian systems reporting was 5.66 per cent. The improvement for July is regarded as very satisfactory, since there was a slight decrease for July, 1925.

Deficits on York Radials Paid

The radial question in Toronto, Ont., took a new turn on Oct. 19, when the City Council adopted unanimously the Board of Control's report recommending that payment be made to the Hydro-Electric Power Commission of Ontario for the accumulated deficits on hydro operation of the York radials up to July 31 of this year. The amount involved is $747,457, made up as deficits of $700,693 for 1923, 1924, 1925 and 1926 and $46,864 of accrued interest.

Conspectus of Indexes for October, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War High	Since War Low
Street Railway Fares* 1913 = 4.84	Oct. 1926 **7.40**	Sept. 1926 **7.36**	Oct. 1925 **7.31**	Oct. 1926 **7.40**	May 1923 **6.88**
Electric Railway Materials* 1913 = 100	Oct. 1926 **155.4**	Sept. 1926 **154.2**	Oct. 1925 **150.9**	Sept. 1920 **247.5**	Oct. 1924 **148.5**
Electric Railway Wages* 1913 = 100	Oct. 1926 **226.2**	Sept. 1926 **226.1**	Oct. 1925 **222.8**	Sept. 1920 **232**	Mar. 1923 **206.8**
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	Oct. 1926 **202.9**	Sept. 1926 **203.2**	Oct. 1925 **202.7**	July 1920 **256.4**	May 1922 **167.4**
Eng. News-Record Construction Cost (General) 1913 = 100	Oct. 1926 **209.8**	Sept. 1926 **208.3**	Oct. 1925 **205.4**	June 1920 **273.8**	Mar. 1922 **162.0**
U. S. Bur. Lab. Stat Wholesale Com modities 1913 = 100	Sept. 1926 **150.2**	Aug. 1926 **149.2**	Sept. 1925 **159.7**	May 1920 **246.7**	Jan. 1922 **138.3**
Bradstreet Wholesale Commodities 1913 = 9.21	Oct. 1 1926 **12.79**	Sept. 1 1926 **12.70**	Oct. 1 1925 **14.15**	Feb. 1 1920 **20.87**	June 1 1921 **10.62**
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	Sept. 1926 **158.5**	Aug. 1926 **155.7**	Sept. 1925 **159.0**	July 1920 **219.2**	Mar. 1922 **138.7**
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	Sept. 1926 **166 8**	Aug. 1926 **165.3**	Sept. 1925 **168.2**	July 1920 **204.5**	Aug. 1922 **154.5**
Steel Unfilled Orders (Million Tons) 1913 = 5 91	Sept. 30 1926 **3.594**	Aug. 31 1926 **3.542**	Sept. 30 1925 **3.717**	July 31 1920 **11.118**	July 31 1924 **3.187**
Bank Clearings Outside N. Y. City (Billions)	Sept. 1926 **17.97**	Aug. 1926 **17.47**	Sept. 1925 **18.19**	Oct. 1925 **20.47**	Feb. 1922 **10.65**
Business Failures Number	Sept. 1926 **1360**	Aug. 1926 **1516**	Sept. 1925 **1234**	Jan. 1924 **2231**	Aug. 1925 **1353**
Liabilities (Millions)	**34.38**	**39.77**	**27.89**	**122.95**	**27.22**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads.

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The action of the Council followed a conference between the Board of Control and C. A. Magrath, chairman of the Hydro-Electric Power Commission, at which Mr. Magrath insisted that these funds were needed at once by the commission to avoid financial embarrassment. Funds needed to cover the further deficit incurred between July 31 and Oct. 31 this year were not reported. In a letter to the Board of Control, recently made public, the Toronto Transportation Commission advised that the radials be abandoned because of their unprofitable return.

The poor showing of the radials and the subsequent hectic meetings on the disposition of these lines have been referred to previously in the ELECTRIC RAILWAY JOURNAL.

4,184,841 More Surface Line Riders in Chicago in Month

The monthly report of the Chicago Surface Lines for September points to an increase of 4,184,841 revenue rides over the number carried in the similar month last year. The total rides for the month were 127,149,619, of which 70,279,811 were revenue passengers, 52,926,708 transfer passengers and 3,943,100 free passengers. The average fare per ride was 3.82 cents.

During the first nine months of 1926 the Chicago Surface Lines has shown a consistent gain in traffic compared with the corresponding period of 1925. The addition of 100 new cars during September and October fortifies the company in its plans to care for the big increase in traffic expected during the Christmas shopping season.

EARNINGS OF CHICAGO SURFACE LINES

September	1926	1925
Gross earnings	$4,916,535	$4,721,820
Operating expenses, taxes, etc.	3,889,973	3,753,402
Joint expense account	34,525	10,000
5 per cent interest on purchase price	671,493	671,965
Divisible receipts	320,543	286,453
City's share	176,299	157,549
Company share	144,244	128,904

Divisible receipts for September were $320,543, after taxes, renewals, operating expenses and the 5 per cent interest on the purchase price, against $221,855 in August and $286,453 in September of last year.

Segregation of Delaware & Hudson Properties Authorized

The managers of the Delaware & Hudson Company were authorized by the stockholders at a special meeting on Oct. 26 "to transfer to a corporation or corporations (all the stock of which shall be owned by the Delaware & Hudson Company) all or any of the railroad properties, boat lines, traction lines, motor bus lines, hotels and other analogous interests belonging to it. . . ."

L. F. Loree, president of the road, explained that no plan had matured to date for the segregation of the D. & H. coal properties, since the stockholders granted the board authority to sell the holdings at a meeting in May, 1925.

Commission Hears Chicago Rapid Transit Security Petition

Evidence bearing on the petition of the Chicago Rapid Transit Company for permission to issue and sell $1,500,000 of 7.2 per cent prior preferred stock, series B, and on another, seeking authority to issue $1,795,000 of first and refunding mortgage gold bonds, series A, was heard in Chicago on Oct. 26 by the Illinois Commerce Commission. Orders on both petitions will probably be issued within the next ten days.

The preferred stock is to be sold to reimburse the company for improvements already made this year.

As mentioned in the ELECTRIC RAILWAY JOURNAL for Oct. 16, a special meeting of the stockholders of the company is to be held on Dec. 9 to vote an increase in the company's capital stock from $25,330,500 to $30,330,500, to be issued in the form of prior preferred stock to provide for future capital requirements.

Receiver Appointed for Geneva Road

The Geneva, Seneca Falls & Auburn Railroad, Waterloo, N. Y., went into the hands of Lansing S. Hoskins and James M. Ryan, as receivers, on Oct. 20. The road was forced into bankruptcy by the Chatham & Phoenix National Bank & Trust Company, New York, representing the holders of $504,000 of bonds on which the company was unable to pay interest due on Jan. 1, 1926. Operation will be maintained on the electric line and the Geneva Railway & Bus Line, a subsidiary.

The company operates about 14 miles of line. It was incorporated in 1913 as the successor to the Geneva & Auburn Railway, which had been sold under foreclosure.

Indianapolis & Cincinnati Reorganization Progress

Current newspaper accounts to the contrary notwithstanding, nothing definite has been done or even agreed upon regarding the proposed reorganization of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind. Nor will anything definite be done along these lines until a decree is entered in the pending foreclosure suit, intended to clear up all debatable questions regarding the property to the end that those interested may know exactly how the matter stands in every respect. It is not possible to tell how soon this will be done, but it will probably be in the near future.

Changes in Financial Set Up Approved in New Jersey

At a special meeting of the stockholders of Public Service Corporation of New Jersey held on Oct. 19 the certificate of incorporation was by a vote of more than two-thirds of all classes of stock outstanding amended in accordance with the recommendation of the board of directors so as to:

1. Increase the authorized preferred stock from 1,000,000 to 2,000,000 shares.
2. Increase the common stock from 2,000,000 to 10,000,000 shares.
3. Provide that of the 2,000,000 shares of preferred stock, 1,250,000 shall be 6 per cent cumulative preferred.
4. Provide for the payment of monthly instead of quarterly dividends on 6 per cent preferred stock.
5. Provide for an exchange of the common stock outstanding at the time the amendment takes effect on the basis of one share of present stock for three shares of the common stock authorized by the amendment.

To the stockholders present at the meeting President McCarter said:

> The corporation is having its best year. Its affairs were never in better condition than they are now nor have its prospects for the future ever been brighter. I have been in this work sufficiently long not to have any delusions about it, so I speak with some confidence when I say that the corporation's condition is very prosperous. We look forward to a continuance of this prosperity in the future, which, of course, will redound to the benefit of the stockholders.

Net Income Lower. — For the three months period ended Sept. 30, 1926, the passenger revenue of the Brooklyn City Railroad, Brooklyn, N. Y., was $2,754,902, against $2,760,996 for the similar period last year. Operating expenses and taxes increased from $2,368,555 to $2,409,750 for the three months period ended Sept. 30, 1926. After consideration of income deductions there was a net corporate income for the period from July through September of this year of $268,009, against $321,473 for the similar 1925 period.

Net of Eastern Massachusetts for Nine Months Up.—The Eastern Massachusetts Street Railway, Boston, Mass., reports net income of $20,824 for September after charges, depreciation and taxes against $50,904 in September, 1925. Nine months net income was $550,892 after above charges against $543,318 in the similar period of 1925.

Charitable Disbursements Large in Louisville.—The balance in the fund of the co-operative association of the Louisville Railway, Louisville, Ky., on Aug. 1, 1926, was $4,366, and interest on deposits $4.60. The disbursements, including sick benefits, death benefits, salaries and recreation, totaled $1,822. The balance as of Aug. 31, 1926, therefore, was $2,549.

Net Income Increases.—For the nine months period ended September, 1926, the gross revenues of the Twin City Rapid Transit Company and subsidiaries, Minneapolis, Minn., were $9,479,051, against $9,231,793 in 1925. Operating expenses increased from $6,853,485 in 1925 to $6,913,957 in the 1926 period. Net income also advanced from $714,611 in 1925 to $901,085 for the nine months period ended September, 1926.

Nine Months Net Off in Boston.—The Boston Elevated Railway, Boston, Mass., reports to the Department of Public Utilities for the quarter ended Sept. 30, 1926, gross revenue of $7,836,886, compared with $7,686,541 in the third quarter of 1925, and deficit after cost of service and dividends of $1,081,119, against $793,836. Gross revenue for the first nine months of 1926 was $25,957,201, comparing with $25,267,219 in the first nine months of 1925, and deficit after above charges of $749,654, as contrasted with surplus of $49,877 in the similar period of the previous year.

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Personal Items

Another Employee Director Elected

W. E. Murphy, Chief Dispatcher, Made Representative of Employees on International Board

William E. Murphy, chief dispatcher for the International Railway, Buffalo, N. Y., was elected a member of the board of directors on Oct. 25. He is the second employee to be made a director, the other representative of the workers being George Burgain, motorman at Cold Spring station. By this action the employees will have double representation in discussions of the affairs of the railway.

Mr. Murphy is vice-president of the I. R. C. Co-operative Association, of which Mr. Burgain is president. Members of this association, comprising the employees of the company, collectively hold $2,000,000, par value, of the company's bonds and stocks, have a saving fund of about $100,000, and each member is protected by a $1,000 life insurance policy. Under the Mitten cooperative plan the men have 50-50 jurisdiction with management in all discussions of wages, working conditions, discipline, etc.

W. E. Murphy

The new director has been employed by the railway continuously for 26 years. His first position, as clerk in the engineers' office, paid $35 a month. Shortly afterward he became timekeeper in the track department, from which position he went to the switchboard. In 1904 he was made a dispatcher, controlling the movement of cars, dispatching of the emergency wagons and attending to similar operating problems. In 1921 he was promoted to the position of chief dispatcher. His office is the nerve center of the entire system on the Niagara frontier, stretching from Buffalo to Niagara Falls, to Chippewa and Queenstown on the Canadian side, and through Lockport to Olcott Beach, which is on Lake Ontario.

Mr. Murphy is the third employee to be elected to the position of director of the company. In 1925 James E. Deaton, full-blooded Mohawk Indian, a pitman in the shops of the company at Niagara Falls, Ont., and then president of the I. R. C. Co-operative Association, was thus honored. He was succeeded by George E. Burgain when the latter became president of the association, and Mr. Burgain is now joined by his vice-president. Together they will represent the employees in the most intimate discussions of company policy and progress.

Personnel Changes in Fitchburg

Emerson W. Baker, district attorney, has been elected president of the reorganized Fitchburg & Leominster Street Railway, Fitchburg, Mass. In this capacity he succeeds Wesley W. Sargent, resigned.

George R. Wallace, Jr., was elected vice-president to fill the vacancy caused by the resignation of Herbert I. Wallace.

Louis H. Cushing is general manager.

Edwin G. Ordway is serving as superintendent of traffic. He has been adjuster of claims of the company for many years.

B. J. Wahle Shore Line Coach Official

Bernard J. Wahle, for the last year and a half assistant general manager and assistant secretary and treasurer of the Calumet Motor Coach Company, Hammond, Ind., has been appointed assistant treasurer and auditor of the Shore Line Motor Coach Company, Gary, Ind.

Since he was graduated from Crane Technical College in Chicago in 1912, Mr. Wahle has been connected with various banking and industrial concerns in the capacity of accountant. He was with the Continental & Commercial National Bank, Chicago, for five years prior to the war, during which he served as paymaster and financial representative of the U. S. Navy at Newport, R. I., and Baltimore, Md.

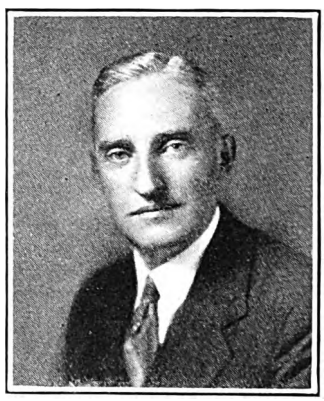
In 1919 he resigned from the Navy to become associated with a firm of public accountants in Chicago. Later, he went to work for the Industrial Appliance Company of that city as auditor.

As operating engineer for the Yellow Cab Company in Chicago, he was subsequently for four years engaged in assisting insolvent taxicab companies to reorganize. In 1925 he entered the employ of the Calumet Motor Coach Company, an independent bus line in Hammond, Ind., but became connected with the Shore Line Motor Coach Company when the Calumet company was brought under unified management last August.

The Shore Line Motor Coach Company is jointly controlled through stock ownership by the Chicago, South Shore & South Bend Railroad and the Gary Railways, members of the Midland group of Insull utility companies.

T. W. Noonan General Manager of Pittsburgh Bus Operation

T. W. Noonan has recently been appointed general manager of the Pittsburgh Motor Coach Company, a subsidiary of the Pittsburgh Railways, Pittsburgh, Pa. He became affiliated with railway work in 1907 when he entered the employ of the Pittsburgh Railways. He served successively as payroll clerk, in the traffic department, in the general manager's office, in the overhead lines department, as secretary to the president of the Duquesne Light Company, and the Pittsburgh Railways. In 1917 he joined the U. S. Army and went overseas. He was discharged from military service in 1919. He re-entered the employ of the Philadelphia Company and affiliated companies in June, 1919, as chief clerk to the operating assistant to the president. His connection with the Pittsburgh Motor Coach Company dates from Dec. 1, 1925, when he assumed the duties of service manager. It is of this company that he was appointed general manager some few weeks ago. The Pittsburgh Motor Coach Company operates 33 miles over territory in and surrounding Pittsburgh.



T. W. Noonan

Mr. Noonan was born in 1888 in Pittsburgh. He attended the grade and high schools there and was graduated from the Duquesne University.

Bill Boyce on Pittsburgh Conference Board

W. H. Boyce, commercial manager of the Pittsburgh Railways, Pittsburgh, Pa., has succeeded Frank R. Phillips as the railway company's representative on the Traction Conference Board. Pittsburgh is represented on the board by two members and the boroughs and townships by a fourth member. As noted previously in the ELECTRIC RAILWAY JOURNAL Mr. Phillips has been appointed to the Duquesne Light Company.

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Changes in Westinghouse Engineering Department

R. E. Hellmund Is Made Chief Electrical Engineer and A. M. Dudley is Made Engineering Supervisor

R. E. Hellmund, formerly engineering supervisor of development for the Westinghouse Electric & Manufacturing Company, has been appointed to the newly created office of chief electrical engineer and A. M. Dudley, formerly manager automotive equipment engineering department, has been made engineering supervisor of development, the position left vacant by Mr. Hellmund's promotion.

Mr. Hellmund's activities in his new position will be principally in connection with electrical development work to assure the adequacy and progressiveness of designs and properly to co-ordinate this work throughout the engineering department. He will continue to serve as chairman of the engineering educational committee and will also retain his connection with the supervisory group on development and the patent board.

Mr. Hellmund entered the employ of the Westinghouse company in 1907 as a designer of induction motors. Later he was engaged in general engineering work and, in 1912, was placed in charge of the design of all direct-current and alternating-current railway motors. In 1917 he engaged in miscellaneous consulting work for the company. In this capacity he continued until 1921, when he was appointed engineering supervisor of development. He continued in this capacity until his recent promotion.

He was born in Gotha, Germany, on Feb. 2, 1879, and was graduated from the College of Illmenau in 1898 with the degree of electrical engineer.

Mr. Dudley entered the service of the Westinghouse company as an apprentice in 1904. Shortly afterward he was given a position in the company's engineering department, where he was engaged in the design of alternating-current motors and controllers. Early in 1906 he was made commercial and general engineer in the industrial and power sales department.

In 1907 he was placed in charge of the alternating current motor section and continued in this position until 1918, when he was placed in charge of the design of starting, lighting, and ignition equipment for automobiles. In 1920 he was made manager of the automotive equipment, engineering department. This position he held until 1924, when he was appointed to assist Mr. Hellmund in his work as engineering supervisor of development.

In the capacity of engineering supervisor of development Mr. Dudley will be responsible for all central activities of the engineering department in connection with the development budget and program of the electrical group. He will continue to act as secretary of the engineering educational committee and secretary of the supervisory group on development.

Mr. Dudley has taken out numerous patents on the details of construction of electric machinery. He was born in Cincinnati, Ohio, in 1877, and was graduated from the University of Michigan in 1902 with a degree of bachelor of science in electrical engineering.

Messrs. Egolf and Savage Advanced by North Shore

John F. Egolf, former general manager of the Aurora, Elgin & Fox River Electric Company and for the past few months assistant to the president of the Chicago, North Shore & Milwaukee, Chicago, Aurora & Elgin and Chicago, South Shore & South Bend Railroads, was appointed general manager of the Chicago, North Shore & Milwaukee Railroad on Oct. 26. He succeeds Jesse S. Hyatt, who was recently made engineering assistant to Bernard J. Fallon, vice-president of the North Shore, South Shore, Aurora & Elgin and Chicago Rapid Transit Lines.

Mr. Egolf began his railroad career as a conductor on the Columbus, Ohio, street railways in 1902 and from that position rose to assistant superintendent of the Ohio Electric Railway. Later he became general manager of the Springfield & Xenia Railway. He was president of the Illinois Electric Railway Association in 1925.

Simultaneous with Mr. Egolf's appointment, Howard P. Savage, newly elected commander of the American Legion and former superintendent of the maintenance of way division of the Chicago Rapid Transit Company, was named assistant general manager of the North Shore Line. Mr. Savage entered the service of the rapid transit company as track foreman in 1913. In his new position he succeeds Bert W. Arnold, who will continue as manager of the motor coach department of the company and will also assist B. J. Fallon, vice-president in charge of operation.

Harry B. Ivers Joins Parker Staff

Harry B. Ivers, widely known among electric railway executives of New England for his service on the former Old Colony Street Railway and on various Maine properties, has been appointed head of the newly created co-ordinating department of C. D. Parker & Company, Boston, Mass., investment bankers. He will report to Vice-President Bowen Tufts.

In 1893 Mr. Ivers entered the electric railway field on the Norfolk Suburban Street Railway and during nine years of service on that property and the Old Colony Street Railway rose to the post of assistant treasurer of the latter. For four years he was treasurer and manager of the railway, lighting and gas utilities at Westerly, R. I., and then went to the Milford Electric Light Company of New Hampshire, where he was occupied in hydro-electric development. He next became treasurer and assistant to the president of the Bangor Railway & Electric Company, Bangor, Me., and for eight years served as general manager of the Lewiston, Augusta & Waterville Street Railway. He was the first general manager of the Cumberland County Power & Light Company, Portland, Me., during this period. Since 1917 Mr. Ivers has been engaged in various activities, including a term of service in the banking business.

H. C. Couch Honored Again

President of New Arkansas Organization One of the South's Most Useful and Prominent Citizens

When the record of utility achievement in the South has been written, one of the most conspicuous names on the roster of useful citizens will be H. C. Couch, prosperity promoter of Mississippi and Arkansas. His dauntless pioneering and untiring energies in behalf of these two states have won public approval and recognition from time to time within the past four years. An added distinction has been conferred upon him in his recent election as president of the new utility group, the Arkansas Power & Light Company, formed by the Electric Bond & Share Company, New York, N. Y. This merger brings under one corporate head public utility properties in Arkansas and honors, because of his executive and financial ability, one who perhaps knows more about Arkansas and its possibilities than any other man.

As president of the new Arkansas Power & Light Company Mr. Couch also serves as president of the Pine Bluff Company, operating 10 miles of electric railway in Pine Bluff, Ark. Assisting Mr. Couch in his work will be two vice-presidents, namely, C. J. Griffith, vice-president and general manager of the Arkansas Central Power Company, and J. L. Longino, vice-president and general manager of the Arkansas Light & Power Company. Other officers will be former officials of the Arkansas Light & Power Company, the Arkansas Central Power Company and the Pine Bluff Company.

Harvey Couch is not so much interested in the recognition and subsequent honors as he is in having gratified, to some extent, his ambition to play a part in the great utility development of the South. His goal was rather to make his particular section a better place in which to live, and in this he has succeeded. Railway patrons, manufacturers and farmers, the latter especially, are unanimous in the belief that if a young mail clerk, a son of Georgia parents, had not turned his attention twenty years ago to utility enterprises the new South would still be a dream.

Born in Magnolia, Ark., 49 years ago, Mr. Couch worked in his early youth as a mail clerk running between Memphis and Texarkana. While at this job he determined to make the life of farmers an easier and better one by building more telephone lines. He paid another clerk $100 to swap runs and he took the run from McNeil, Ark., to Bienville, La. In partnership with the postmaster at Bienville he sold coupons for telephone service to the farmers, and with this money and their reputation obtained credit for wire and insulators and built a telephone line, using small trees for poles. His subsequent selling coup, by which the Southwestern Bell Telephone Company parted with $1,500,000 in favor of the Couch-Longino combination, is a thrilling chapter in the romance of the South.

Mr. Couch next turned his attention and energies to the electric light and power possibilities in Arkansas, acquir-

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ing the systems of Arkadelphia and Malvern. As president of the Arkansas Light & Power Company and the Pine Bluff Company his outstanding services have been mentioned previously in these columns. The railway line he reconstructed until it was put on a paying basis. He saw the same opportunities for service in Mississippi that had stimulated him in Arkansas. He and his associates acquired public service properties in Jackson, Columbus, Greenville and Vicksburg. The Mississippi Power & Light Company was organized, with C. P. Couch, brother of H. C. Couch, as vice-president and general manager at Jackson.

True it is that many railway and power magnates made valuable contributions to utility progress, but it is to be remembered that Mr. Couch succeeded in the midst of war-time struggle and industrial stress. With him success was within—no chameleon judgment, but an adamant purpose to win for others and himself some of the amenities of life to be lived in Arkansas and vicinity. In the midst of sterner realities he remained visionary, an idealist, with performance always part of the dream.

The Pine Bluff Chamber of Commerce good citizenship award of 1925 was presented to him early this year. This trophy was voted to him by the unanimous opinion of a committee representing, in the words of the Pine Bluff *Commercial*, "every activity, every walk of life and every phase of community life in Pine Bluff." A few years ago the Mystic Shriners elected him a potentate. By that title he will always be known in the utility field.

A. W. Brownsworth has succeeded Fred Heckler as master mechanic of the Lake Shore Electric Railway with office at Sandusky, Ohio.

Thomas A. Wright, Jr., has resigned as purchasing agent of the Wilkes-Barre Railway, Wilkes-Barre, Pa. He has been connected with the company in many different capacities for the past thirteen years.

Obituary

Frederick M. Nellis, special representative at New York of the Westinghouse Air Brake Company and secretary since 1899 of the Air Brake Association, died on Oct. 16. He entered the service of the Westinghouse Air Brake Company in 1882 as a demonstrator on its instruction car. Later he went to Cornell University and took a special course in mechanical engineering, remaining at Cornell for three years and being graduated with the class of 1899. He then resumed his association with the Westinghouse Air Brake Company, serving in various responsible positions. For a number of years he was on the editorial staff of *Locomotive Engineering*. Mr. Nellis was born in 1862 at Tionesta, Pa. Early in his career he was a locomotive engineman on the Panhandle Division of the Pennsylvania Railroad. Throughout the remainder of his life he was a member of the Brotherhood of Locomotive Engineers.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Brill Will Build Philadelphia's 150 New Subway Cars

A contract for building 150 high-speed electric cars for Philadelphia's new Broad Street subway was awarded to the J. G. Brill Company on Oct. 26 by Henry E. Ehlers, Director of City Transit for the city of Philadelphia.

The Brill bid, which was the lowest of several received some weeks ago, was $4,039,434, and in awarding the contract Director Ehlers placed the limit at $4,500,000 to take care of unforeseen expenditures. Under the specifications delivery must begin in May of next year and continue until the full consignment has been delivered to the Fern Rock terminal yard.

The cars will be built at the Brill plant in Philadelphia. The Department of City Transit is to supply the motors, motor control equipment, air brake equipment, door-operating devices, couplers and draft gears and other appliances. Bids for this equipment will be advertised for shortly.

Under the Brill contract ten extra trucks are to be delivered. It is also planned to equip ten of the 150 cars with Hyatt roller bearings to determine the effectiveness of roller bearings in this type of equipment.

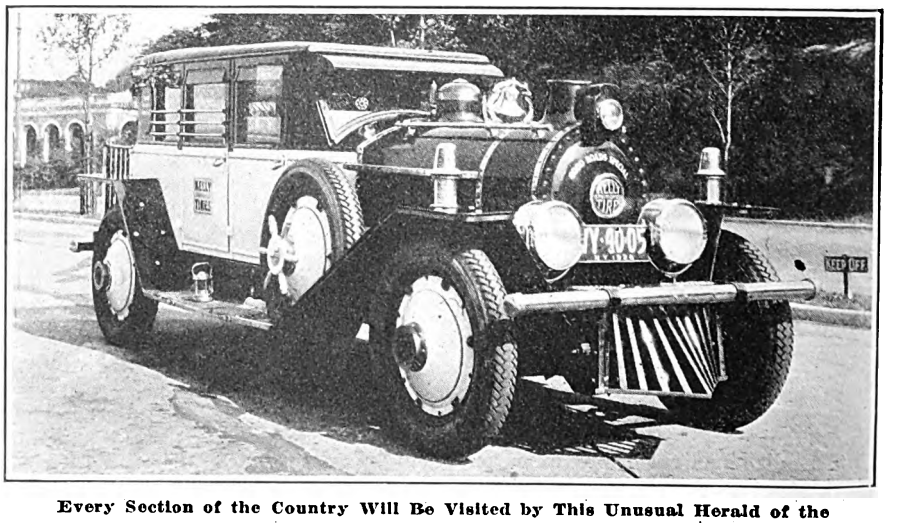
To Stimulate Interest in Good Roads

A desire to stimulate interest in the good roads movement has actuated the Kelly-Springfield Tire Company to send out a "Good Roads Special" on a tour of the United States. The car, from the front, has the appearance of a locomotive, and from the rear, of an observation car. It was first introduced at the convention of the American Electric Railway Association in Cleveland during the week of Oct. 4. The realism of the special is heightened by the fact that it has a smokestack which emits smoke, a real bell and whistle, a sandbox, and Westinghouse air brakes.

Training Apprentices for Industry

A thoroughgoing treatise on the subject of apprenticeship in industry has been issued by the department of manufacture of the Chamber of Commerce of the United States. Information and experiences in the development of industrial training are very completely reported in this booklet, and as a result of the investigation which has been made in preparing the report a number of deductions are made which will be of real interest to all executives charged with the supervision of mechanics and shop labor. Special emphasis is laid upon the value of co-operating with manufacturers and industrial organizations in the training of apprentices by city school systems. It was found as a result of a survey conducted on this point that a large majority of vocational education is carried on in direct conjunction with the industrial organizations of the communities involved, and that the courses described are laid out with a view to training young men for specific lines of employment.

While training of employees for railway shop practice is not specially considered, the subject of industrial apprenticeship has been treated in a sufficiently broad manner to make it well worthy of the attention of railway executives and of railway equipment manufacturers. Apprenticeship for both large and small companies is considered, and the experiences of a number of typical companies are considered in outlining the results of the survey. Opinions of representatives of employers, labor and the engineering profession on the subject of apprenticeship are included.



Every Section of the Country Will Be Visited by This Unusual Herald of the Good Roads Movement

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Frank Fageol Resigns

Frank R. Fageol has just announced his resignation from the American Car & Foundry Motors Corporation, New York, N. Y. Mr. Fageol was formerly head of the Fageol Motors Corporation of Oakland, Cal., and the Fageol Company of Kent, Ohio. These two companies were consolidated with the American Car & Foundry Company some time ago and the American Car & Foundry Motors Corporation was founded.

Mr. Fageol has not announced any definite plans for the future, aside from the fact that he intends to take a much-needed vacation in the next few months. It is understood that he will retain no affiliation with the American Car & Foundry Motors Corporation or with the subsidiary Fageol companies. He is now in California and expects to remain on the coast for several weeks.

Rail Orders Are Not Fluctuating

Orders for steel rails thus far placed in the last third of the current year for delivery in 1927 total about 550,000 tons, it is reported. The total last year, September to December inclusive, reached approximately 1,500,000 tons, and it is estimated that the current year's buying will be about the same. No material extensions of existing rail lines are indicated in the purchases for 1926, the total tonnage being almost entirely for replacement use.

J. G. Brill Dividend Period Coincides with Calendar Year

A dividend of $2.91⅔ a share has been declared by the J. G. Brill Company, Philadelphia, Pa. This is at the rate of $5 per share per annum on outstanding common stock for the period from March 1, 1926, to Oct. 1, 1926, to adjust the dividend period to coincide with the calendar year. On March 1 a quarterly dividend of $1.25 a share was paid on the common stock, which was the rate paid quarterly during 1925. The regular quarterly dividend of 1¾ per cent was also declared on the preferred stock. Both of the above dividends are payable Nov. 1 to holders of record Oct. 29.

A Significant Demonstration of Electrical Transportation

On Oct. 29 the directors and officials of the General Electric Company participated in a unique demonstration of various types of electrical transportation mediums. Gathering at the Grand Central Station in New York City at 10 o'clock Friday morning, the General Electric representatives, officials of the New York, New Haven & Hartford Railroad, and various newspaper and technical journal representatives boarded a special two-car train which was pulled to New Rochelle by one of the New Haven standard electric locomotives.

At New Rochelle this locomotive was detached from the train and an oil-electric locomotive took its place. Again, at Stamford, the oil-electric locomotive was dropped off and one of the General Electric Company's a.c.-d.c. locomotives took up the load. When South Norwalk, Conn., was reached the party detrained and boarded a gas-electric rail car which was waiting for them at that point. Thence they proceeded to Bridgeport, Conn., where the party was picked up by gas-electric buses and taken to the General Electric plant located there. The officials and guests were thus enabled to compare the different types of electrical transportation equipment in regular railway service, as the various stops and changes of motive power were made, and it was possible to draw important conclusions as to the relative merits of each form of equipment for main and branch-line service.

Upon reaching Bridgeport the board of directors and other officials of the General Electric Company went directly to the company's plant which is located there. Newspaper representatives and technical journalists were taken to the University Club for lunch, while the General Electric board went into session for a short meeting. Later the directors were served with luncheon at the plant, where they were joined by a number of prominent local business men, Governor Trumbull of Connecticut, the Mayor of Bridgeport and others. Following the luncheons those who so desired were conducted through the General Electric plant, while the others returned by regular trains to New York or other points.

All save four of the members of the General Electric board of directors were present at the meeting in Bridgeport. In addition, F. C. Pratt, G. P. Baldwin, J. G. Barry, E. W. Allen, W. B. Potter and H. L. Andrews, the two latter executives of the railway department, were on hand. E. J. Pearson, president of the New Haven Railroad, and two directors of that road, J. H. Harding and W. B. Lashar, were in the party that went up from New York.

Westinghouse Billings Continue to Rise

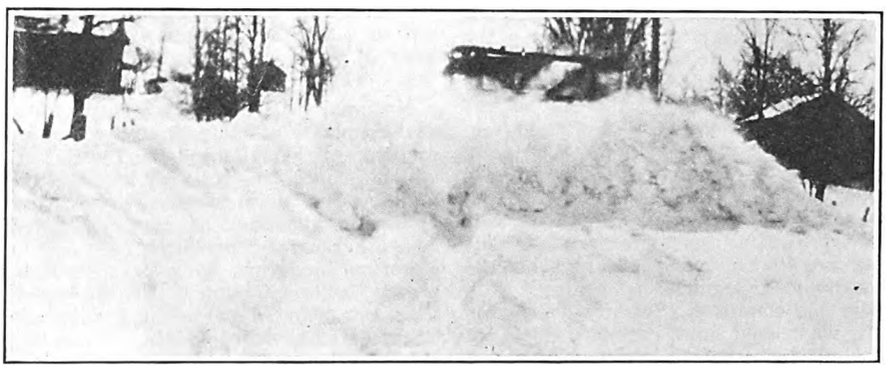
For the quarter ended Sept. 30, 1926, orders amounting to $41,008,310 were reported by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., as compared with $41,250,000 in the corresponding quarter a year ago. The sales billed showed an increase this year, totaling $49,313,230, as against $46,700,000 in the similar quarter last year. For the six months ended Sept. 30 orders amounted to $85,870,667, compared with $85,682,211 in the similar period during 1925, and sales billed $94,453,186, as against $85,424,000.

To Join the Yellow Truck & Coach Manufacturing Company

Raymond C. Snell, formerly in the electric and steam railroad division of the national sales department of the White Company, Cleveland, has joined the Yellow Manufacturing sales organization as assistant to H. E. Listman, vice-president. Mr. Snell has been with the White Company for three years. Prior to this time he was connected with the electric railway industry. Mr. Snell, as assistant to Mr. Listman, will act as special representative of the Yellow Truck & Coach Manufacturing Company. His headquarters will be in Chicago.

Gas-Electric Drive for Snowplows

Fifteen snowplows equipped with gas-electric drive are being obtained by the Philadelphia Rural Transit Company, bus operating subsidiary of the Philadelphia Rapid Transit Company, for use this winter in keeping the roads open for its large fleet of buses, which also have gas-electric drive. The plows were adopted after an experimental unit was tried by the company last winter.



Experimental Gas-Electric Snowplow in Use in Philadelphia Last Winter

Incorporation of gas-electric drive in this service marks the first use of such transmission for other than buses. The plows are mounted on the fronts of trucks and are being manufactured by the Walters Motor Truck Company of Long Island. The electrical equipment, similar to that in the hundreds of buses used by the railway, is being supplied by the General Electric Company. The snow fronts are demountable, so that the trucks will be of service during the summer.

The plows are furnished with two-motor equipment, thus eliminating the differential and reducing wheel slippage and skidding. Some of the inherent characteristics of gas-electric drive found advantageous in bus operation, such as higher schedule speeds and greater comfort for passengers, are not of so much importance in a consideration of plow equipment, but other advantages, such as the impossibility of racing under load or stalling the engine, are important.

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Track and Line

Utah Light & Traction Company, Salt Lake City, Utah, has been granted permission by the county commission to provide a single-track turnout or Y track at the intersection of 33d Street South and Highland Drive running eastward.

New York, N. Y.—The Board of Transportation on Sept. 14 asked for bids, receivable Oct. 8, for the construction of the elevated portion of the Fourteenth Street-Eastern subway from Stewart Street, connecting with the Broadway elevated structure, Brooklyn, to East New York. This is the only remaining section of the Fourteenth Street-Eastern line not under construction.

Wisconsin Gas & Electric Company, Kenosha, Wis., has started the work of replacing the single track in Racine on its West Sixth Street line with double track from Lafayette Avenue west to the Kinzie Avenue bridge. Consideration is being given to the plan of extending the West Sixth Street line on Linderman Avenue over the North Shore tracks into West Racine, thence to the Manree Park addition.

Pacific Electric Railway, Los Angeles, Cal., started service recently over the 9,700-ft. extension to the Reliance Rock Company's plant near Azusa. The new line, which branches off the Covina line near Bassett, using an electrified section of the Southern Pacific Company tracks for a distance of 4,500 ft., extends in a northeasterly direction from Bassett. Construction work on the project, costing approximately $200,000, was begun on April 17, and but 3½ months was required to bring it into operating condition. Seventy-five-pound rail was used and catenary type of construction employed in the overhead. An interchange yard of six tracks, capable of storing 125 cars, was constructed. Storage yards adjacent to the rock company's plant also will care for the storage and handling of approximately 100 cars. At the present time the Reliance Rock Company is the only industry served by the new extension, this company's product being crushed rock, sand and gravel, used largely in highway construction in this section.

Power Houses, Shops and Buildings

Los Angeles Railway, Los Angeles, Cal., has given a contract to the Willard Brent Company for the erection of a modern brick, reinforced concrete and steel structure to be used for general bus, truck and auto inspection and as a repair shop. The building will be 310 ft. long and 100 ft. wide. It will provide pit accommodations for 30 buses. It will also contain store room, machine shop, battery room and offices for the superintendent of automotive equipment. The machine shop will be equipped with lathes, milling machines and cylinder grinders. Plans call for three traveling cranes to run the entire length of the building. All of the plans for the new structure were drawn by the engineering department of the railway.

Nashville Railway & Light Company, Nashville, Tenn., has been granted the permit for the construction of a $20,000 fireproof one-story garage. The building will be located on Fourth Avenue, North, adjoining the carpenter shop of the company's car shops, and will be used as a temporary storage garage for the company's motor vehicles, including the new buses which are reported soon to be put in operation.

Trade Notes

Silent Hoist Winch & Crane Company, Brooklyn, N. Y., announces the removal of its works and general offices into its new building at 762 to 772 Henry Street, Brooklyn. The company manufactures winches, cranes and derricks for motor trucks, and electric and gasoline car pullers, hoists and winches, as well as equipment to meet unusual requirements in hoisting work.

Sullivan Machinery Company, Chicago, Ill., announces the appointment of J. E. M. Schultz as manager of its office in Dallas, Tex., to take the place of D. H. Hunter, who has resigned.

G. C. Barry has been appointed assistant to E. G. Hines, general sales manager of American Brown Boveri Electric Corporation, New York, N. Y.

National Carbon Company, Inc., Cleveland, Ohio, has prepared a moving picture entitled "Behind the Pyramids," which shows in a very interesting manner the manufacture, application, operation and care of carbon brushes and other carbon products used in the electrical industry. This picture will be shown before technical society meetings, operating department groups and engineering college classes. There are three reels of film, requiring approximately 45 minutes for showing. Arrangements for showing this film may be made by writing to the carbon sales division, National Carbon Company, Inc., Cleveland, Ohio, or through its sales engineers.

A. D. McKerrow has been appointed sales representative in central New England for the Line Material Company, South Milwaukee, Wis. Mr. McKerrow's headquarters will be at 10 High Street, Boston, Mass. He was formerly manager of the paper and rubber mill department of the Westinghouse Electric & Manufacturing Company's New England office in Boston and prior to that was employed in the engineering and commercial departments of the New England Power Company, Worcester, Mass.

Indianapolis Street Railway, Indianapolis, Ind., has completed contracts for financing and building five electric substations mentioned in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 18, 1926, page 482, and designed to replace completely the present methods of supplying power to the Indianapolis street car lines. Under the contracts more than $600,000 will be spent immediately, the end being more dependable and faster service. The improved plan of supplying current includes four substations of the automatic and one of the manually operated type. Construction on the new stations will begin immediately. The contract for the electrical equipment provides for shipments by units, covering a period of about four months, and the building program calls for completion of the buildings in time to house the equipment as it is received. The equipment will be provided by the Westinghouse Electric & Manufacturing Company and will consist of transformers and rotary converters.

New Advertising Literature

Electric Railway Improvement Company, Cleveland, Ohio, announces the publication of three new catalogs bearing on steel arc-weld rail bonds, portable arc welding and bonding equipment for voltages above 400 and copper arc weld rail bonds. Circular No. 15 outlines a new method of directly copper arc welding rail bonds to mine and railway rail and describes the effect of a new type of copper arc welding rod which carries a special coating. Circular No. 16 is a complete treatise on the various types and methods of arc weld bonding of railway and mine rail and contains a considerable amount of data of value to bonding crews, as well as to purchasing and engineering departments. The Erico type SR portable bonding and arc welding outfit is described in circular No. 17. This circular gives complete data on the use of this equipment for electric welding, brazed bonding and arc welding. In addition to the description of the welding, pictures and explanatory matter are given on a new type of trailer which has just been brought out by the company.

J. G. Brill Company, Philadelphia, Pa., has issued a leaflet giving information on savings in operating costs effected by new cars on four railway properties where modernized rolling stock has been placed in service.

Cornell Iron Works, Inc., Long Island City, N. Y., has issued a new 32-page catalog on steel rolling shutters and doors. The publication describes steel rolling doors and labeled Underwriters' rolling fire doors and includes details of construction with full dimensions and specifications. Fifty actual installations of these doors and shutters in factories, warehouses, shops, etc., are described and illustrated.

Metal, Coal and Material Prices

Metals-New York	Oct. 26, 1926
Copper, electrolytic, cents per lb.	13.80
Copper wire, cents per lb.	16.00
Lead, cents per lb.	8.25
Zinc, cents per lb.	7.56
Tin, Straits, cents per lb.	69.00
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$7.375
Somerset mine run, Boston, net tons	4.125
Pittsburgh mine run, Pittsburgh, net tons	2.675
Franklin, Ill., screenings, Chicago, net tons	1.525
Central, Ill., screenings, Chicago, net tons	1.45
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, ptr 1,000 ft.	$5.75
Weatherproof wire base, N. Y., cents per lb	17.75
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.50
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.25
Turpentine (bbl. lots), N. Y., per gal.	$0.89

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, November 6, 1926 *Number* 19

Baffling Problems Are Those Worth Solving

EVERY industry is confronted with problems that for a time baffle solution. They are discussed by the many, but tackled seriously only by the few. For a time they stay the wheels of progress. The industry as a whole pauses and shakes its head. The rank and file think more of the difficulties involved than of the solution—that's why they remain in the ranks. But each of these baffling problems presents an opportunity as well as a difficulty. They test the wisdom, initiative and energy of the men who encounter them.

The electric railway industry has more than its share of baffling problems. It is beset on every side by difficulties that to many have seemed to defy solution. Inadequate revenue, restrictive franchises, burdensome and unfair taxes, listless employees, unfair competition, obsolete equipment, traffic congestion—these have all seemed for a time to be insurmountable difficulties.

But the very number and difficulty of these problems in the electric railway industry measure its opportunities. To the very extent to which they baffle solution by the many do they offer opportunity to the few—to those who have the heart and the courage and the imagination needed. Among those who are today courageously grappling with the electric railways' baffling problems are the industry's leaders of tomorrow.

Jitney Controversy in Detroit Appears to Be in Final Stage

STILL another chapter has been written in the story of the attempt by the city of Detroit to bring the jitneys operated on its streets under regulation. The latest move is an order by the State Supreme Court which sustains a previous order made by Justice Bird last July enjoining the city from enforcing the jitney regulation ordinance pending a decision by the United States Supreme Court. The city wants the case advanced on the court calendar before further damage is done to the railway.

The jitney matter has been before the people of Detroit now for several years. The various moves made are all reviewed briefly elsewhere in this issue of the JOURNAL. It has been a long contest, far too long. The conclusion is inescapable that the management of the municipal railway has been embarrassed beyond measure by this unrestrained competition, which last year mulcted the revenues of the municipal system to the extent of more than $1,000,000.

Long before the recent referendum city officials felt sure of their ground in contending that the jitneys are a menace, and so they considered themselves justified in carrying on an intensive campaign against them. That public opinion had been appraised correctly was shown by the vote at the election on Sept. 14, at which an amendment was defeated which would have allowed 500 jitneys to operate under city license on Woodward, Jefferson and Grand River Avenues and on Fort Street.

At the inception of the controversy in Detroit there was no disposition to deal harshly with the jitney owners. Notice was served to them long in advance that on a specified date they would be expected to withdraw from the field. They were never disposed to comply with this order. Instead they elected to give battle, in behalf of what they considered their rights. In the meantime, however, they have been a source of constant annoyance to the management of the municipal railway. It is to be hoped that the United States Supreme Court will heed the plea for the advancement of the case on its calendar. The issues at stake justify it.

Closer Control Needed Over Operations that Obstruct Streets

IN THE streets of mid-town Manhattan the New York Police Department recently found more than 200 obstructions to traffic caused by building operations, repairs to water, gas and sewer pipes, subway construction, etc. Movement of all traffic was greatly hampered. Street railway service suffered seriously because the presence of these obstacles in the vehicular roadway forced an unwonted volume of traffic onto the car tracks.

The existence of obstructions of this kind in the streets is not a new evil, but the tremendous increase in the use of the automobile has brought it sharply to the fore in all large cities. Although a permit from the municipal authorities is ordinarily a prerequisite for work that will result in blocking a street, the officials responsible for the circulation of traffic seldom are consulted. Building permits generally are granted by the building department and permission to open the pavement by the street department. The traffic department is left to deal as best it can with the situation thus created. Before the advent of the automobile this policy probably served well enough, but nowadays, when every available inch of roadway is needed for traffic, closer control should be exercised over operations that obstruct the streets.

Some interference to traffic doubtless is unavoidable during the construction of any building of considerable size. Often, however, the builder avails himself far too liberally of the public street for the storage of his materials and the location of his machinery. A certain amount of ingenuity and possibly some slight additional expense might be required to reduce the amount of obstructions to a minimum, but, after all, the right of the public to the use of the streets is superior to the convenience of an individual. By firm exercise of the

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municipal authority it would be possible to reduce greatly this kind of obstruction.

Similarly, obstructions resulting from repairs to water, gas and sewer pipes cannot be eliminated entirely, but they can be lessened materially. In new developments such pipes can be laid under the sidewalks or in parked strips along the curb where reconstruction will not disturb costly pavements nor interfere with vehicular traffic. In older districts, of course, these utilities have already been installed and cannot well be moved. Nevertheless, much can be done to co-ordinate repair work so that the street will not be opened today to fix one set of pipes, and again next week to fix another set. Many renewals can be made to advantage when the paving is open without waiting for breaks to make them necessary. When a section of Fifth Avenue, New York, was opened up some years ago seven gas mains were found where two would have sufficed. No authority existed, however, to order their reconstruction or repair, and new pavement was laid over the old mains. During the ensuing six months more than 50 openings had to be made in this new paving.

More attention is being given to this subject today from the standpoint of protecting the pavement. Its importance as a cause of traffic congestion, however, is often overlooked. In congested districts the latter feature of the situation is fully as serious as the former and deserves the careful consideration of municipal authorities.

A Governor Hell Bent for Heaven

GOVERNOR PINCHOT of Pennsylvania has appointed R. J. Beamish to the Public Service Commission to represent, as he said, the public as contrasted with the utilities of the state and has tagged Chris Golden, another of his recent appointees, a representative of labor on the commission. But that is not the end of this iniquity. The Governor says that he hopes "to be able in the near future to announce the appointment of another commissioner whose attitude toward the rights of the public will be the same." Probably not one bit of fault can be found with either Mr. Beamish or Mr. Golden, but how unfair it all is to them, to the public and to the state as a whole. No similar case is recalled in which a Governor so labeled men named by him for appointment to a regulatory body.

The Governor has been almost continually at war with the Public Service Commission ever since he has been in office. There is no mistaking his leaning. The conclusion is inescapable, however, that he is either unable clearly to conceive the character and purpose of the Public Service Commission as defined in the law or he chooses to disregard its specifications and spirit.

For his attitude he is rightly called to account by the Philadelphia *Public Ledger*. The whole idea of regulation is that it shall be conducted by a quasi-judicial body. It is not supposed to reflect the desires or views of a particular class or faction. Like the courts, the regulatory body sits in judgment on the facts and the evidence. As the *Ledger* says, it presupposes these new members will permit their judgment to be swayed in accordance with the humor of the forces they are supposed to represent. In designating his appointees as he did, the Governor takes from them the first requisite of efficient service—independence of judgment and decision. His attitude represents an assumption of power not conferred by any state law.

It will not do to dismiss the issue with the thought that the Governor will be out of office the first of the year. The matter is too far-reaching for that. The question that arises and is being asked is how the ends of impartial judgment can be attained when members are appointed specifically to represent the ideas of this and that shade of opinion. Such action is not at all in conformity with the intent of the law or with ordinary ethical conceptions. It can only be explained in terms of the acts of the zealot "hell bent for heaven," to whom every corporation, even at its best, is the embodiment of the world, the flesh and the devil.

Utilities Hit by Higher Learning Wave

WITH the serious season well under way systematic and clearly-defined educational plans have been evolved by many railways, with hundreds of employees and officials, too, enrolled for courses in instruction desired, needed or suggested. Among the prominent exponents of the educational theory is the Boston Elevated Railway. Here under a carefully selected staff of instructors an employee can indulge in electric railway law, public speaking, reading and current events. So interesting and profitable were last year's courses in Boston that many requests were made for similar topics during the 1926-1927 term. In Milwaukee, under the slogan "The Trained Man Wins," the Milwaukee Electric Railway & Light Company is offering to its employees not only necessary information for their advancement but is also giving advice to individuals on the best path to pursue. Subordinates of the Pacific Electric Railway, Los Angeles, who are quick to grasp the opportunity for a limited number, have the privilege of learning the elements in "Traffic Management," with a practical demonstration by men actually employed in such work. Nor has Mr. Mitten lagged behind in this march to higher learning—his men are attending classes for "broader understanding of the principles underlying the company's co-ordinated system, and its varied activities." In the utility classes in Pittsburgh a vice-president sits adjacent to a conductor, so avid are they both for enlightenment on the utility as a business. These above-mentioned properties are fairly well launched on the campaign for the better-informed employee, but there are many other properties in the inchoate stages of this development idea.

This "learning wave," so far as the railway employee is concerned, has followed naturally the universal interest in the subject of utilities and their management. Many university leaders have seen the need for including in their curriculums courses in public utility regulation and management, and certain undergraduate school authorities have arranged for public utility speakers to discuss such phases of the economic life. An instance of the latter is seen in Ohio, where the state superintendent of public instruction has arranged for speakers to address various student bodies.

This year such activity in the universities is being continued. Northwestern University of Evanston, Ill., is offering a course in public utilities, and Indiana University of Bloomington, Ind., is giving not a profes-

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sional course for the training of future executives but a course in general information. Today, a properly qualified business man can learn at the Harvard Business School methods of public utility regulation through a study of utility decisions. Closely akin to the utility subject is accident prevention, which is this year being discussed at New York University. Again, these are only the "high spots" in this educational panorama, but they are evidences of the present-day demand for knowledge of utilities.

With a corps of better-trained employees and a well-informed management and public, might not the *ne plus ultra* in the railway business be realized? It is hoped and expected that the various studies now being undertaken will be reflected in a new service, sympathy and solidarity embracing the public, the management and the employees.

Nashua Pioneers for True Bus Flexibility

ON THURSDAY, Oct. 28, 1926, the Public Service Commission of New Hampshire issued an order that will make it possible for at least one electric railway operator to take full advantage of the flexibility of the motor bus. Under this order, the commission gives the Nashua Street Railway the broadest possible right "to decide for itself what streets may best be included in convenient and profitable routes."

Heretofore, only the lawless jitney has been able to choose its routes at will. When electric railways have entered the bus business, as at Nashua, they have found the flexibility of the bus greatly circumscribed by the condition that they were expected to run over the same route throughout all hours of the day and all days of operation. The operator has not been permitted to use his own judgment in combining maximum service to the public with best returns to himself.

Naturally, so broad a right is not lightly granted. In the case of the Nashua Street Railway, the commission recognized points of special merit. The company had earned the confidence of its local public in every possible way and was known to be doing all in its power to give service to all parts of the city. However, its bus operations were hampered by the customary terminal-to-terminal restrictions. It seemed to the management that if the bus routes could be shifted to meet varying requirements of service in different parts of the city, such routes would be much more useful to the community. This decision helps to establish a precedent in car and bus co-ordination that will surely aid the industry everywhere.

Advertising Plays Important Part in Everyday Existence

MANY statements of interest to manufacturers and electric railway men were made by President Coolidge in an address on Oct. 27 before the annual convention of the American Association of Advertising Agencies. The President, who is temporate of speech and self-effacing in action, praised advertising as having played a leading part in stimulating the growth of the United States and in making possible the maintenance of a high standard of living and a high scale of wages.

Advertising, a comparatively new but none the less potent force, is a factor that is shaping economic destiny. It is doing it in one field no less than another, but its effect is not evenly appreciated. In other words, the consciousness of it is deeper in some lines of endeavor than in others. Its value as a business builder has been slow to express itself in the electric railway field—far too slow. There is no need to reiterate the reasons why this is so. In the sale of transportation, as in the sale of any other commodity, it is essential that the merchant know the important part that advertising plays today—that he be fully cognizant of the fact that advertising is one of the most potent influences in adapting and changing the habits and modes of modern life, affecting what we eat, what we wear—the work and play of the whole nation.

Railway men everywhere should read the President's speech. And in reading it they should remember the truism on which his central theme revolves, namely, that mass demand has been created entirely through the development of advertising and that while advertising is the life of trade its successful use depends upon a representation of the exact truth.

No statement of these virtues made for advertising by anyone within the profession would have carried the weight that the President's remarks did.

Cost Accounts Should Do More than Record Expenditures

IGNORANCE of essential facts often leads to serious errors of omission or commission in management. It is to the accountant that the railway manager must look for his facts. But accountants as well as other department executives are seeking economies in the operation of their departments and in so doing the basic facts relative to the economies of old versus new equipment are often not revealed.

This was effectively shown in a recent examination of the monthly statements of a large interurban property. New light-weight cars replaced old ones on one division, yet the cost of equipment maintenance showed no change to the division affected, because the savings were spread over the whole property. This was the result of a practice existing on many properties of throwing the cost of maintaining all equipment into the prescribed classification of accounts and prorating to divisions on the basis of car mileage. There is consequently no basis for determining the relative cost of different groups of cars or of knowing when the costs on obsolete equipment have become excessive.

It seems even more important to classify accounts between groups of cars than between the different classes of work on all cars. The present classification, of course, has many obvious advantages and has become a standard with the I.C.C. and many state commissions. For bookkeeping purposes it has proved satisfactory and adequate.

Cost accounts should do more, however, than form a mere record of expenditure. They should serve as an active guide in the administration of operating and maintenance departments. In the equipment accounts, particularly, the present classification falls far short of this requirement.

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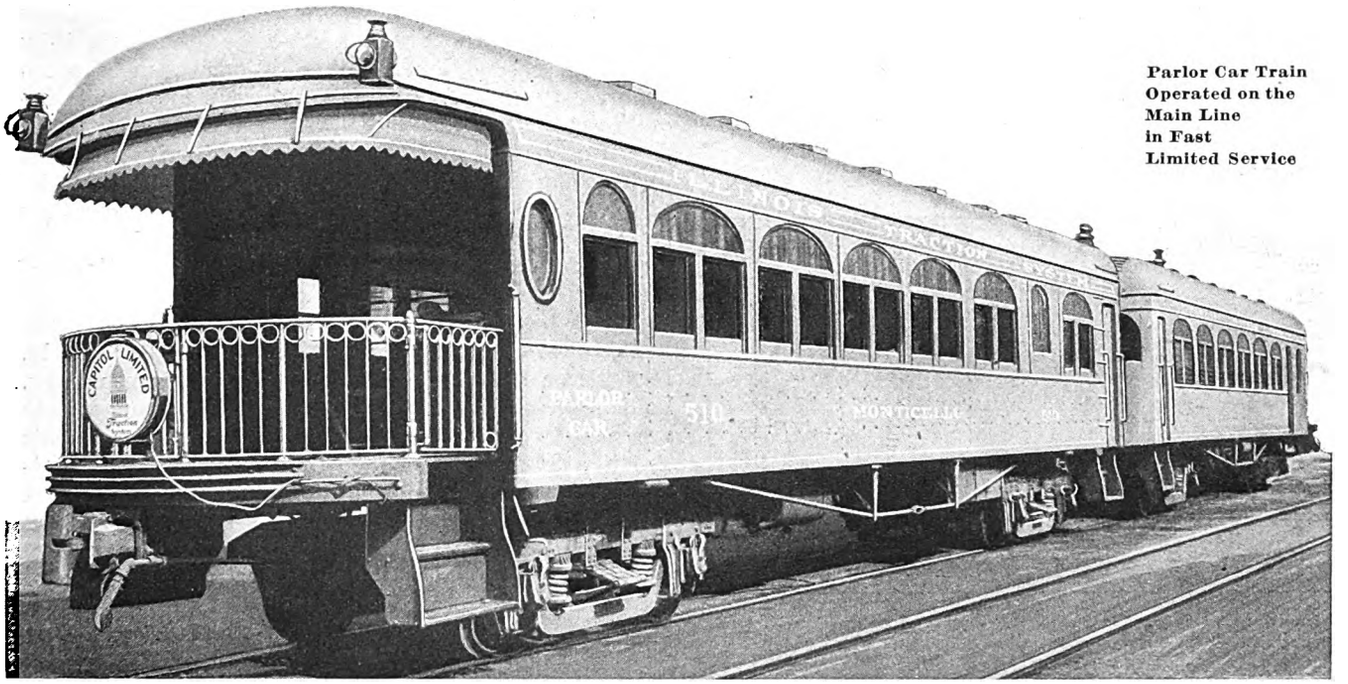
Illinois Traction

Checks Passenger Decline with Improved Equipment and Service

More Attractive Equipment, Faster Schedules, More Frequent Service and Intensive Merchandising Effort Cause Recovery of Passenger Receipts in the Face of Severe Automobile Competition



Parlor Car Train Operated on the Main Line in Fast Limited Service

IN COMMON with other electric railways throughout the United States, the Illinois Traction System has been confronted by a condition of dwindling passenger traffic due to the tremendous increase in the use of private automobiles in intercity transportation. Not only has the number of private automobiles greatly increased, but their use in intercity transportation has been fostered by the annually increasing mileage of paved highways.

An alarming decrease in passenger revenue made imperative extraordinary efforts to check the decline. The measure of success in these efforts is shown by the fact that the curve of passenger earnings again is turning upward. The number of registered automobiles in the state increased from approximately 950,000 in 1923 to more than 1,350,000 in 1925. The mileage of paved roads in the counties served by the Illinois Traction System increased from 890 in 1924 to 1,006 in 1925. More damaging, however, to the company's passenger earnings than the increase of 15 per cent in the hard road mileage was the closing during the year of many unpaved gaps in the existing hard road.

As a result of this paved road competition, passenger earnings, which amounted to approximately $1,100,000 during the six months period ended Oct. 30, 1923, failed to increase during the six months period ended April 30, 1924, and then began a rapid decline. Earnings for the six months period ended Oct. 30, 1924, amounted to only approximately $850,000, and a further decrease was noted for the six months period ended April 30, 1925, when passenger earnings were less than $800,000. At this point strenuous efforts on the part of the passenger traffic department resulted in slightly increased traffic and earnings held steady for the six months period ended Oct. 30, 1925, at slightly less than $800,000. Results of the intensive campaign to increase passenger revenues did not, however, become fully apparent until April 30, 1926, when the upward movement of passenger earnings began. A detailed story of the accomplishments along this line is told in the brief presented by the company in competition for the 1926 Coffin prize.

The first step taken to increase passenger traffic had for its object the development of through riding between the larger cities on the line. To accomplish this a revision of schedules was made. More trains, faster running time and better connections were provided at the larger cities all along the line. From Peoria to Springfield and St. Louis an additional "Tangerine Flier" was provided, bringing the number of these popular trains up to four daily, in addition to the "Capital Limited," parlor car train, and the "Owl," sleeping car train, between these points. This marked the adoption as permanent of the Tangerine Flier service inaugurated late in 1924 and described in the Nov. 29, 1924, issue of

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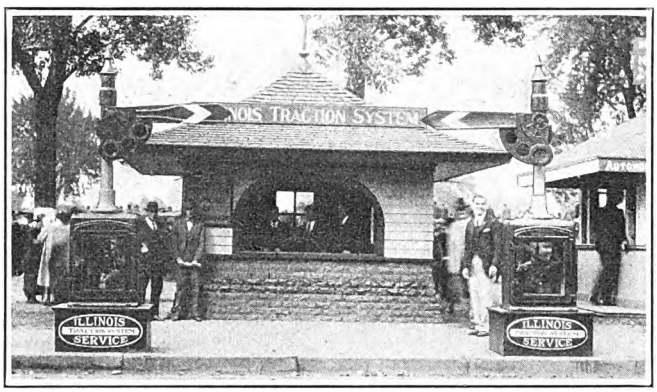
ELECTRIC RAILWAY JOURNAL. The Tangerine Fliers operate on extremely fast schedule between Peoria and St. Louis. Special cars are used for this de luxe service. Seating arrangements provide for both the usual type of coach seats and also for parlor car chairs. No extra fare is charged on the Tangerines. The cars are painted a special color, developed by the Illinois Traction System, which for advertising purposes has been given the trade name of Tangerine. This has been effective in calling the public's attention to these trains.

SPEED AND FREQUENCY OF SERVICE INCREASED

From Peoria to Bloomington and Decatur an additional limited train was added, bringing the total number of limited trains in each direction up to four daily. Connecting Springfield, Decatur, Champaign, Urbana and Danville four fast trains each way daily were provided and schedules for both local and limited trains on all divisions were readjusted to improve service. An intensive campaign of advertising was then inaugurated. Newspaper display advertising was employed in announcing the changes, and in addition thousands of time-table circulars were sent out to chambers of commerce, fraternal and civic organizations, churches, societies and associations throughout the territory. In cities where chambers of commerce were in existence arrangements were made whereby copies of the circular were mailed to each member of the chamber. This advertising activity was supplemented by the usual circular and time-table matter distributed in stations, by time-table distributing companies, in railroad guides, railroad stations, on connecting lines, in hotels and by travel bureaus, etc. Arrangements were made even with a number of taxicab companies in the larger cities to distribute condensed time-table circulars in the "take-one" boxes in the cabs.



Information Booth at State Fair Helped to Advertise the Illinois Traction System Service and to Make Friends for the Company

Organization of a "Traction Go-Getters Club" also helped in building passenger revenue. Letters were sent to the employees of every department of the road urging them to be on the alert for passenger business and asking co-operation with the passenger traffic department by turning in tips on probable passenger movements, whether of a single individual or a considerable number. These bulletins, sent to each employee at monthly intervals, had the effect of keeping constantly in the minds of each his vital interest in the welfare and prosperity of the company. Each month many tips were sent to the traffic department covering prospective freight and passenger business. These tips are turned over to the traffic department representative in the district where they originate, and personal solicitation for the business is made.

The Illinois Traction System is in competition with twelve steam railroads. In an effort to make its service more attractive, the company instituted the sale of a $10 coupon fare book at a 10 per cent reduction. The book, which sells for $9, contains $10 worth of 1-cent coupons good for bearer and party for one year from the date of sale. The coupon books are advertised as a 10 per cent reduction under the regular interurban fare and a 25 per cent reduction under the steam road fare. Frequent riders are urged to purchase these books, with the object of establishing the habit of riding the electric line. The use of coupon fare books is just entering upon its second year, and its popularity is illustrated by the fact that sales now exceed those of a year ago by 83 per cent.

Recognizing the efficacy of building public good will as a promoter of business, the company has bent its efforts toward the creation of a good will asset by rendering special, out of the ordinary service when opportunity offers. Where large group movements require special trains these are provided, and traffic department representatives are trained to give attention to the comfort and needs of the party. These special parties not only add to the passenger revenue but they create good will and have the cumulative effect of promoting future business, as is evidenced by testimonial letters received from many sources. Special attention is paid to baseball enthusiasts who wish to attend Three I League games at Peoria, Bloomington, Springfield, Danville or Decatur, or the major league games at St. Louis. In all the cities named special arrangements are made to set aside certain blocks of seats for Illinois Traction System patrons, so that those desiring to attend games may purchase tickets at traction ticket windows.

REGULAR PARLOR CAR AND SLEEPER SERVICE OPERATED

The Illinois Traction System claims to be the first electric railway to adopt regular parlor car and sleeping car service. This has been successfully continued. The latest addition to its sleeper service is that started in 1925 between Champaign, Ill., and St. Louis, a distance of 198 miles. Because of the lateness of the hour at which sleeping car passengers arrive at Champaign, 8:30 a.m., a light breakfast is served, for which no charge is made. The porters hand each passenger a small card on which is printed "Good Morning—This light breakfast is served by courtesy of the Illinois Traction System to guests aboard our St. Louis-Champaign sleeping car." As a result of the establishment of this service the St. Louis to Champaign traffic has been increased 41.9 per cent and Champaign to St. Louis traffic increased 57.45 per cent over the previous year.

The value of paint and a general appearance of attractiveness, which has proved so effective on the Tangerine Fliers, is also being demonstrated on the company's suburban line connecting St. Louis, Venice, Madison and Granite City, Ill. Cars operated in this service are run in two-car trains. Recently a change in the color scheme and vestibule arrangement met with an immediate response from the riding public. It was noticeable that when the newly painted cars were placed in operation with the old cars during mass movements they were plainly preferred by the car riders. The program of reconstruction includes the removal of the front bulkhead and the addition of two seats in the front end of the car. A small cab was built around the motorman's position. The partition forming this cab

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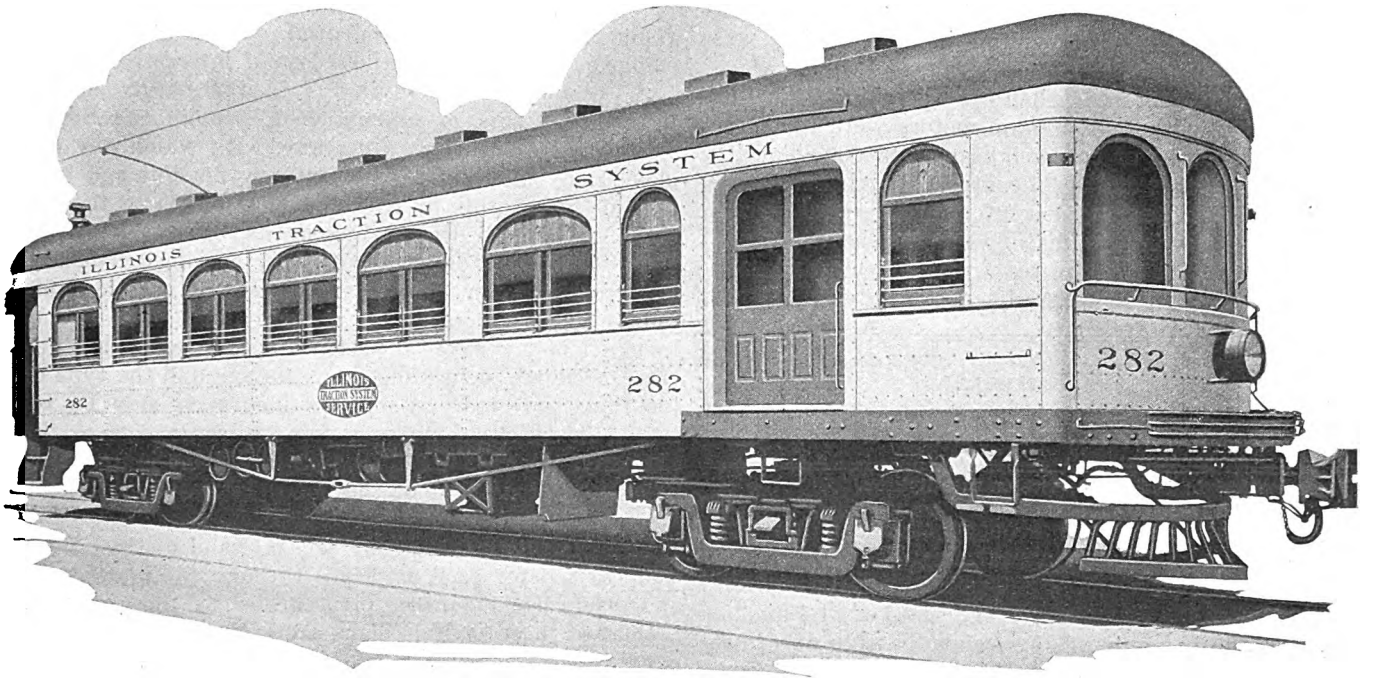


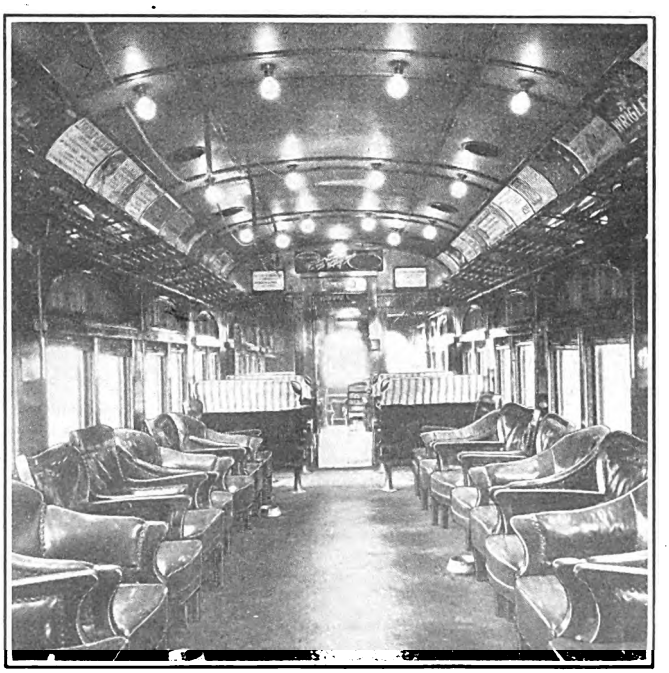
Exterior Views of New "Tangerine Fliers." Distinctive Color, High-Speed Operation and Semi-Parlor Car Facilities with no Extra Fare Have Helped to Build Up Riding

is equipped with glass above the watertable, thus allowing passengers a clear view ahead of the car. All light and heat switches, as well as all equipment pertaining to the operation of the car, formerly exposed on the front platform, are now hidden from view. Economy meters are placed inside the cab where the motorman may easily read the registration. This arrangement also eliminates the practice of smokers standing on the front platform. Those desiring to smoke are requested to ride in the trail car and consequently all passengers seem to be pleased.

Tightening of passenger train schedules on the main division has not only resulted in more economical but also more efficient operation. Revised passenger schedules with an average speed for all limited trains of 29.56 m.p.h., compared with 27.22 m.p.h., and an average speed for local trains of 24.34 m.p.h., compared with 22.45 m.p.h., resulted in having 93.5 per cent of the passenger trains on time daily, which is an improvement of 4.2 per cent over the previous year.

Passenger car miles for the year ended May 1, 1926, showed an increase of 13.3 per cent over the previous year, while passenger trainmen's hours for the same period showed an increase of but 7.77 per cent. This is evidence that the addition of trains and reduction of schedule time have proved to be an economy. Many ways have been found for speeding up passenger schedules. Delays in getting trains through congested sections of the cities have been eliminated by enlisting the co-operation of municipalities and other carriers and by routing freight trains either around the principal cities or over routes that do not interfere with the operation of passenger trains.

The installation of flashing light signals at street corners has eliminated previous positive safety stops in some of the smaller towns, the installation of crossing gates over railway crossing tracks, which are set normally for Illinois Traction trains, also help. Electric switches make it unnecessary for trains to come to a stop. Flagmen of street railways over which Illinois Traction trains operate, flag trains over railroad crossings and station agents in the small towns flag public street crossings adjacent to their stations. All these arrangements have helped to speed up service and have made it possible to operate limited, non-stop passenger trains while at the same time increasing safety. These improvements have likewise affected the freight service. They have made it possible to put through freight trains on working time-tables and have helped to increase the allowable tonnage per train.



Interior View of New "Tangerine Flier"

The use of one-man interurban equipment on the Illinois Valley Division has been given more than one year's test and has resulted in increased riding, reduced operating expense and increased earnings. Although the Illinois Valley Division operates 106 miles of track through sixteen stations and carries baggage and express on all trains, the management decided that one-man operation was entirely feasible. Consequently, seventeen new one-man, single-end, double-truck cars were purchased and substituted for the heavy equipment previously used. The former schedule was on a two-hour basis.

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The present schedule, providing hourly service, was inaugurated on Aug. 1, 1924.

Where previously interurban cars weighing 94,000 lb. and equipped with four 100-hp. motors were used, the new one-man type of car weighs only 37,000 lb., with four 35-hp. motors and K-35 control. Particular attention was paid to passenger comfort and general attractiveness. Seats in the main compartment are plush covered, the floors are covered with linoleum and each seat has arm rests and an adjacent coat hook. Sand-

	1923	1925	Saving per Car-Mile	Per Cent Reduction
Equipment	3.60	0.95	2.65	73
Power purchased (all service)*	5.80	3.35	2.45	42
Platform expense	5.17	3.75	1.42	27

*Includes freight and city service on this division.

blasted pebble glass upper windows of the Gothic type give the car a distinctive appearance. These cars are geared to about 40 m.p.h. at 600 volts and on an average line voltage of 520 make an average speed of 21.4 m.p.h., with one stop per mile of 35 seconds average duration. Passengers ordinarily enter and leave by the front door. However, at heavy loading points the rear door may be operated by an air valve outside the car and fares collected by street fare collectors. Passengers pay to their destination when entering the car and receive destination checks, which are surrendered to the operator upon leaving the car. A full description of these cars was given in the Jan. 10, 1925, issue of ELECTRIC RAILWAY JOURNAL, page 51.

With these one-man cars on hourly schedules reports show 97.2 per cent on time, as compared with 92 per cent for the same twelve months period under two-man operation of old cars on a two-hour schedule. The one-man cars have practically eliminated platform accidents. Only one such accident has been reported since the cars were put in operation. Reduction in operating cost per car-mile for those accounts affected by the new cars are shown in the accompanying table.

The results of the operation of these cars have been so satisfactory that the company has appropriated funds for the purchase of ten additional cars of the same design to be used on branch lines of the main division to replace heavy, two-man equipment. Other similar equipments include the remodeling and acquisition of light-weight, double-truck one-man cars for city service in La Salle and Peru and branch line service on the Vermilion Heights and Catlin branches out of Danville. All three of these situations have responded to the improved service and marked economies in operation have been effected.

Employee Savings Made Easy by Northern Texas Traction

TWO plans for employee saving have been perfected by the Northern Texas Traction Company of Fort Worth, Tex., as of June 1 this year. These plans are an outgrowth of successful Liberty Loan sales made during the war period and later sales of 7 per cent notes by the company.

Through arrangements with the Tarrant County Building and Loan Association any employee of the Northern Texas Traction Company may ask the company paymaster to deduct any amount the employee desires and apply it to building and loan shares. These deductions bear interest at the rate of 8 per cent. Provision is made for withdrawal on the part of the employee at any time without loss of interest.

A second plan of saving is in the nature of life insurance. This is accomplished through the Southwestern Life Insurance Company, with which any employee may take out a policy of any amount and have it paid for monthly by regular deductions from the pay check. Through the arrangements of the Northern Texas Traction Company with the insurance company, the premiums for this insurance are at a lower rate than would be charged for an individual policy. Any form of policy may be selected by the employee, the rate, of course, depending upon his age and the type of insurance selected. Also, this insurance may be retained in case the employee for any reason leaves the company. In case the age of the applicant is under 45 years, or the amount of the policy is less than $5,000, no physical examination is required.

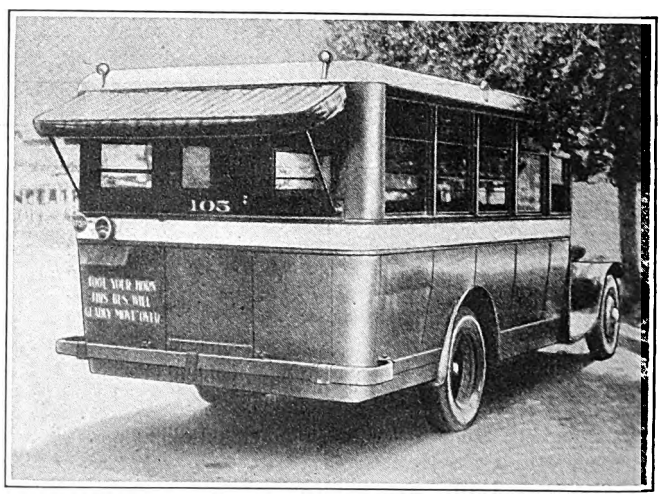
This insurance is entirely separate and distinct from that carried for each employee through the mutual aid and group life insurance plan carried by the company.

Both of these savings plans are explained in the company's 1926 Coffin prize brief.

Rear Awning Protects Bus Passengers

ALL buses of the El Paso Electric Company have been equipped with awnings which shade the rear seats and keep the inside of the buses cool. These awnings make riding more comfortable, especially during rush hours in the morning and evening when the buses are crowded. Many favorable comments have been received from passengers. Mention is made of this device in the brief presented by the company in competition for the 1926 Coffin Prize.

On the back of each bus has been painted a sign which reads "Toot your horn and this bus will gladly move over." This sign has done much to create good will. It shows the drivers of private automobiles, whom the company is endeavoring to secure as customers, that



Buses of the El Paso Electric Company Are Equipped with Awnings at the Rear to Protect Passengers from the Glaring Sun

it is trying to do its share toward keeping traffic moving smoothly. Keeping this sign constantly before them also tends to make them more considerate of the rights of other users of the street. This, in turn, reacts to the advantage of the company. Many people have expressed admiration for the spirit of fairness and co-operation which prompted the El Paso Electric Company to place this sign on its buses.

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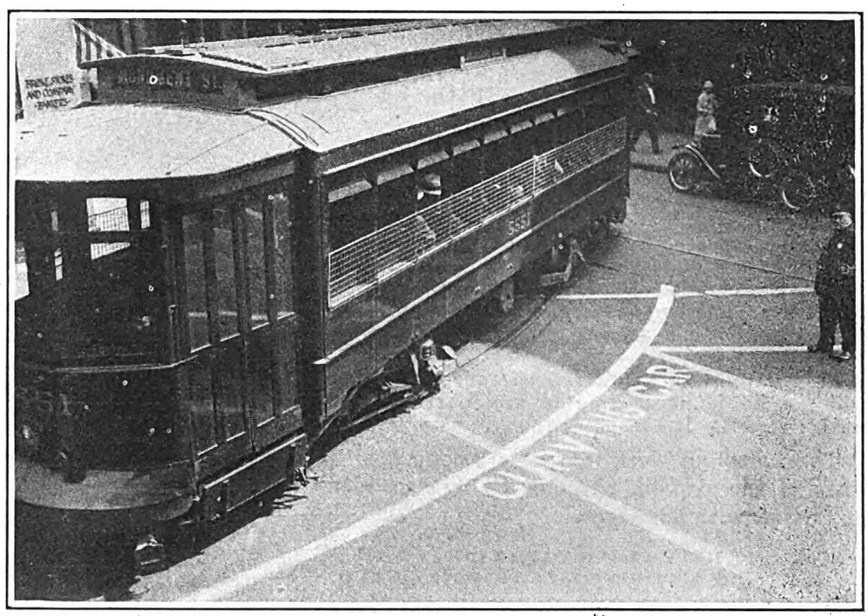
Elaborate Safety Precautions in Baltimore

Efforts Are Addressed to Public and Employees, and a Number of New Methods Have Been Put in Operation This Year—They Include Distinguishing Straps for Car Greasers, New Rule Book, Expansion of Safety Courses, Lighting of Waiting Areas on Streets, Etc.—Gratifying Gain from Safety Work Done Thus Far

FOR a number of years past the United Railways & Electric Company of Baltimore has paid a great deal of attention to means for reducing accidents. Its safety program has included teaching safety intensively and constantly to its employees; imparting safety information to children in the schools and at all public gatherings of children; impressing safety rules and practices upon the general public by widespread publicity, and eliminating hazards and adopting safeguards in operation and service whenever opportunities appear. The success of this effort is shown by the lower accident records of the company.

In 1925 there was but one boarding and alighting accident and but one person injured in street car collisions in Baltimore for each 106,210 passengers carried, while in 1919 there was one such accident and injury for each 63,817 passengers carried.



These Markings on the Pavement at a Curve Are a Warning to Pedestrians of the Overhang of a Car

In the three years ended December, 1925, the decrease in the number of pedestrians struck by cars was 11 per cent; in persons injured while boarding cars, 24 per cent; in persons injured while alighting from cars, 51 per cent; in passengers injured in collisions between cars, 12 per cent; in injuries to occupants of horse-drawn vehicles, 43 per cent; in accidents to employees, 4.9 per cent. Injuries to occupants of motor vehicles in collisions with street cars increased 2 per cent.

But the net decrease in personal injury cases from all causes during the three years ended December, 1925, as compared with the three years ended December, 1922, was 17 per cent. Compared with 1919, the decrease in 1925 was 34 per cent.

In the same comparative periods street car accidents resulting in fatalities decreased 20 per cent.

Comparing the same periods, accidents resulting in claims have decreased from 37 per cent of the total to 29 per cent, and the percentage of gross revenue expended for claims and suits decreased from 4.61 per cent in 1920 to 3.45 per cent in 1925. Evidence that the trend is still downward is found in still further decreases during the first six months of 1926, indicating 3.25 per cent of gross revenues.

The company's methods of impressing upon its men the necessity for thinking of safety always will be dealt with later on, but at the outset the story of its most recent efforts to reduce accidents will be told, as given in the company's presentation in the Coffin contest for 1926.

Early in May, 1926, the company launched a series of "Week-End Safety" campaigns. Each Monday morning the newspapers carried stories of the long lists of accidents that had occurred on Saturday and Sunday when thousands of families were taking summer holidays. Many tragedies were among them, by far most of which involved automobiles. The street car accident reported over the week-end was rare.

But the company used the newspaper publicity given to week-end accidents as a vehicle to carry its own safety messages to its men. Large posters were placed in all carhouses and substations and in the company's offices as follows:

Accidents Over the Week End
Mar Happiness in
Many Homes
Make Our Service
SAFE
Prevent
WEEK-END TRAGEDIES

At the same time cards were distributed addressed "To operating employees," and reading in part:

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All of us know the week-end toll of accidents. Monday's newspapers carry columns about these mishaps. Lives are lost. Untold suffering and economic waste lie in the wake of weed-end holidays. . . .

In the interest of public safety this company is co-operating in efforts throughout the city to

PREVENT WEEK-END ACCIDENTS

We have the utmost confidence that every man in this company will lend his full assistance to this worthwhile effort.

The responsibility is placed squarely upon you and we know you will be equal to it. SAFETY DEPARTMENT,
United Railways.

No accidents involving street cars were reported in the newspapers on the first Monday morning following the launching of the campaign, and at once the safety department put out posters, reading:

Street Cars and Buses Were Absent
from Newspaper Accounts
of
SERIOUS WEEK-END ACCIDENTS
You Demonstrated Skill
and Carefulness!
BEAT LAST WEEK'S RECORD!

This time, too, cards were distributed to all operating men, reading:

Street cars and buses were conspicuously absent from Monday's newspaper accounts of serious accidents in this city last week end. Your special effort to bring about this result was another evidence of the fine team work and co-operation which always produces results in our organization. . . .

As we approach another week end, we are confident you will not be found lacking in any particular to beat last week's record. It can be done and you will do it.

The following week the posters contained lists of the lines of the system, without a single accident, serious or trivial, with the legend:

HELP PLACE YOUR LINE IN THE
NO-ACCIDENT LIST THIS WEEK END

The newspapers took up the campaign and printed articles about it, featuring the company's efforts with such headlines as:

WEEK-END TROLLEY SAFETY CAMPAIGN ON
Effort Started by United to
Cut Down Holiday
Mishaps

Another story was headed:

SEEKS TO REDUCE ACCIDENTS
United Railways Will Use Posters
as Part of Campaign

NEW IDEAS WERE PUT INTO EFFECT

Several new ideas intended to impress the value of safety personally upon the men in the track, shops and power departments were put into practice during the past year. One was the regular distribution to the men in these departments of monthly accident record cards, showing how many men in each department had clear accident records for the month, but bearing in a list the names of the men who were hurt. The effect of this publicity to the men who had been hurt was a decrease of 15.8 per cent in accidents in the first five months of 1926, while the decrease in May, over May, 1925, was 33 per cent. The deep impression made by printing names of injured men probably was responsible.

TRAFFIC COP BELTS FOR CURVE GREASERS

Another was the adoption of crossed white safety belts for curve greasers and men engaged in trackwork on the street—belts exactly like those worn by Baltimore's traffic policemen. The object, as in the case of the policemen, was to increase the visibility of the company's men. In sixteen months 31 of them had been hurt, some seriously, by reckless automobilsts. These belts have greatly reduced the hazards of street work for the curve greaser and track worker.

Still another was the regular issue of instruction leaflets to motormen and conductors, each leaflet covering a special subject directly affecting the safe operation of street cars. The list of subjects so far covered follows: (1) The pedestrian, (2) boarding and alighting accidents, (3) passengers injured on cars, (4) collisions between cars, (5) collisions between automobiles and street cars, (6) employee accidents, (7) "assured clear course."

The leaflets are printed on colored paper, a different color for each leaflet, and are as simply and as interestingly written as possible. After each "lesson" there is a list of questions relating to the subject of the "lesson."

MOTORMEN'S SAFETY CONFERENCES

A fourth innovation during 1926 was a series of special safety conferences especially for motormen, added to the regular safety meetings of many sorts. In all the regular conferences motormen and conductors meet together, but the company believed special work should be done by and with the motormen. These special conferences began March 12, 1926, and so far about 700 motormen have attended them. They are addressed by the superintendent of transportation, the safety director and the claim agent of the company, and have brought good results not alone in improved accident records, but in more thorough participation by the motorman in the company's affairs, since the company's problems are discussed with the utmost frankness. The special safety conferences for motormen will be continued until every motorman on the system has attended them. Then a similar special series will be held for conductors.

In Baltimore regular courses in safety instruction start with a man's first days on the system and before he actually begins work. He must pass a rigid medical examination and exacting tests of eyesight and hearing. Then he must spend several days in school rooms for conductors and motormen. These school rooms are equipped to teach the men everything about a street car and its work. For motormen there is a series of lights showing the path of current from the trolley. By this means they are taught the principles of energy saving as well as the principles of safety. In January, 1926, a new rule book was issued. The safety department really inaugurated the revision and took the initiative in actually revising the rules, with the result that by far the most of the new rules relate to safety. Then, in order, if possible, to insure their being thoroughly read and understood, the safety department started its accident record card plan of keeping the recent accident records of their lines, or their friends, closely before them. One card would read, in part: "Have you read the new rule book? If there is any rule you do not understand, please indicate the number of it so it can be more fully explained."

There would also be a question concerning the rules on the card, which every man was supposed to answer in writing, turning the answer in to his superintendent. The cards for each department would contain the names of men who had had accidents during the month.

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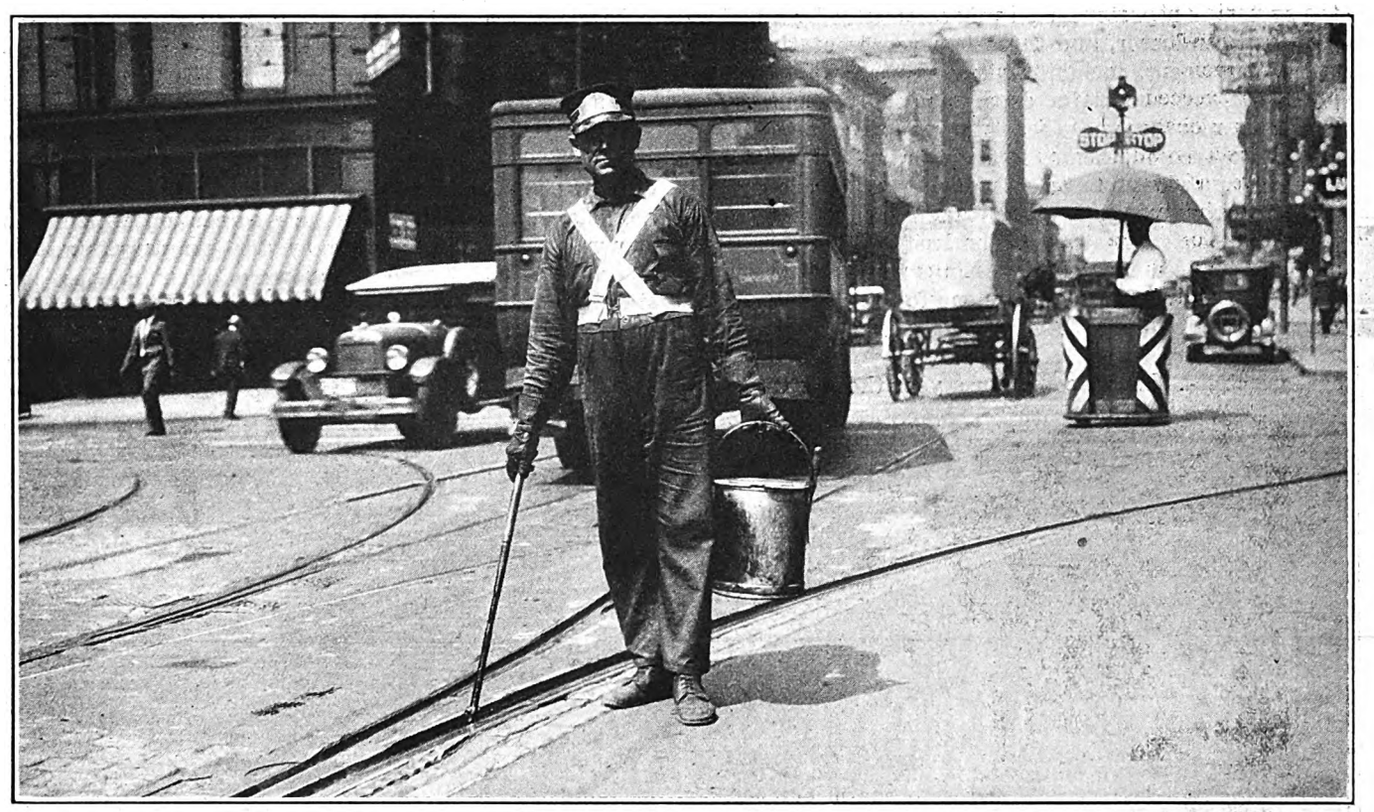


Curve Greasers Wear Crossed White Belts as a Protection in Heavy Traffic. Note Also the Stop-Go Station with Safety Striping

These cards were supplemented with such posters as this in all carhouses:

DO NOT FORGET!
This Month's Question on Your Accident Record Card
Have You Read
THE NEW RULE BOOK?
It Is Important
DO IT NOW
REMEMBER TO GIVE THE NUMBER
OF ANY RULE YOU DO NOT UNDERSTAND

About three-fourths of the men replied that they had read the rules and understood them. Those who did not reply, or who replied negatively, were checked up. Then, month after month, the card system was carried on, the questions asked on each card being answered on the card issued the following month, which also bore new questions.

The plan worked about like this: Many collisions between cars were occurring, due principally to motormen running their cars into open switches and colliding with cars on other tracks. So, on all cards issued to motormen one month, this question appeared: "What are the rules governing the operation of your car at a facing switch of any type?"

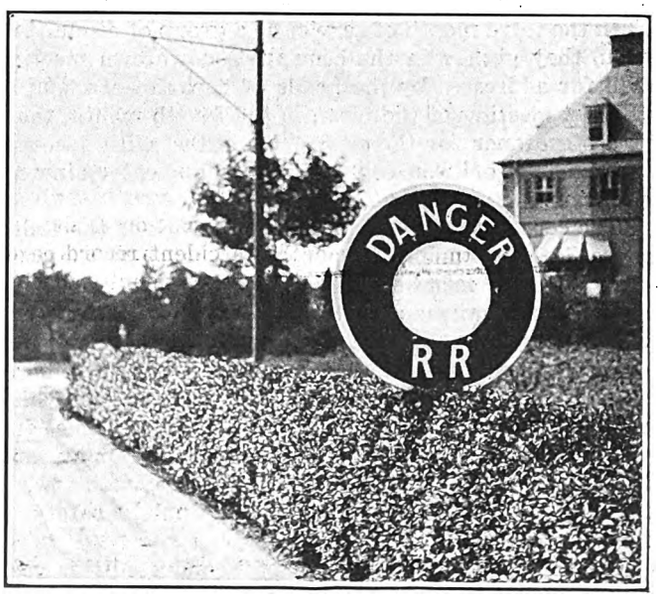
About half the motormen replied, "Slow down," or "See that switch is properly set," and so on. On the card issued the following month the correct answer was printed—the rule requiring them to come to a full stop was quoted. The result was a marked decrease in the number of collisions of this sort.

School Room and Platform Instruction

To go back a moment to the company's regular system of training men in safety practices: After their school room experience they are sent out on the cars to do practical work under instructors. If a man is quick and careful, the instructor may stay with him only a week. If he is slow, the instructor will spend more time with him. During this period of instruction and for some time afterward the men must attend weekly safety lectures, which include painstaking discussions of accident prevention, the need of knowing one's own line thoroughly; the company's plan of organization, and general outlines of the work of all the company's departments.

It is in these lecture periods that the company's service department is represented with talks on courtesy and the great influence of the car man's position upon the company's relations with the public.

Once accepted for service the new motorman and conductor are eligible to serve on the company's "safety committee," which is a sort of "safety congress," or "house of delegates" within the company. Each line on



Self-Illuminated Reflector Signs Warn Automobilists Day and Night of Dangerous Crossings with the Railway

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the system is represented on this committee by a motorman and conductor, and there is a representative from each department, including the bus transportation department and the claim department. Members serve for four months and then other representatives are elected to succeed them. Every man on the system is thus given a chance to be a safety committeeman.

They meet frequently during their period of office to thresh out safety matters. The best results have been achieved by holding special meetings for each particular group—one for operating men, one for shops, power and track men, and so on. Each committeeman is virtually a "safety scout," with a watchful eye for clues to unsafe practices. In the course of a year these committeemen bring in more than 1,000 reports and suggestions and, on an average, about three-fourths of the suggestions are adopted.

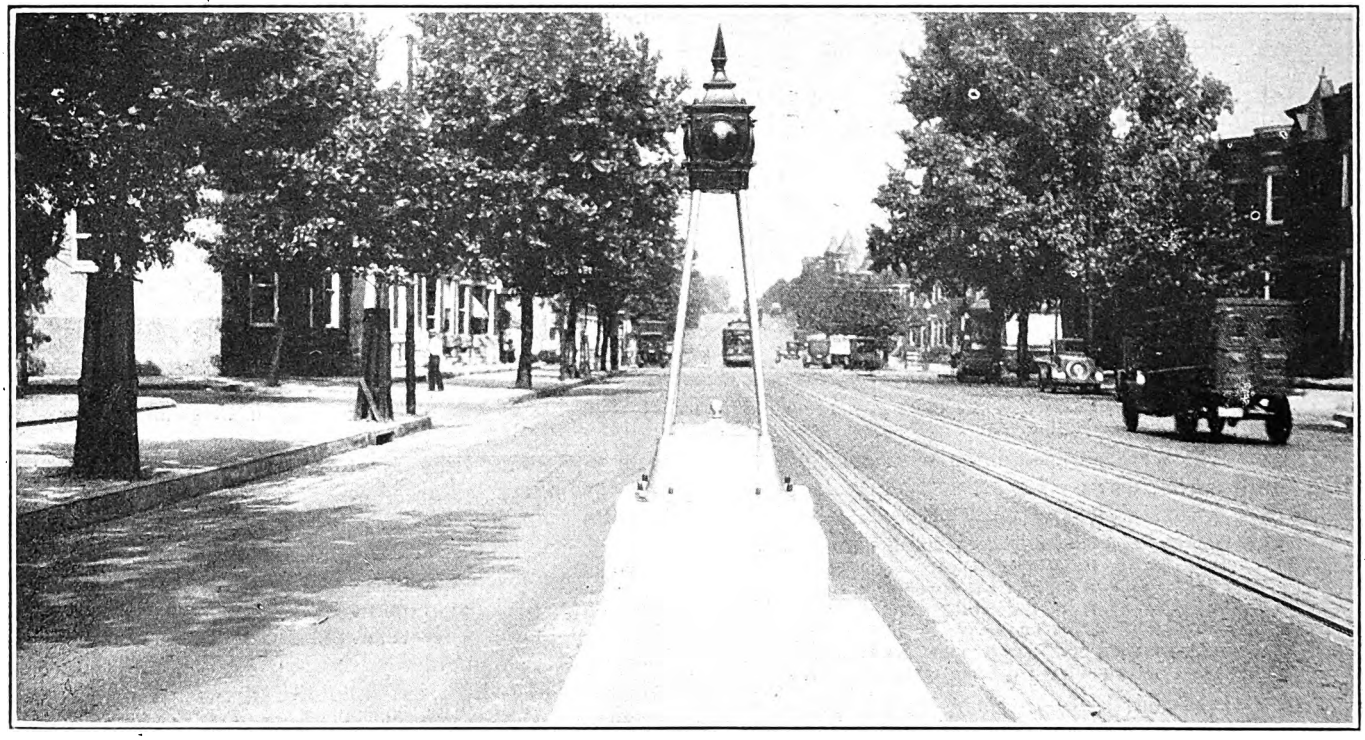
In the third month of service of a group of committeemen, they gather in the company's downtown meeting hall for addresses by the heads of departments, and at the last meeting of the term, in the fourth month, there is a big dinner for the entire committee, with speeches by officials of the company, and an entertainment program.

The company is quite active in the work of the Baltimore Safety Council, the general manager of the company being a member of the board of control of the council and chairman of the publicity committee, while the vice-president of the company is chairman of the council's executive committee. The council itself resulted from the "No-Accident Week" campaigns, which will be remembered in Baltimore for a long time, and were initiated by this company. The company contributes substantially each year to the council's work in schools, industries and wherever public safety is important.

In the "Drivers' safety contest," conducted this year by the Baltimore Safety Council for all commercial truck drivers, the railway's drivers finished first.

In the company's own safety work among children and the general public, many new things were accomplished last year. At the Better Homes Exposition in the Fifth Regiment Armory, where the company's bus and street car exhibit was one of the most popular, a "Kiddies' Theater" was a noteworthy feature, with rows of little benches decorated with friezes of birds and animals, and a moving picture screen on which was shown a safety film made by the company, entitled "Perilous Paths," and there were other movies and stereopticon pictures. The show was continuous and so was the audience.

At the end of each showing of the film an "essay contest" was announced, and paper and pencils were distributed throughout the "theater" so that the children could write briefly on the subject, "Why Should I Be Careful?" Six Eversharp pencils were offered as prizes, and during the week hundreds of essays were turned in.



Forty-eight Gas Beacon Lights and Eight Electric Beacons Have Been Installed at Car Stops, Including Raised

The company's "Safety Ladies," who also make frequent talks to classes of children at the public schools, moved through the crowds, pinning "safety buttons" on children, telling them always to "play safely." The whole exhibit with all its features besides the "safety" one was one of the most talked of things in the armory.

The "Safety Alphabet" originated several years ago by this company is apparently as popular now as it was in the beginning. It is a simple set of verses about safety, based on all the letters of the alphabet. Last year requests for copies of the "alphabet" ran into hundreds. School teachers seem to find it an easy way of teaching children simple safety rules, and requests for it have come from all over the country.

Before the company's two summer parks, Bay Shore and Gwynn Oak, open, the safety director makes a general safety inspection, and all the park employees are required to attend safety meetings and read accident prevention bulletins. Special features at each park are fully equipped playgrounds for children, each under the

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supervision of an instructor or play leader. This has greatly reduced the accidents to children in the parks. Each park, too, has a completely fitted first-aid room, under the supervision of a physician, where minor cuts, bruises and bathing injuries are treated.

Forty-eight gas beacon lights and eight electric beacons have been installed at car stops all over the city, marking safety zones or loading platforms for the safety and convenience of car riders. In all, there are 76 safety zones for car riders, including eighteen concrete boarding and alighting platforms, five safety zones formed by electrically lighted street buttons, and 53 sets of chains and standards. The concrete platforms are built and installed by the company in co-operation with the Baltimore Police Department, which also contributes one-half the expense of the beacon lights.

The warning, "Danger—Curving Car," has been stenciled on street pavements where the overhang of a car making a turning movement might be a menace to pedestrians, and a broad white line marks the limits of safety while the car is turning. A number of reflector lights which catch the headlights of automobiles and warn motorists of car tracks ahead have been installed at dangerous crossings, where cars curve over busy suburban highways.

Fire drills for employees are frequent all over the system. All buildings are fully equipped with fire-fighting equipment. Block signal systems have been installed, and wherever even a possibility of danger exists at a curve or crossing, warning signals have been put up. At the drawbridges signals have been installed to stop cars when draws are open. These signals are interlocked with the drawbridge and cannot be operated until the signal has first been set to "stop" position. At one such drawbridge (Bear Creek), which is opened frequently to let boats pass, an automatic stopping device has been installed in connection with the signal, so that if the motorman should fail to observe or heed the signal, his car will be stopped automatically.

Wherever shrubbery or embankments in the suburbs have blocked the vision of motormen, the company has cut the obstruction away in the interest of safety.

Equally as important as the practical results of the company's safety program, in accident reductions and the like, is the sense of confidence in the company which its safety promotion activities give the public. Baltimore people know now not only that the street cars are the safest places on the streets, but that the first concern of the Baltimore street car men is the preservation of public safety.

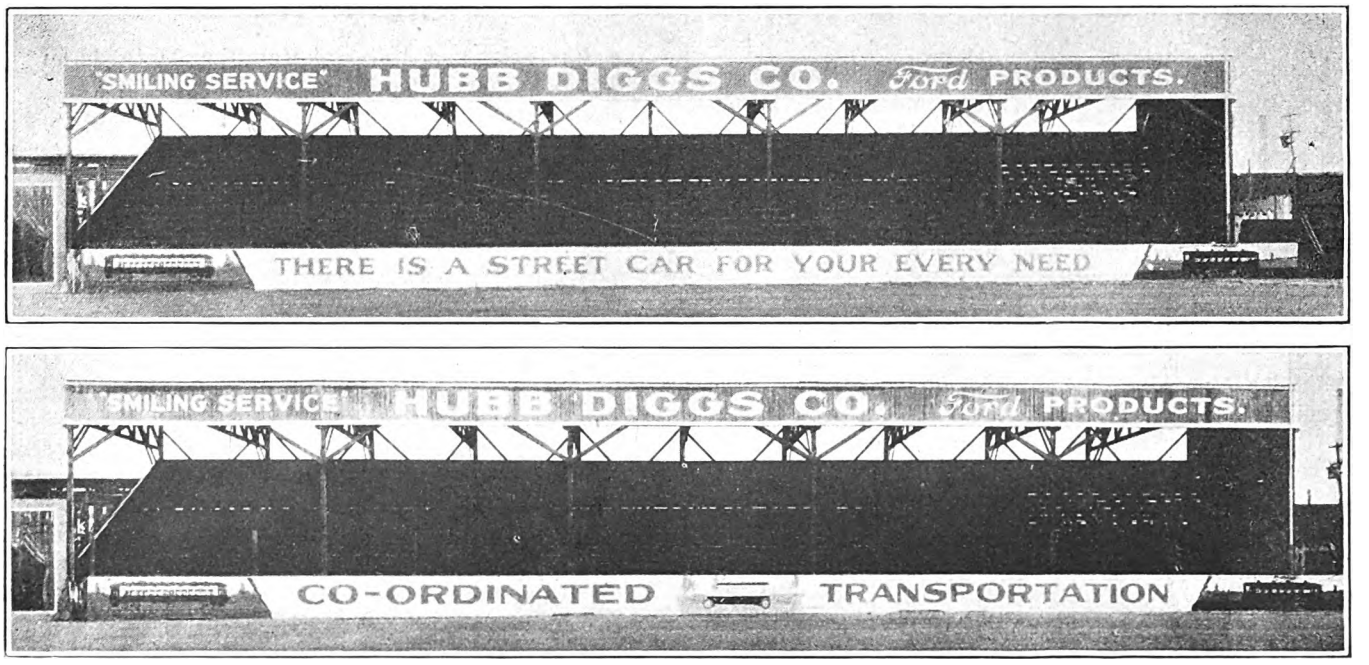
Ride Selling an Accomplishment of Long Standing on the Northern Texas Traction

MANY ride-selling ideas have been developed in the past year by the Northern Texas Traction Company of Fort Worth. One of these grew out of the co-operation of this company with the Junior Chamber of Commerce of Dallas in the promotion of a building opposite the Union Railroad station in that city. The interurban cars, known as the Crimson Limiteds, operate between Dallas and Fort Worth and pass this station en route. The thought behind the construction of this building facing the railway station was that it would be a permanent and continuous welcome to strangers arriving in the city via the Union Station.

The building was constructed through the co-operation of other railway companies in Dallas, as well as several business firms not engaged in transportation.

The problem of operating the station naturally came up, and it was felt desirable to have someone in attendance day and night who could give dependable information. The company, in co-operation with other railways in Dallas, took over the operation of this building, paying all expenses and erecting a large electric sign, as shown in the accompanying illustration in exchange for the privilege of selling tickets. The railway companies use their own men in dispensing information and for the sale of tickets. The plan was enthusiastically received, and after the building was completed it was officially opened, and for practically a year it has been operated under this plan. This has proved to be one of the principal revenue offices for the Northern Texas Traction Company.

At the town of Handley, 8 miles from Fort Worth and practically a suburb of that city, the company has



Prominent Advertisements Facing the Main Grandstand of the Fort Worth Ball Park. The Top Sign Appeared for Part of the Season and Was Repainted as Shown in the Bottom Picture After the Buses Were Started in Fort Worth

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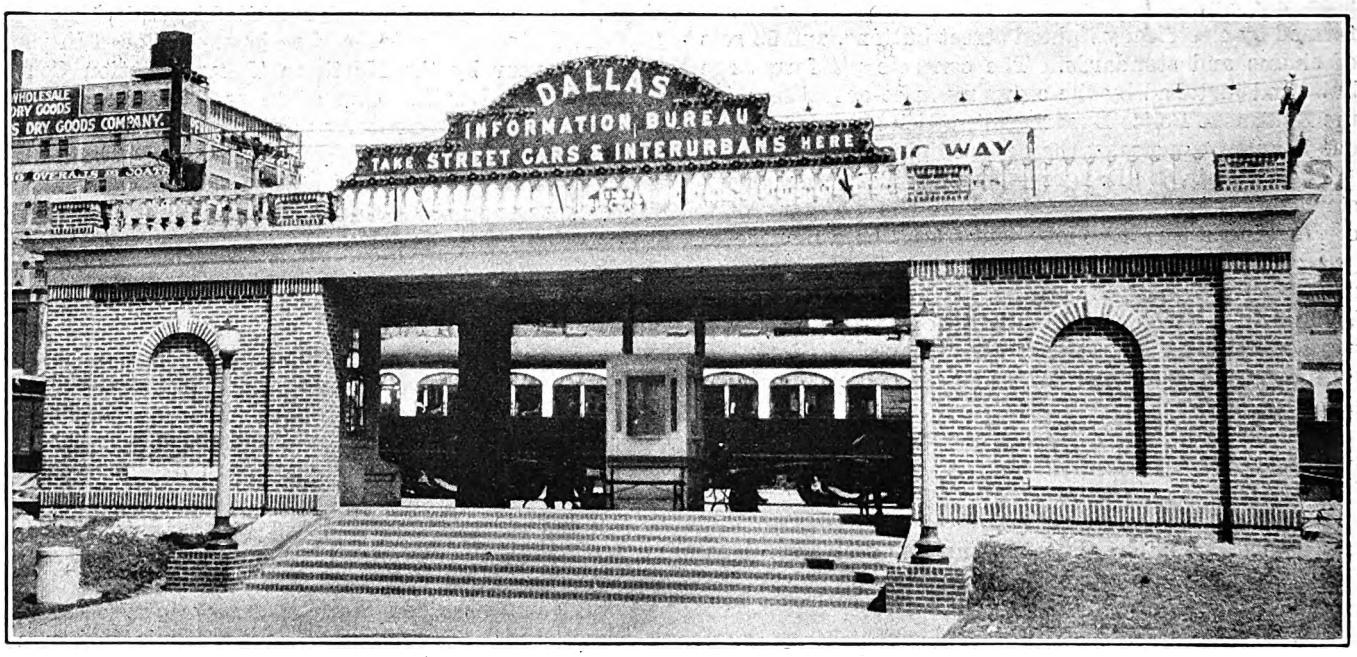
arranged a large, attractive parking station just opposite the Handley interurban station. This parking area has been fenced in and flowers and shrubbery planted to make it attractive. The proximity of the parking area to the station affords a measure of protection, and patrons have confidence in leaving their cars there while going into the city via the interurban. The number of autos taking advantage of this station's parking facilities is gradually increasing, there being from ten to twenty vehicles there at all times of the day.

The other parking space is within a loop of track on a main street car thoroughfare heavily traveled by automobiles from large suburban territories toward the west and northwest. Both of these parking spaces are being equipped with gasoline filling stations and will be manned by men capable of rendering any service to motorists. These men also handle the parking privilege and sell to each motorist a parking ticket and two street car tokens for 25 cents. As the price of the tokens is 15 cents, the parking privilege is sold for 10 cents. It permits the motorist to leave his car as long as he likes up to midnight of the day when parking begins.



Facing the Union Railroad Station in Dallas Is This Attractive Building Erected by the Junior Chamber of Commerce of Dallas, with the Help of the Local Railways and Other Business Interests. The Local Railways Operate the Building

Aside from the business-getting effect of this parking area, the improvement of the ground with shrubbery has added to the appearance of the city and the friendship between the company and the public it serves.

It is the claim of the company that merchandising transportation does not depend on one or two major things, but on a multitude of small items and small, relatively unimportant details that keep the service of the company constantly before the public mind.

That these methods have been successful is evidenced by the fact that in the four-month period from March to June of this year the company has shown an increase in gross revenue of $41,000. Specific examples are also given in the presentation for the Coffin prize for 1926 that shows that this increase in gross revenue has been experienced on all divisions and on practically all lines of each division.

Baltimore Provides Parking Space for Automobilists

PARKING spaces for the use of automobilists are being provided by the United Railways & Electric Company of Baltimore at two points on the company's system. They form one contribution by it to the solution of the parking problem, as well as a means of selling service, increasing patronage and improving good will, according to the 1926 Coffin prize brief.

One large lot on Washington Boulevard adjoins the company's shop, outdoor storage house and concrete pole plant. Its present parking capacity is about 60 automobiles. It is directly on a main street car line and in the path of motorists from Washington as well as from small suburbs inside and outside the city limits.

Modern Storeroom Increases Efficiency

New Facilities and Material Handling Methods on Illinois Traction System Cut Waste—Printing and Reclamation Department Add to Saving

DURING the past year the Illinois Traction System has erected a modern stores building adjacent to its Decatur shops and has installed a system for handling stores that has saved time and reduced distribution cost on materials destined for various departments. The company's Coffin prize presentation gives the results obtained. The regular run of supplies has been standardized by a newly formed standardization committee within the company. Maximum and minimum quantities for various materials have been established and the supply department has thus been able to allot sufficient space in the bins and on the platform for these materials. When any supplies are requisitioned by the stores department from the purchasing department, the quantity that must be in each package is specified. For instance, all galvanized bolts must come in boxes of 50, 2,300-volt insulators in cartons of 50, cross-arm braces in bundles of twenty and high-tension insulators in crates of six. As much of this material as possible is kept in the

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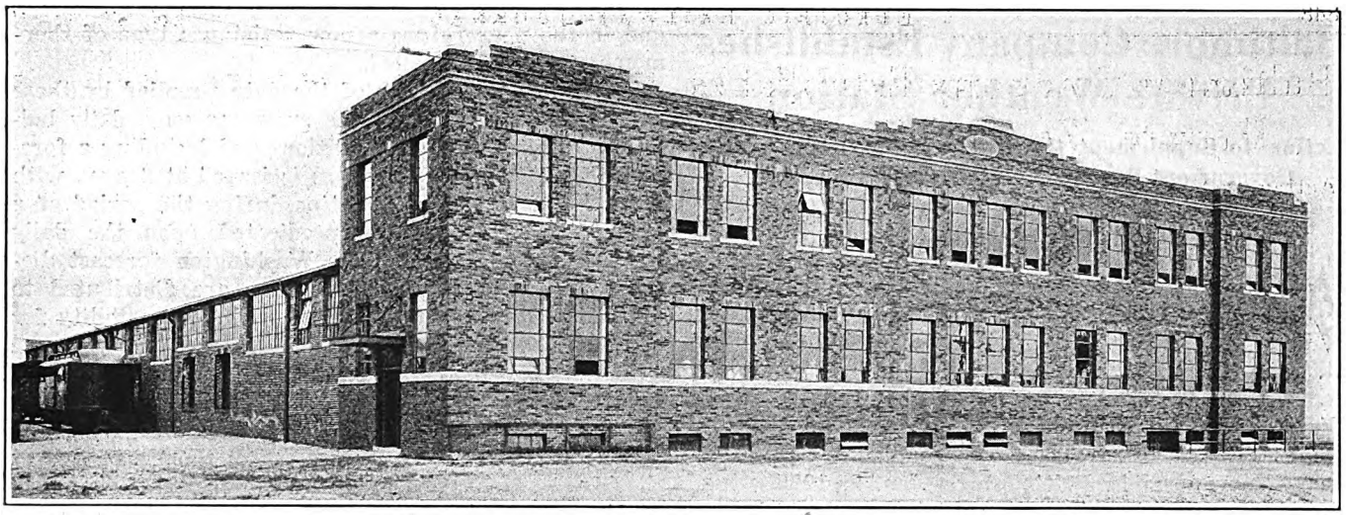

Exterior of New and Modern Storehouse at the Decatur Shops of the Illinois Traction System, Which Has Helped to Increase Efficiency by Providing Facilities for the Systematic Handling of Materials

original packages, so it is rarely that any such commodities appear in stock in broken packages.

As a result, the time required when preparing for reshipping to the various departments has been reduced 50 to 60 per cent. The time required in counting for inventory has also been considerably reduced and the material can be stored in much neater shape. For example, 10,000 ⅝ x 14-in. galvanized machine bolts—200 boxes—arrive at the storeroom. These boxes are stacked on platforms 8 in. high, 16 ft. long and 5 ft. wide, ten boxes (500 bolts) to the stack. One can easily appreciate the saving in time when counting these against the old method when such bolts were received in burlap sacks containing all the way from 400 to 450 in each sack, or when a carload of 50,000 porcelain insulators was received in barrels, each containing from 290 to 315. The new storeroom permits storage of 95 per cent of the items inside, while formerly about 40 per cent were stored outside the building.

The company also maintains a well-arranged stationery and printing department. During the past twelve months this department has printed, gathered and padded more than 4,000,000 forms running off quantities of 20,000 to an operation, instead of buying in quantities of from 100,000 to 200,000. The company maintains a reclamation department in which railroad lanterns, switch and marker lamps, track jacks, etc., which find their way to this department are dismembered, the parts inspected and usable parts prepared for reassembling. As an illustration of the saving made by this department, out of 30-odd switch lamps reaching the reclamation department 21 were turned back into service at a total outlay of less than the value of two new lamps.

Interior of New Decatur Storehouse. Materials Are Arranged so that Inventories Can Be Taken Accurately in a Minimum of Time

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Baltimore Company Establishes Private Weather Station

Acting to Supplement the Information Given by the Government Bureau, It Has Helped Greatly in Predicting Storms—It Issues Daily Bulletins to Department Heads

AMONG the most unique of the improvements introduced by the United Railways & Electric Company of Baltimore during the past year is a private weather station. Its purpose, of course, is not in any way to replace the excellent service of the United States Weather Bureau in Baltimore, but to supplement it. Its establishment grew out of trouble incident to a heavy snowstorm in Baltimore on Jan. 2, 1925, when the system was virtually paralyzed for nearly 24 hours. It was a "freak" storm in many respects, beginning about midnight with a heavy fall of sleet that froze to a depth and hardness impervious to the work of sweepers. On top of this sleet came a 13-in. precipitation of wet snow. Thousands of automobiles, coming downtown in the morning, traveled in or near the car tracks, which alone were clear to snow, threw it back on the rails and packed it tightly in the rail grooves. The effect of the almost complete 24-hour tie-up on the transportation system, which was the sole dependence of more than 700,000 daily riders, can be imagined.

To leave nothing undone to avert recurrence of such a disaster, the company sent a committee to a number of large cities in this country and Canada to study snow fighting and snow-fighting equipment. The committee found the Baltimore company as well prepared as any it visited, but recommended a plan of organization for better preparedness in such emergencies, and among other things, the establishment of a company weather station which would permit more frequent and perhaps more detailed reports to be made than could otherwise be had.

Station Has Complete Equipment

The weather station was, therefore, established. It was not a duplication of but an adjunct to the local government station, which, for lack of appropriation, was unable to maintain 24-hour service. If, before closing its offices, the government bureau predicted a snowstorm, the railway company was forced to choose between calling out its snow-fighting forces and perhaps keeping them idle, or assuming the responsibility for getting through the night without them.

The company's weather station, supervised by three members of its engineering staff, is located at emergency department headquarters, where a 24-hour service is maintained. The equipment consists of a barograph, a hygro-thermograph, a thermocouple temperature indicator and a remote indicating wind vane. The last-named instrument was built and designed by one of the company's electrical engineers and consists of a wind vane head located on top of an adjacent tall building, connected through a lead-covered cable to the indicating instrument in the dispatcher's office. Unlike the usual instruments for giving remote indications of wind direction by a system of lights denoting certain points of the compass, the pointer of the indicating dial on the company's instrument follows the slightest movement of the wind vane outside. The same engineer is at work upon a remote curve-drawing anemometer, and in the near future a new resistance type of thermometer will be installed.

An hourly log is kept of the data supplied by these instruments, and during the snow season a daily bulletin outlining weather conditions and including a forecast for the ensuing 24 hours is issued at 2 p.m., with more frequent special bulletins during the period of a storm. This bulletin is predicated upon the daily weather map issued for the Washington forecast district, and five copies of this map are distributed to officials of the company charged with responsibility for operation and snow removal.

These maps used to come by mail from Washington, but to reduce the delay in their arrival, the company arranged last winter with the Western Union Telegraph Company to have a messenger collect them each day at the Washington office of the Weather Bureau as soon as they came off the presses and deliver them to the noon train of the Washington, Baltimore & Annapolis Electric Railway Company. Through the courtesy of this company, these maps are delivered in Baltimore to a representative of the United Railways & Electric Company by 1:30 p.m. each day. They are thus in time to be included in the preparation of the daily bulletin. To illustrate the form in which the information from the company's weather bureau is given out, extracts will be given from one issued at 2 p.m. on Tuesday, Feb. 9, 1926.

After reporting a summary of the weather situation as shown in the official Weather Bureau map, the reading of the thermometer and the height of the barometer, the report continues:

> The outlook for Baltimore is most unfavorable, considerable precipitation being in prospect this afternoon and throughout the night. It is believed that the precipitation will be mostly in the form of snow; however, with temperatures just bordering on freezing there is possibility of sleet.
>
> The situation is to be regarded as serious and every precaution should be taken to cope with a moderately heavy snowfall. The center of the storm may not pass Baltimore until after midnight.
>
> The progress of the storm is being carefully watched, and a special bulletin will be issued at 11 o'clock tonight.

The bulletin continues with a record of the hourly data of the previous 24 hours.

As these bulletins contain forecasts made by the company's staff, they are considered confidential information, since public disclosures of them might be considered invasions of the government bureau's rights.

Supplemental Data by Radio

In addition to the data obtained from the company's own instruments, a radio set was installed and at 10:05 a.m. and at 3:45 p.m. weather broadcasts from station NAA, Arlington, Va., are taken by stenographers and copies forwarded to proper officials of the company.

As the result of all this, the company has a sense of preparedness in the snow seasons that never before was realized. A little more than a year after the storm that tied up the system, there was another snow and sleet storm, namely, on Feb. 4 and 5, 1926. This storm was accompanied by 12 in. of snow and much sleet, tying up telephone lines and interurban railways and working havoc with shipping in Chesapeake Bay, but through its weather station and the improvements that it made in its equipment, the company kept its cars on schedule. The daily newspapers in Baltimore learned the facts and were prompt to praise the company for its foresight.

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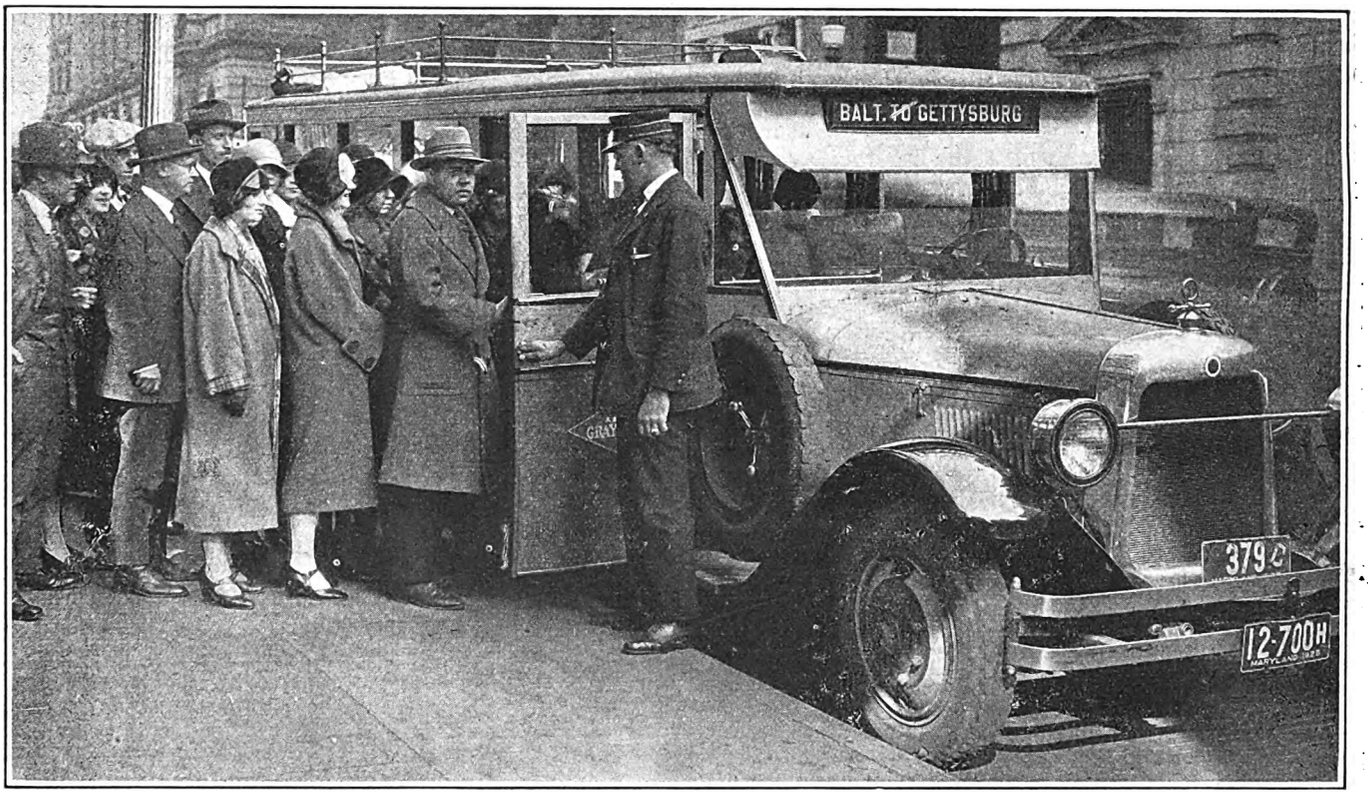
Co-ordinated Bus Service Makes Profit

Operations of the United Railways & Electric Company in Baltimore Include Both Lines Which Transfer with the Cars and Lines Which Do Not, Sightseeing Trips, Extended Tours and Chartered Buses—The Last Mentioned Business Is Considered the Most Profitable



A Touring Party Starting for Gettysburg on a Motor Coach of the United Railways & Electric Company

ON THE basis of present earnings, the United Railways & Electric Company of Baltimore estimates that its buses are earning annually a net profit of $20,622.16 in addition to providing a necessary service which if given by trolley cars would have cost $304,300. Hence it places its total profit and saving from the use of buses to the company at approximately $325,000 a year. The bus developments of this company are told in its 1926 Coffin prize brief.

The company's first bus line, established some ten years ago to operate between the center of the city and the northern residential section, was put in operation in the heyday of jitneys for the purpose of offsetting the effect of jitney competition and to pre-empt a desirable route. Since that time, but particularly during the past year and a half, the company's bus service has been greatly expanded. All this service is now in charge of the department of bus transportation, a newly organized branch of the company, which directs the activities of:

1. The Baltimore Transit Company, which operates the bus line already mentioned, as well as another serving the northwestern section of the city.

2. The newly acquired East Fayette Street Bus Company, which was bought from private owners and operates a fleet of some 30 single-deck buses from the shopping district to the eastern section of the city.

3. The Gray Line sightseeing and tour coaches, bought at the same time as the East Fayette Street Bus Company.

4. A trackless trolley line, operating from a junction with two car lines to a point 6 miles away in the northwestern suburbs.

5. Four bus feeder lines, which act as auxiliaries to the street railway service in various sections of the city, there being an interchange of transfers between buses and cars.

6. All motor vehicle equipment of the various departments of the United Railways & Electric Company.

The services operated by the Baltimore Transit Company and the East Fayette Street Bus Company and the trackless trolley line are independent fare collecting institutions, producing a direct revenue. Most of the "railway bus lines" are not in themselves producers of revenue, their principal rôle being to lessen the expense of passengers carried in the territory they serve by relieving the company of the necessity of building and equipping railway extensions.

The Gray Line cares for that portion of the public interested in sightseeing, operates motor trips to points of interest near and far and cares for parties desiring chartered service for special tours. In this latter service there are also employed buses of the transit company, and the development of this class of business helps to solve the problem of idle equipment

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in non-peak hours and on Sundays and holidays. Thus, buses which otherwise would have stood idle in garages when off scheduled routes earned during the first five months of 1926 a gross revenue of $26,031 and a net income in the same period of $2,554.

A concrete example of the usefulness of the bus in lightening the expense burden of the railway is shown in the case of the Montgomery Ward Company, which established a branch with approximately 3,000 employees in a section without adequate trolley service. A bus line with a twelve-minute headway service was installed at a cost of about $30,000 a year less than would have been the cost of one-man Birney cars with double tracks.

Another instance of the same kind was in the case of a new real estate development about a mile from the terminus of a car line, where the realtors agreed to purchase a bus which would be operated at their expense by the Baltimore Transit Company. It was further provided that the transit company should credit the real estate operators with $52 a year for each house built and occupied on the property after the date of agreement and should take over the entire bus operation when 800 houses had been constructed.

There is also a copartnership arrangement between the company and residents along the route of the trackless trolley under which the burden of the annual deficit of that line is shared by those residents. A bus line, in addition to those which have been mentioned, was inaugurated under a similar arrangement with a real estate developing company.

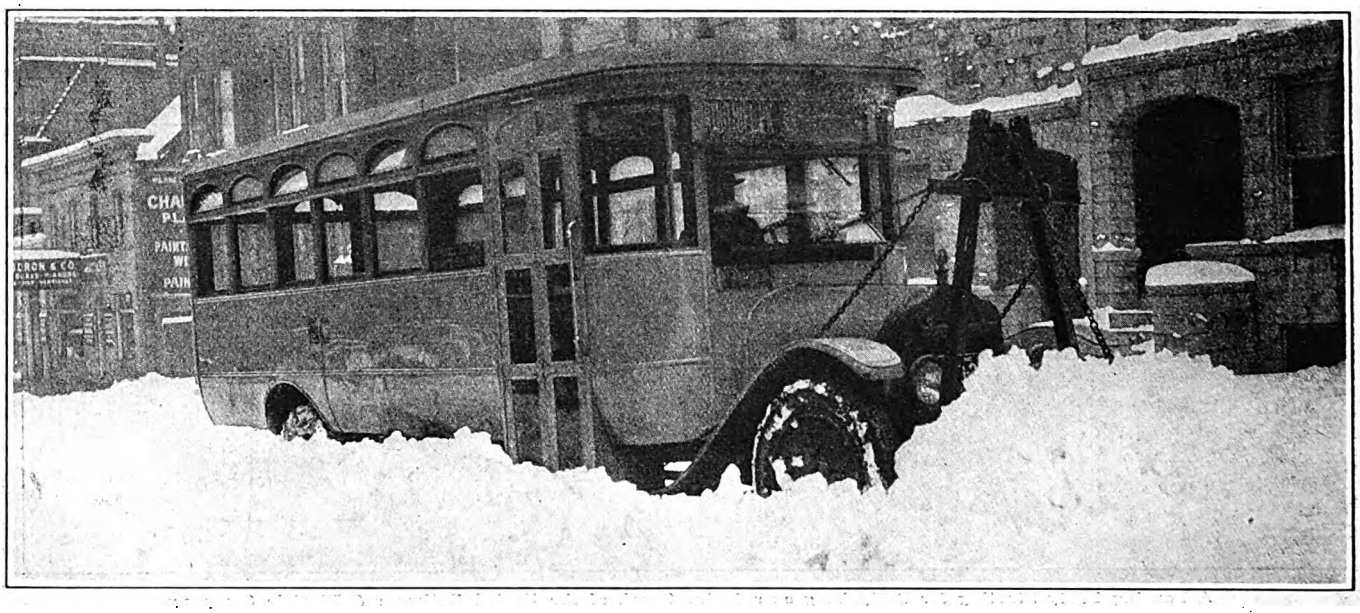
Outings and Tours Office for Giving Information

A feature of building up good will for the company, as well as business for buses, is the outings and tours office established by the company in the heart of the city. At this office tourists and others can obtain answers to all sorts of questions, of which about half are for information on subjects not directly relating to outings and tours, such as ferry schedules, railroad schedules, steamboat schedules, local street car schedules, hotels, theaters, restaurants, and so on. This service is given by the Gray Line, which also operates the sightseeing tours in Baltimore.

Baltimore has never been considered a sightseeing city, such as is Washington, New York, Philadelphia or Boston, yet more than 10,000 passengers were carried on the company's city sightseeing trips during the twelve months ended June 30, 1926. Indeed, so great has been the increase of passengers on sightseeing trips in Baltimore since the company took over the operation of the Gray Lines that the Mayor of Baltimore has appointed a committee of citizens to work up a program of advertising and entertainment for visitors and to establish a municipal "visitors' bureau." An official of the company has been appointed to this committee, as the sole representative of the city's public utilities.

Chartered Buses Profitable Service

The most profitable branch of the company's bus business is that of chartering buses. This business is done largely with single-deck buses, used also for regular



City Bus Used for Clearing Streets of Snow in Winter

line service. During the busy season, which is from April to October, an average of about fifteen of these buses are used for chartered business on weekdays and from 20 to 30 on holidays and Sundays. The maximum number of chartered buses on any one day has been 40, and sometimes the demand exceeds the available supply.

About 4,000 persons have taken the Gray Line tours from Baltimore to Washington and Mount Vernon, Gettysburg Battle Field, Atlantic City, Blue Ridge Mountains, Harrisburg and Susquehanna Valley, Philadelphia and Valley Forge, Annapolis and Naval Academy, etc. One form of this business is the handling of parties of tourists making combination railroad and boat trips and consists of the handling of a dozen to several hundred tourists with their baggage between railroad station and steamboat wharves, and vice versa. Usually a sightseeing trip through the city or to more distant points is included in these trips.

Advertising the Bus Business

In developing chartered bus business and business for bus or coach sightseeing tours some of the publicity has been of a unique and original character. One was a series of evening entertainments for civic and church organizations and community gatherings. The program on these occasions consisted of a "travelog," descriptive

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of one of the regularly operated bus or coach tours. These travel talks, illustrated with stereopticon slides, were presented by one of the young ladies of the publicity department, who carried her auditors on interesting picture trips to Harper's Ferry, the Blue Ridge Mountains, Washington and Mount Vernon.

Talks of this kind have been presented, by request, before various religious, social and improvement organizations. Each of these talks meant a great deal of favorable publicity for the company's tourist business and also served to promote good will, as the remarks of the presiding officer in introducing the lady speaker invariably included an expression of appreciation of "the kindness of the United Railways, to which we are indebted for this evening's entertainment," or similar sentiment. Finally, the audience never failed heartily to voice its collective appreciation in the form of a resolution or vote of thanks, together with a request to "come again" at the conclusion of the talk.

Light Regulates Heating in Cars

WHILE El Paso usually has mild winters, the use of heaters in the street cars of the El Paso Electric Company is necessary during cold snaps. As these cold spells are intermittent and often of short duration, it is possible to make substantial savings in energy consumption by careful regulation of the heaters. To insure their most economical use, their operation is controlled by an inspector located at the dispatcher's room in the center of the city. Practically all cars pass this point. When heat is needed in the cars the inspector turns on a red light so placed that it can be seen easily from the platforms of passing cars. A thermometer on the outside of the booth is used to determine when the heaters should be used. Operators on the outlying lines and in shuttle service depend upon the chief dispatcher to keep them advised as to heating requirements. An account of this practice is given in the brief presented by the company in the 1926 Coffin prize competition.

Interstate Railway Adopts Symbol

TO DISTINGUISH its buses from those of its competitors the Interstate Street Railway, Attleboro, Mass., recently adopted a circular symbol bearing the letters ISR, as shown in an accompanying illustration. The use of such a symbol was considered particularly

Symbol Used by the Interstate Street Railway to Distinguish Its Rolling Stock from that of Its Competitors

desirable because of the existence of many interstate bus lines in the territory served by this company and the consequent lack of individuality in the name "Interstate." The same symbol is used also on the company's cars, on its letterheads and advertising copy. Mention of this is made in the company's Coffin prize competition.

Railway Employees Build Bus Garage

WITH the expansion of bus business during the past year it became necessary for the Interstate Street Railway, Attleboro, Mass., to provide better facilities for housing its vehicles. It was decided that the best location for a bus garage would be immediately

Garage of the Interstate Street Railway Is Conveniently Located Immediately Adjoining the Carhouse

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adjacent to the existing carhouse. A structure 45 ft. x 60 ft. with concrete floor, cement block walls and a waterproof roof was designed. The railway company's own track, shop and line employees did all the actual construction work at odd times at an almost negligible cost for labor. The building was under the direction of a specially engaged boss carpenter who supervised the work of the railway men. The total cost of the garage, including labor and materials, according to the company's 1926 Coffin prize brief, was only $4,944.75.

Prompt Daily Reports Guide Operations

IN COMMON with many railroads doing an interline freight business the Illinois Traction System formerly had no method of knowing quickly its daily earnings. The results of a month's earnings and operating expenses were not known until the monthly report was issued. This was usually not available until about the 25th of the month following. It then did not always reflect true earnings or the trend of business because of the large percentage of interline and intermediate business, the earnings from which are frequently very irregular in clearing between the railroads.

As the freight business of this road grew the need for an earlier and more definite record impressed itself more and more forcibly upon the management. The need for control of expenses and the necessity of making expenditures bear a proper relation to income also pointed to the need of a budget system and an accurate daily earning statement with an earlier monthly report. With this object in view, the control of expenses was secured by a simple budget plan based on estimates made by department heads. These estimates were then carefully analyzed and suitable budgets were allotted by the management, due consideration being given to probable earnings, condition of property and equipment, trend of labor and material costs, and previous operating and maintenance records. The budget allotments are approved for monthly periods and are usually planned from three to six months in advance, depending upon the season of the year, the character of the program and the department involved. These budget allotments are subject to revision only by the chief executive and as changing conditions warrant.

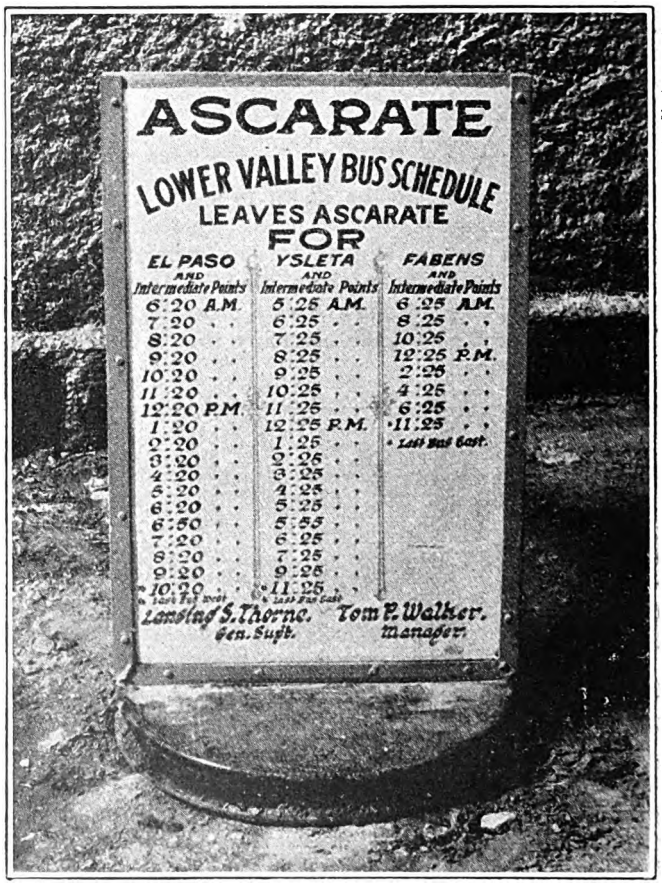
As a guide to the earnings of the system and as a means of controlling expenditures, a daily report has been formulated on the property. This is a summary of the daily records of approximately 100 station agents on the system and is quite accurate as far as the passenger and local freight earnings are concerned. The interline and intermediate earnings cannot be determined by the agents. To determine these last-named earnings daily in the office of the general auditor would require costly accounting and would delay the daily report. In 1925 the interline and intermediate tonnage on this road amounted to about 1,500,000 tons. It constituted more than one-half the system's freight business. An accurate method of forecasting these earnings was worked out by the freight auditing department by calculating division of earnings during certain test periods. Percentages were thus established which when applied to interline and intermediate total freight charges give an accurate estimate of the actual earnings. When very heavy special movements that may tend to disturb these percentages are handled such special movements are calculated separately.

Good results are mentioned in the brief presented by the company in the recent Coffin prize competition. By this system the management has a daily report three days after the day's business. This report records accurately the passenger and local freight business and estimates very closely all interline and intermediate business by dollars, by carloads and by tons. The comparisons are made day by day, are cumulative by the month and by the year. The report shows the freight business divided by carloads and less than carloads, by local, interline forwarded, interline received, intermediate and switching movements. Four divisions of freight as to class are made as follows: Coal, grain, sand, gravel, stone, shale and like products, and all other car movements. The passenger business is divided as to cars and buses, and also between station agent ticket sales and conductor cash collections.

This daily report provides an accurate guide to the company's business both as to total earnings and as to the volume and class of business handled.

Substantial Schedule Signs Used at El Paso

NOVEL and inexpensive time-tables have been designed by the El Paso Electric Company to inform passengers concerning the schedule of the Ascarate Valley buses. The complete schedule was neatly painted



Substantial but Inexpensive Schedule Signs Have Helped the El Paso Electric Company Popularize Its Intercity Bus Service

on a large piece of sheet metal. The lower edge of the metal was then imbedded in cement poured inside of an old tire rim and allowed to set. This forms a substantial base for the schedule, preventing it from being knocked over or blown over by a strong wind. A description is given in the company's Coffin prize brief.

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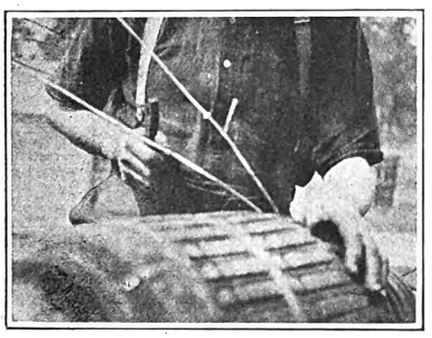
Maintenance Notes

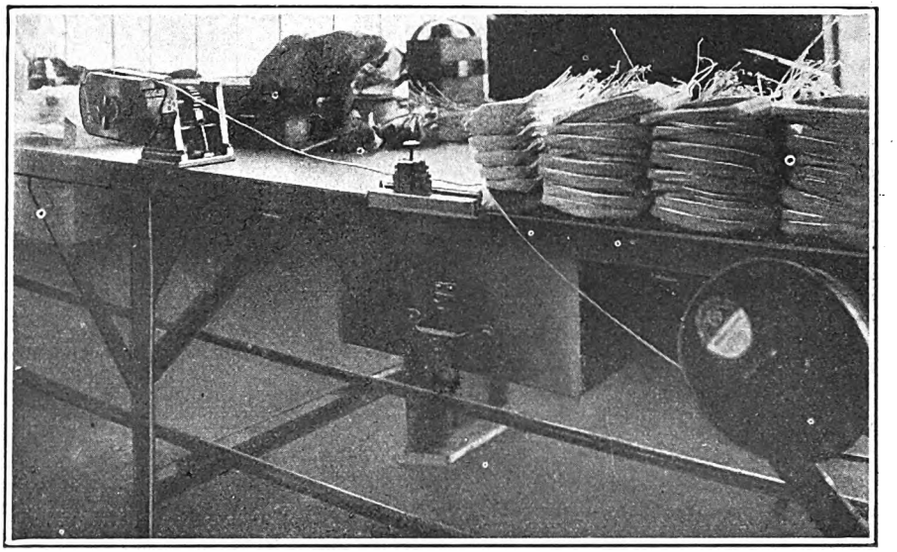
Safe Method of Splicing Armature Leads

SOMETIMES, in handling, the leads of an armature coil become broken and sometimes open circuits occur in the leads, while the coils remain in good condition. In such cases it is the practice of the Grand Rapids Railway, Grand Rapids, Mich., to splice out these leads. In doing this another piece of wire of the same size is lapped over the end of the lead and the two are wound carefully with fine copper wire. The entire joint is then brazed to form a tight connection. After the repair is made, the splice is taped carefully and an insulating sleeve is placed over the wire.

Previous to the use of this method it was the practice to use a small copper sleeve, which was placed over the ends of the two wires to make the joint. These were soldered in place. This method has been abandoned in favor of the wrapping with copper wire as this latter has proved much more satisfactory.



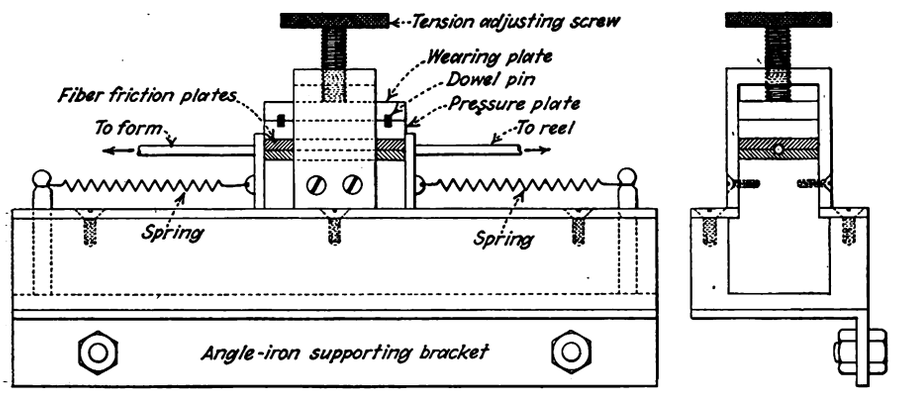
Splicing Leads of Armature Coils by Winding with Copper Wire and Brazing



In Winding Armatures the Wire Passes from the Reel at the Right Through the Special Tension Device to the Coil Form Shown on the Left

Tension Device for Winding Small Armature Coils

WHEN winding small armature coils such as those used for compressor motors, with the usual type of tension device, the tension on the wire will vary as the winding form is turned or stopped. This is not only annoying to the operator but serves to decrease the efficiency in winding. In order to provide for uniform tension, a special tension device is used in the department of electrical repairs of the Brooklyn-Manhattan Transit Corporation. This device consists of a carriage that slides back and forth on a guide against the restraining action of two springs located on either side. The accompanying line cut shows the details of construction. The wire is held between two plates, the pressure on which is adjusted by means of an adjusting screw. Fiber friction plates are used next to the wire. A reel of wire is attached to the bench at one end and after passing through the tension device goes to the coil form.



Details of Tension Device with Coil Springs on Either Side

As necessity is the mother of invention, so's good lubrication your "old man" of prevention.

Wooden Protective Blanket for Armatures

SAFELY transporting armatures from point to point has always caused the armature department of the electric railways a considerable amount of worry due to the possibility of coil or commutator injury. To overcome this danger the New York Railways developed a wooden protective blanket, which since its adoption has decreased materially coil and commutator injuries during transportation and handling.

This blanket has strips of maple wood 1 in. x 2 in. with sufficient length to cover vital parts, laid equally spaced in parallel and securely roped together. Holes ½ in. in diameter are bored through the 2-in. dimension of each strip about

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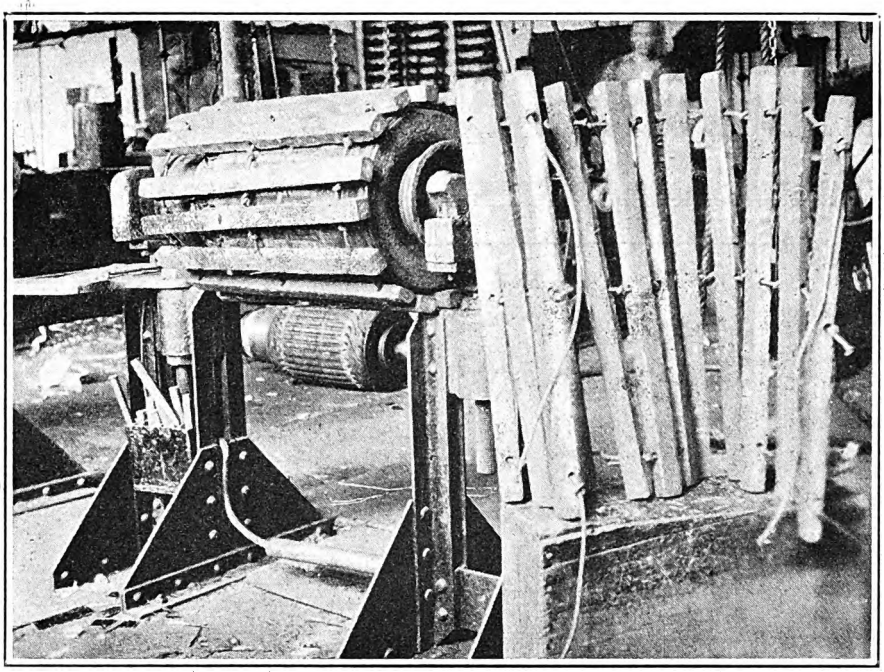

Wooden Protective Blankets as Installed on an Armature and Ready for Use

6 in. from either end and at the center.

A sufficient number of strips to encase entirely a desired armature and spaced about 1¼ in. are threaded on three ropes and the ends left long enough to permit making a secure knot when the completed blanket is installed on an armature. The 1¼-in. spacing of strips is accomplished by making a simple knot in each rope between strips so as to keep them apart.

This blanket has not only decreased the mechanical injuries to coils and commutators during transportation and handling but it has also practically eliminated the rolling about of the armature during transportation if not securely blocked.

Overhead Maintenance Kinks in Baltimore

Important Savings Made in Cost and Minutes Delay from Breaks—New Apparatus for Draining Manholes and Locating Cable Faults—Carhouse Conductor of Tire Steel

THE United Railways & Electric Company of Baltimore has reduced its trolley breaks per year continuously for the last six or eight years so that the number in 1918 of 1,321 was brought down in 1925 to 56. Concurrently, there has been a decrease in the delays to cars due to power trouble. Thus 1925, as compared with 1924, shows a reduction in number of delays due to this cause of 61.4 per cent and in number of minutes delay of 48.9 per cent. An organization of patrol inspection crews is responsible, the company believes, according to its 1926 Coffin prize presentation.

In the plan followed, the system is divided into four sections with an inspector assigned to each, and his entire time is spent in patrolling this section and reporting to the emergency dispatcher all necessary maintenance work. This work is assigned to the various overhead maintenance crews, who keep in frequent telephonic communication with the dispatcher so as to be available immediately for emergency work. Except during peak hours, when all crews are held at their various stations, one crew is held as standby at divison headquarters for answering fire, accident and other emergency calls. The remaining crews of both day and night shifts are kept on the street occupied in inspection and maintenance.

The present operating force of the emergency division consists of six truck crews on each of the day and night shifts and one line car crew on a suburban division. Each crew consists of a lineman, a chauffeur and a helper. As the overhead system has now been brought to an excellent operating condition, it is believed that a reduction in the maintenance forces can be made without detriment. The reorganization plan provides for the elimination of one of the day crews, two of the night crews and the line car crew. As most of these men, from previous experience, are capable as motormen or chauffeurs, they are to be transferred to other departments of the company where suitable vacancies exist, without personal loss to them by reason of the reorganization scheme. It is estimated that a net saving in labor and truck operation expense of about $28,000 yearly can be made by this change.

All of the overhead construction trucks are now motor-driven. The use of motor trucks instead of horse-drawn trucks permitted the company to reduce the personnel of the division from 43 to 26 men. Nevertheless, approximately 25 per cent more work was accomplished by the smaller number of men.

Detecting Cable Faults

The company is now using a capacitance bridge with microphone hummer to determine the location of the fault when a cable fails and the conductors are burned in two without grounding. It was virtually impossible to locate the fault either with the time-honored slide wire bridge or the exploring coil method. With the new instrument the fault is readily located by measuring the capacitance of the several conductors and computing the distance from office records, giving the per foot capacitance value of the cable. The old way of locating such a fault was by cutting the cable a number of times until the faulty section had been segregated, a method which was both costly and slow. The new instrument was purchased from a company which developed it for measuring the capacitance of telephone circuits, and it is said that this is the first time the instrument has been used by an electric railway or power company to adopt it for locating faults in power cables.

Pump for Draining Manholes

To expedite the work of maintaining the 1,500,000 ft. of underground cable in service, a 3-in. centrifugal pump was installed on the front end of a 2-ton truck during the month of March, 1926. The pump is driven by the truck motor through a power take-off connected to the crankshaft. An electric starter was installed on the motor to do the cranking, but if it is necessary to start the motor by hand, the front end of the pump shaft is adapted to take the hand crank.

An automatic primer connected to the intake manifold of the motor supplies a simple and quick method of priming the pump. Two sections of

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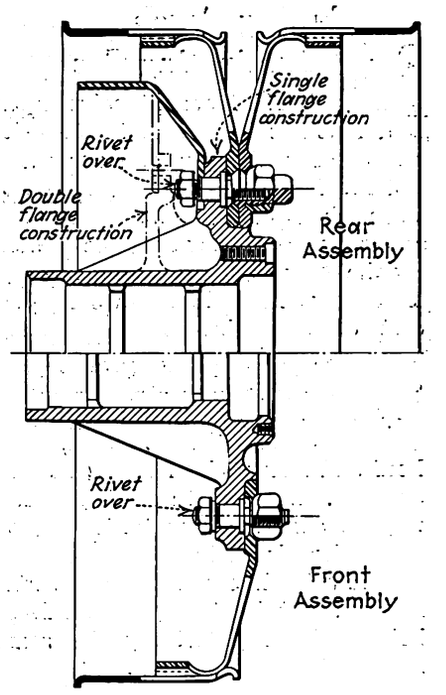
special smoothbore suction hose, each 15 ft. long, are carried on the truck and are used coupled together when the truck cannot be placed near the manhole. The capacity of the pump is 250 gal. per minute and it has proved to be very efficient in draining manholes, as well as in other maintenance and construction work.

New Carhouse Conductor

A new type of rigid contact overhead conductor has recently been installed in the carhouses of the company to overcome the problem presented by frequent crystallization of the wire at the ends of the ears and the burn-downs or pull-downs resulting from frequent shifting of cars by shop men.

The material used for the new type of conductor is ⅜-in. by 2-in. tire steel, which has one edge suitably rounded. It is supported by standard insulated clevis hangers, spaced 10 ft. apart in straight line work and 4 ft. apart in curves and special work. The tire steel, which is obtained in 30-ft. lengths, is mounted with adjacent sections held in alignment by two ¼-in. by ¼-in. by 10-in. straps, bolted and welded to the conductor. Frogs and crossings are bolted to the trolley trough, and the end of the tire steel conductor, where it enters these fittings, is so dressed as to provide a smooth under-run. Entrance under fire doors is effected by an insulated runner fastened to the bottom of the door, which provides a smooth under-run and permits ready lowering of the door.

A crew of three men with a line car will install an average of over 150 ft. of conductor a day, including mounting of supporting hangers. The conductor is neat in appearance, rugged in construction and easy to install and it will outwear the ordinary trolley wire many times.



Section Showing Double Cap-Nut Method of Mounting Dual Rear Wheels

New Equipment Available

Double Cap-Nut Method for Mounting Dual Wheels

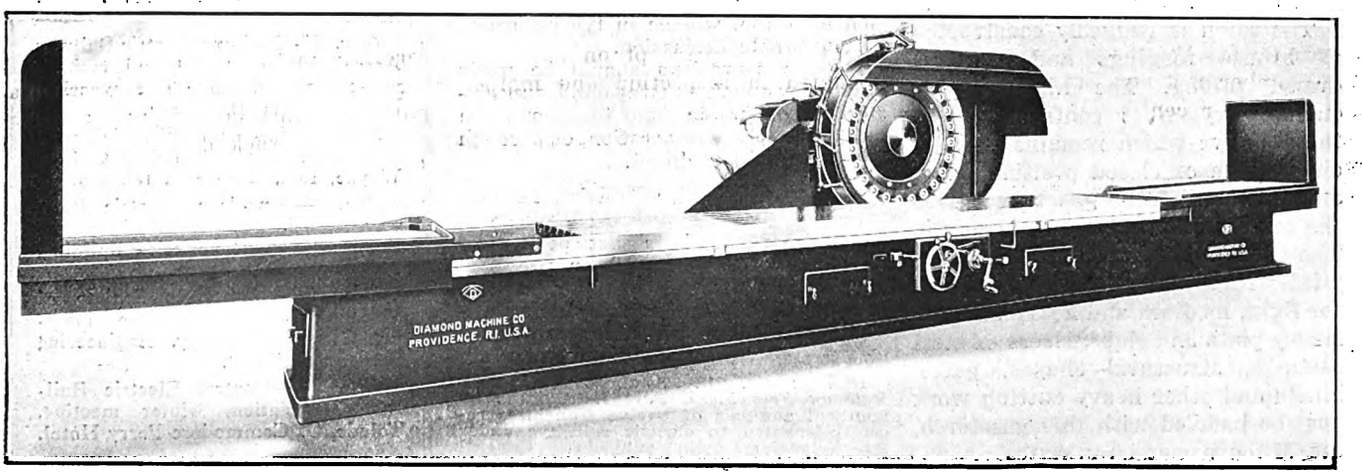
DUAL rear wheels for buses can be mounted by an improved method announced by the Budd Wheel Company, Detroit, Mich. This is termed the double cap-nut method. With it each of the dual rear wheels is driven by an individual set of nuts. The original Budd dual wheel method of mounting was by means of a single nut through which both inner and outer wheels were driven. By this design the inner wheel of a dual assembly was in reality driven by the friction or clamp action between the outer wheel and the hub flange. With the advent of larger and heavier buses, improvements in the method of mounting became necessary as tires up to 7 in. and 8 in. are required to carry the load.

The principle of the Budd method of driving wheels remains unchanged from the original design. The wheel stud holes are larger than the studs themselves and are counterbored cup shape. The bored face of the cap nut fits into this counterbore. The design provides the nut with a great area of contact against the wheel. Right and left-hand studs, used on the respective sides of the vehicle, contribute to keeping the nuts tight after they are properly drawn up. It is stated that elimination of worn holes and sheared or broken studs is accomplished through this design.

Face Grinder for Frogs

WHERE flat surfaces are required in grinding track frogs and for similar purposes a large face grinder has recently been developed by the Diamond Machine Company of Providence, R. I. The machine is claimed to reduce greatly the time necessary to grind a frog satisfactorily. It is operated by a 75-hp. motor. Work up to 198 in. long and 48 in. high may be taken by this machine.

The table may be operated at a maximum speed of 30 ft. per minute. Machines are built in various sizes, 18, 30, 36, 54 and 66 in. diameter, and in various lengths.



Large Face Grinder for Finishing Track Frogs

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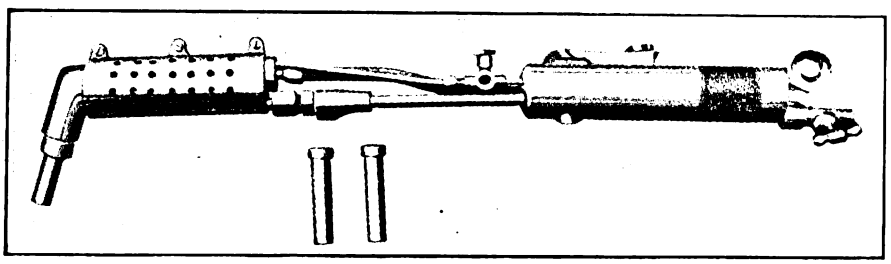
Cutting Torch Uses Illuminating Gas

RESULTING from extensive experiment and research in the utilization of a cheaper fuel for metal cutting is the gas cutting torch for use with illuminating and by-product gases, recently placed on the market by the Alexander Milburn Company, Baltimore, Md. Economies in fuel cost of themselves reduce cutting costs materially, and in addition the company claims that features of the new torch cause it to give better penetration into the metal, a narrow kerf and sharp, clean edges, as well as speedy and smooth cutting with a notable absence of metallic slag on the underside of the cut. Nor does the new torch case-harden the surfaces cut, it is stated, the surfaces being left in practically the same state as the original steel. With city gas costing approximately 1/30th that of other gases, the item of saving in this one direction is important. An outstanding feature of the



This Cutting Torch Uses Illuminating Gas

Milburn torch is the superheater which heats and expands the cutting oxygen, also the preheating of the gases, raising the temperature of the cutting oxygen to approximately 100 deg. C. prior to combustion. This increases the temperature of the gases at the torch tip, increases the rate of flame propagation in the burning mixture and reduces the oxygen consumption from 25 per cent upward.

The torch is ruggedly constructed of bronze forgings and specially drawn tubing. The high-pressure cutting oxygen is controlled by a thumb valve which remains fixed in either open or closed position. The arrangement of the gas tubes gives the torch great transverse strength. The torch is 21 in. long and is supplied with a complete range of tips for light, medium and heavy cutting. Heavy plate and slabs, risers of steel castings, structural shapes, gates, billets and other heavy cutting work may be handled with this gas torch, the Milburn company states.

Association News and Discussions

C.E.R.A. Winter Meeting Feb. 4-7

THE Central Electric Railway Association will hold its annual winter meeting at Toledo, Ohio, on Feb. 3 and 4, at the new Commodore Perry Hotel. Members are looking forward to this meeting as a banner gathering because, at the same time, the executive committee and also several of the American committees of the American Electric Railway Association will meet in Toledo.

Official announcements have not yet been made, but one of the preliminary entertainment features will be the banquet to be held on Thursday evening in the main assembly room of the hotel.

The date of the convention has been proposed for this time in order that the activities might be held at the Commodore Perry because of the excellent facilities. There are a number of large committee rooms; and the assembly room is provided with a stage, a moving picture booth, and also amplifiers.

This convention will immediately follow the Ohio Bankers Association and will be the second one on record at the new hotel. Delegates are urged to make their reservations early.

Regular Meeting Central Traffic Association on Nov. 17-18

CENTRAL Traffic Association will hold its next traffic meeting at Fort Wayne, Ind., on Nov. 17 and 18 at the Keenan Hotel. The opening session at 9 a.m. will be in the nature of a round-table discussion.

Hotel reservations should be made either through J. A. Greenland, superintendent of traffic and transportation Indiana Service Corporation, or through the Hotel Keenan direct.

Special Bulletins Available

FOLLOWING is a list of special reports which have been prepared by the Bureau of Information and Service of the American Electric Railway Association and which are available to member companies upon request:

Bulletin No. 111. Analysis of Electric Railway Franchises, Part I. This is an identical analysis of twelve franchises recently granted to electric railways under the following main subjects: General Terms; Public Control; Fares; Regulation of Service; Finances, Capitalization and Accounts; Regulations Governing Companies' Use of Streets. Part I covers the first three subjects mentioned, namely, General Terms, Public Control, and Fares.

Bulletin No. 112. Motor Bus Decisions. This is a collection of court and commission decisions regarding motor vehicle common carriers made since the issue of Bulletin No. 26—Motor Bus Decisions, June 1, 1925. It covers all decisions under existing motor bus laws handed down by the United States Supreme Court, the state supreme courts, and the various state public utility commissions. Included in the range of the decisions are such subjects as jurisdiction and powers of commissions, issuance of certificates of convenience and necessity, abandonment of service, extension or modification of routes, service requirements, rate structures, etc. The decisions are preceded by an analytical index, making possible ready access to decisions on all phases of motor vehicle operation.

Bulletin No. 113. Relative Seniority of Electric Railway Trainmen and Bus Operators. A collection of extracts from electric railway labor agreements covering the question of seniority of bus operators and trainmen, and the rating of trainmen who break in as bus operators.

In addition to the above the following supplements have been prepared, bringing the information they cover down to Nov. 1, 1926:

Supplement No. 14 to City and Interurban Fare Bulletins Nos. 41 and 42.
Supplement No. 1 to Bulletin No. 108, Wages of Trainmen.
Supplement No. 1 to Bulletin No. 109, Wages of Busmen.
Cost of Living Studies (Bulletin No. 114).

COMING MEETINGS OF *Electric Railway and Allied Associations*

Nov. 9-12 — **National Association of Railroad and Utilities Commissioners, annual convention, Battery Park Hotel, Asheville, N. C.**

Nov. 11-12 — **American Institute of Electrical Engineers, regional meeting, Engineering Societies Building, New York City.**

Nov. 16-18 — **Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

Nov. 17-18 — **Iowa Electric Railway Association, operating and maintenance section, annual convention, Fontanelle Hotel, Omaha, Neb.**

Nov. 17-18 — **Central Electric Traffic Association, regular meeting, Fort Wayne, Ind., Keenan Hotel, 9 a. m.**

Dec. 3 — **American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.**

Dec. 6-9 — **American Society of Mechanical Engineers, annual meeting, New York City, Engineering Societies Building.**

Feb. 3-4 — **Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.**

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The News of the Industry

Action Urged at Once

Mayor's Message to City Council Seen as Spur to Chicago Subway Construction

Breaking a silence on traction matters that has persisted since the defeat of his ordinance in April, 1925, Mayor William E. Dever of Chicago delivered a message to the City Council on Nov. 3, in which he strongly recommended that the city begin at once the construction of a system of downtown subways. It was, of course, known he had been following the negotiations for a new traction ordinance with great interest, but the Mayor's sudden action surprised the Council, by which the remarks are regarded as a final effort to put through a subway plan before his term of office expires next spring.

The message is obviously intended to separate the subway question from the complicated negotiations now in progress between the city and local traction interests for a unification, terminable permit ordinance and with the Harlan-Lisman interests, New York, for a twenty-year Surface Lines franchise. The Mayor made it clear, however, that he does not desire any interruption to this work. He declared:

> On the contrary, these negotiations should be prosecuted with the utmost diligence. These phases of the problem are equally important and must be solved before anything like adequate transportation can be given all portions of the city.

Mayor Dever assured the Aldermen that he fully appreciated the difficulties involved in the situation and did not purpose to criticise them for failure so far to obtain a solution.

The main features of the Mayor's plan, as outlined in his message, are as follows:

1. Selection at once of the type, location, and engineering plans for subways, using as a basis the recent report of the citizens' advisory committee.
2. Submission of the plan in a referendum, as required by Illinois statutes, at a general or special election, possibly the election in April, 1927.
3. Judicial confirmation of special assessment procedings, again using the citizens' advisory committee report as a basis for negotiations.
4. Operation of cars, either by the city through an arrangement with the surface and elevated lines, with a transfer arrangement; or direct rental of the tubes to the companies.

The plan of the citizens' advisory committee, which was referred to in the ELECTRIC RAILWAY JOURNAL for Aug. 28 last, calls for a low four-track tube for "L" cars in State Street from North Avenue south to Roosevelt Road, and a high level, two-track Loop subway for surface lines cars east of the Chicago River under Washington and Jackson boulevards, connecting at Michigan Avenue.

At $5,600,000 a mile, this system would cost approximately $32,500,000, about one-half of which would be raised by special assessments. These assessments might be voluntary, the committee suggested, thereby avoiding long litigation.

Mayor Dever stated concisely that the "city should own and control all subways." There is "no reasonable possibility," he asserted, "that either the surface or elevated lines could finance subways without increasing their fares."

He believes that the example of other cities where near-by property owners have borne a large portion of the cost should be followed in building subways for Chicago, in addition to utilizing the city's $45,000,000 traction fund. He said:

> The only subway construction possible under present financial limitations would be a subway of limited extent, so located as to render a maximum service to the greatest number of our citizens.
>
> Construction of subways in the central business district, by relieving traffic congestion, will inure to the benefit of all who use the transportation system, whether or not they actually travel through the subways.

In view of the Mayor's substantial following in the City Council and the urgency of his plea, it is believed that the message will go far toward clearing up the present maze of discussion centering about the transportation situation and tend to draw at least one phase of it—subways—out into the spotlight for early and specific disposition.

Traffic Regulatory Ordinance Passed in Baltimore

Mayor Jackson on Oct. 28 signed the most drastic ordinance on city-center parking which has ever been passed by the City Council of Baltimore. The new law becomes effective immediately. Under it, motorists must move their cars from congested downtown streets at 4:30 o'clock in the afternoon. From that time until 6 o'clock all parking in the city center is prohibited.

The measure was signed despite considerable protest, and the step is regarded by municipal authorities as the only solution available to the traffic problem.

Representatives of the Maryland Automobile Club, the Automobile Dealers' Association and many merchants' organizations opposed the plan, saying it would hurt business.

This newest ordinance is supplementary to the ordinance passed by the City Council on Sept. 27 after Baltimore motorists had enjoyed five days of unrestraint following the invalidation of the city's traffic laws by a court decision. In that case the court held that the Police Commissioner had no power to enforce the traffic rules he had promulgated by virtue of the powers vested in him by the State Legislature. As a result, Baltimore was left without traffic regulation from Sept. 24 to Sept. 26.

Votes Affect Utilities

Election Results Have Slight Bearing on Railway Industry—Commissions Target of Attacks

In at least eight states of the country the results of the elections on Nov. 2 had a more or less direct bearing on the light and power industry or the development of water power. However, these results had little bearing in the main on companies that are operating in the electric railway field.

In Colorado the proposed amendment to the public utilities commission law bringing under commission jurisdiction all public utilities except those municipally owned, thus abolishing the "home rule" feature of the present law, was defeated by a majority of two to one.

Governor A. V. Donahey of Ohio, Democrat, was re-elected for a third term by a small majority. He had been waging war with a Legislature of the opposite party over the personnel of the Public Utilities Commission. This war, which has culminated in a commission composed of two hold-over members and a third whose term will expire in February, will, the Legislature being once more Republican, presumably go on. One of the charges of the Governor is that the commissioners show undue favor to certain utility companies.

In Maryland Governor A. C. Ritchie has been re-elected. He was attacked for his support of the plan for the development of the hydro-electric plant at Conowingo as it was finally approved by the Public Service Commissions of Maryland and Pennsylvania and the Federal Power Commission.

COMMISSION ISSUE IN KANSAS

In Kansas a fight was waged around the Public Service Commission. The Democratic nominee for Governor, former Gov. Jonathan M. Davis, conducted his campaign on the issue of forcing public service companies to pay taxes on the same valuations used for rate-making purposes. During his term of office Mr. Davis helped to raise the valuations of utility companies $153,000,000 for taxation purposes. In most instances tax payments on such valuations were made under protest and the affected companies succeeded in having the courts enjoin the tax commission from further collection on the increased valuations. An attack on the commission and the utility companies failed to win the support of the voters, Governor Paulen, who had been renominated by the Republicans, winning readily.

The election for United States Senator in Illinois was of interest to the utility companies because of the attacks made on candidates who accepted contributions to their primary campaign

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expenses from Samuel Insull, president of the Commonwealth Edison Company of Chicago. It was revealed by the Senatorial committee of investigation that the successful Republican candidate for the nomination, Frank L. Smith, then chairman of the Illinois Commerce Commission, accepted $125,000 from Mr. Insull and the Democratic nominee, George Brennan, $15,000.

This disclosure was largely responsible for the nomination of a third ticket by independent Republicans, who chose H. S. Magill as their candidate. The latter failed to poll a very large vote and Mr. Smith won over his opponent by a good plurality, but one much under the normal.

Fares on New Basis in Jamestown

The weekly pass entitling the holder to an unlimited number of rides on cars and buses of the Jamestown Street Railway, Jamestown, N. Y., and the Jamestown Motor Bus Transportation Company went into effect on Nov. 1. The pass sells for $1. On the same day, the new fare schedule on cars and buses in Jamestown went into effect. The new cash fare is 10 cents on buses or cars, but tickets may be purchased at the rate of three for 25 cents or ten for 75 cents. The new rate provides for interchangeable transfers from bus to car or from car to bus. The new fare from Jamestown to Celron or from Falconer to Ashville on the interurban division is 20 cents. Some changes in car routings also have been made on the local lines in Jamestown.

Claims Philadelphia Loss $4,000,000 in "L" Lease Terms

The Pennsylvania Public Service Commission considered a list of objections in City Hall, Philadelphia, on Nov. 4 to the proposed 30-year extention of the Frankford Elevated lease. Harold M. Evans, a former member of the Public Service Commission, acting as counsel for the City Club, pointed out that under the proposed amendment of the Frankford lease the city would receive in rentals from the Philadelphia Rapid Transit Company nearly $4,000,000 less than the total rentals payable under the original lease, if extended. There were many lively tilts at the hearing. Former Mayor Moore, who appeared as a witness, declared that the extension of the elevated lease to the Philadelphia Rapid Transit Company was a mere surrender by the city of its rights. City Solicitor Gaffney, President W. K. Myers and H. M. Evans argued over the difference between "equal to" and "equivalent to." At the close of the hearing Commissioner Beamish said he desired Mr. Myers to furnish at the next hearing, on Nov. 18, an explanation of what the Philadelphia Rapid Transit Company meant by "equal to" and "equivalent to" in reference to interest charges on city bonds.

The Mayor's recent approval of the "L" extension lease and the terms embodied in that agreement were referred to in the ELECTRIC RAILWAY JOURNAL previously.

Decision Reserved on Locomotive Inspection Order

As a result of an order of the Interstate Commerce Commission to appear and show cause why interurban electric railways should not be included among roads required to conform to the rules and instructions for the testing and inspection of locomotives other than steam, a meeting and hearing was held in Washington, D. C., Oct. 31 and Nov. 1. In order to arrange the information to be presented at the formal hearing a preliminary meeting of engineers and counsel was held at the A.E.R.A. headquarters in Washington, D. C., Sunday, Oct. 31. The rules and instructions of the Interstate Commerce Commission for the inspection and testing of locomotives other than steam were gone over very carefully and suggested changes in a large number of the rules were agreed upon. In the absence of Judge Ralph R. Bradley, chairman of counsel, C. D. Cass acted as chairman for the meeting. Harley A. Johnson was chairman of the engineering committee. Other members present were S. H. Anderson, J. M. Bosenbury, R. H. Dalgleish, H. J. Graham, V. R. Hasty, Guy C. Hecker, C. L. Henry, W. F. Howard, E. S. Johnson, Frank Karr, R. E. Quirk, C. W. Squier, D. F. Smith, Fred E. Stout, Charles E. Thompson and C. C. Whittaker.

The meeting held on Nov. 1 was before Examiner Rogers of the Interstate Commerce Commission. At this time argument was presented to show why, in the opinion of counsel for the electric railways, interurban roads should not be included in the order. Without in any manner waiving the rights of the electric railways, they were also requested to submit changes that they considered necessary in the present rules. To comply with this Harley A. Johnson took the stand and presented a list of the various changes in the present rules and instructions for inspection and testing of locomotives other than steam which had been agreed upon as requiring changes in order to conform with present electric railway practice. Decision in regard to the findings will be made later.

A New Idea in Regulation

In appointing C. J. Golden to the Public Service Commission of Pennsylvania Governor Pinchot said:

This appointment was offered to Mr. Golden not only because of his wide experience in the class of questions which come before a Public Service Commissioner, but more especially because he will represent the rights and interests of the plain people of this Commonwealth.

The working people of this State ride in the trolley cars and they are entitled to have a representative in the body that determines the amount of fare they must pay. Mr. Golden will give voice to the needs of the great mass of our workers who have hitherto been without representation on the commission.

The domination of the majority of the present commission by the public service corporations makes it especially important that every vacancy should be filled by a man who will be actively on the side of the people.

Only a few days before this the Governor named Richard J. Beamish for appointment to the commission to represent, as he said, exactly the opposite point of view to that of the utilities.

St. Louis Postpones Action on Fare Request

City Counselor Muench of St. Louis, Mo., on Oct. 26 filed with the Missouri Public Service Commission at Jefferson City, Mo., the city's answer to the petition of Rolla Wells, receiver for the United Railways, asking for an immediate temporary increase in fares. Counselor Muench asks that no increase be given the company until the city has been heard and until the issues raised in the company's original petition for an increase have been determined. While the city's answer does not specifically oppose the latest petition of the railway, it in effect asks for a postponement of action until the time the commission would have acted on the original petition for an increase from 7 cents to 8 cents or two tokens for 15 cents. The original application for a raise in fares was filed in June.

Changes Sought in Operation in Elizabeth

Proposed changes in the transportation service at Elizabeth, N. J., to provide for a single-fare ride between the eastern and western parts of the city were agreed upon recently at a conference between the Board of Works and the City Plan Commission.

The plans call for the following recommendations to the Public Service Railway:

Restoration of the former system of railway operation by rerouting the Roselle Park cars through Elizabeth Avenue to the Elizabethport section and the Morris Avenue cars to the terminal at Bayway.

Extension of the El Mora bus line down Elizabeth Avenue to Union Square.

Establishment of a new bus route to furnish transportation between downtown and Warinanco Park.

Extension of the Edgar Road and Irvington bus lines over loops east of Broad Street to relieve congestion now caused by their present terminals.

The City Plan Commission also advanced a suggestion that a crosstown bus line be established to furnish single-fare service between the El Mora and Kellogg Park sections.

Hearing Put Over on Buffalo Fares

The New York State Public Service Commission has adjourned from Nov. 8 to Nov. 22 the taking of testimony on the application of the International Railway, Buffalo, for permission to increase its fares from 8 to 10 cents in the city of Buffalo. Commissioner William R. Pooley explained the adjournment was made necessary because the accountants have not completed their work on the books of the railway. Dr. Milo R. Maltbie has been retained by the city of Buffalo to oppose the company's application for higher fares. It is said that the city hopes the figure of $22,000,000, fixed by the commission in a previous proceeding, will be used as the basis of the commission's computation of a reasonable rate in Buffalo. The city is not asking for a reduction of the present 8-cent fare.

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De Luxe Cars Placed in Service in Chattanooga

The ten new railway coaches purchased by the Tennessee Electric Power Company, Chattanooga, Tenn., early in the year representing an investment of $150,000, were introduced to citizens of Chattanooga on Oct. 19.

The new coaches were assembled at Sixth and Broad Streets at 1:30. At 2 o'clock the coaches moved up in order and stopped in front of the Chamber of Commerce building. A fifteen-piece band was ready to lend a festive air to the occasion. E. D. Reed, manager of the Chattanooga district of the company, formally presented the new coaches to Commissioner Fred Frazier, representative of the city. After the preliminaries in the way of two or three short speeches the coaches were loaded to capacity for the maiden trip through the downtown sections.

City and county officials, directors and representatives of the chamber of commerce and the manufacturers' association, civic club delegates, press representatives and others were invited to be guests of the company on this occasion.

Led by the new coach "Chattanooga," which was on display at the recent American Electric Railway Association convention, the route of travel was south on Broad to Ninth, north on Market through the transfer station at Fifth Street, south on Market to Main to Central Avenue and return. Walter Cline took moving pictures of the parade. All ten coaches went into regular service on Wednesday morning.

The new coaches cost $14,600 each. They seat 45 passengers as compared with 36 to 40 on the present cars. They weigh 28,000 lb., or 14 tons, and are lighter than those now in use.

The following names have been given the coaches: "Chattanooga," "Chickamauga," "Missionary Ridge," "Sherman Heights," "Orchard Knob," "Fort Wood," "Cameron Hill," "Lookout Mountain," "Signal Point," "Cravens House."

A Lone Battler for the Right in St. Louis

R. B. Brooks, director of streets and sewers for St. Louis, Mo., debated single-handed against 50 men and women who appeared on Oct. 20 before the Aldermanic committee on streets, sewers and wharves to protest against the plan of the Board of Public Service to segregate street cars from other traffic when Olive Street is widened between Twelfth and Grand Boulevards. Mr. Brooks cooly marshaled facts and statistics, vouched for by experts from other cities, to uphold his contention in favor of the segregation plan.

The protestants, led by Lee Orcutt, secretary of the Greater Olive Street Association, based their opposition solely on their personal interests, disregarding the fact that 95 per cent of the users of Olive Street ride in the street cars and that a large portion of the cost of the improvement will be paid from bond issue funds voted by the city at large.

Director Brooks pointed out that if the present bill is killed by the Aldermen it will require at least another eleven months to bring a new measure up to the same legal status and in the meantime about 40 ft. on the south side of Olive Street for more than 2 miles would be filled with half-wrecked buildings, greatly depreciating values.

Real estate men who opposed the measure contended that the parkway would tend to decrease property values along the street.

Atlanta Cars in Merchandising Feat

Railway cars of Atlanta, Ga., played a big part in an advertising scheme introduced by the J. M. High Company at the recent 44th anniversary sale of that store. Thirteen cars of the Georgia Railway & Power Company were chartered and operated from the ends of thirteen main arteries of traffic between 8 o'clock and 10 o'clock on the morning of the opening day. Signs were hung on each of the cars inviting the shoppers and housewives to get aboard for free transportation. Wide publicity was given to the plan by the daily papers, which printed schedules for the bargain seekers.

Through a Motorman's Window

HOW simple are the duties of a motorman! All he has to do is to pilot his car through the mazes of down-town traffic and get back to the end of his run on time, with no passenger hurt or angered, no pedestrian scathed, no automobile jammed and his own ponderous vehicle unscratched.

Nobody has a kind word for the motorman. If a jaywalker gets in his way and is clanged at, the motorman is to blame. If a motorist gets in the way of a street car, the motorman is at fault. If a passenger arrives after the car starts or gets carried by a stop or is swayed against a neighbor by a quick application of the brakes, no one but the motorman is responsible.

The inflexibility of street cars in traffic is a factor too often overlooked in the consideration of congestion. A street car cannot dodge; cannot detour around an obstruction. The motorist who acts the grasshopper, gets out of line and into the car track may hold up 60 passengers merely to save a few seconds for himself. The driver who deliberately pulls in front of a car, knowing the motorman will not hit him if he can help it, does the whole brotherhood an injustice.

Blaming one's own faults on the motorman does not help solve the traffic problem. It is merely an index of one's own folly. The constant wonder is not that an occasional automobile is nipped by a street car but that such accidents occur so seldom. Behind a motorman's window is a good place to study highway foibles. The urban world passes in jumbled panorama outside.—*Cleveland Plain Dealer.*

Big Brother Club Hears Words of Wisdom

School boys and girls of Boston, Mass., have again been warned by Edward Dana, general manager of the Boston Elevated Railway, of the dangers incident to their going and returning from school. Over the radio on Oct. 22 he addressed the Big Brother Club and offered some statistics on the results of their co-operating with the conductors and motormen last year in avoiding accidents. He said that as far as the Boston Elevated was concerned only 59 instances were recorded during the past twelve months of children under 14 years of age injured while stealing rides on cars or being struck, compared with 85 for the previous year.

Memphis Railway Claims Right of Discipline

In a bill filed against the Amalgamated Association, the Memphis Street Railway, Memphis, Tenn., recently sought a judgment of the Chancery Court on the company's right under the existing contract to discipline its union carmen. A difference between the company and the men is that the latter claimed the matter should be submitted to arbitration, while the company claimed that the first clause in the contract, signed as of April 1, 1926, gives it this right. The union questioned the propriety and justice of this discipline and demanded arbitration. The company is asking the court to construe the terms of contract. If the court so rules the company will submit to arbitration. In this event, should the arbiters hold that the men suspended recently have been dealt with unjustly, the company has agreed to reinstate them with pay for time lost.

Pedestrians May Go and Stop on Signal

It is expected that stop and go signals for pedestrians will be adopted if the recently completed traffic survey of the Association of Commerce is approved by the City Council of Chicago. The preliminary statement said that the "hodge-podge intermingling of scampering pedestrians and slow-moving honking vehicles" caused a "chaotic condition" calling for "adequate treatment." Miller McClintock, director of the survey, said that thus far the pedestrian had been left to follow his own inclination, but that the time had come when all classes of street users had to be regulated if vehicles were to move faster and pedestrians be protected.

A count made by Mr. McClintock and his assistants on a typical Saturday last May showed 195,930 persons crossed State and Madison Street intersection between noon and 5 o'clock, 49,250 pedestrians an hour. It was his belief that this huge flow of traffic, not protected or regulated, resulted in a wild scramble of pedestrians and a retardation of vehicles. According to the survey in that fashion an average of 1,000 persons a block cross loop streets at the noon hour.

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Ten-Mile Electrification Planned in Seattle

The Chicago, Milwaukee & St. Paul Railway plans to electrify 10 miles of its main line between Seattle and Black River Junction in Washington, over which steam trains are now being operated. The work will cost $250,000 and is expected to be completed within four months. The improvement will speed up service, as it will be possible after the change to run the electric locomotives into Seattle, eliminating delays incident to the change from steam to electric propulsion at the junction.

Commission Has Fresno Case

Mooted questions in Fresno, Cal., were aired before the Railroad Commission on Oct. 25, with the result that Commissioner T. H. Louttit took under advisement both the increased fare issue and the extension of the lines of the Fresno Traction Company to the Fink-Smith district. The Fresno Traction Company applied early in the present year to the Railroad Commission for an increase in its present 6-cent fare rate, alleging that it had operated at a loss of $4,056 during 1925. The commission first set the application for hearing on June 1 before Commissioner Brundige at Fresno, and intended to consider at the same time the complaint of the city of Fresno to require the utility to extend its tracks to the Fink-Smith district.

News Notes

One-Man Cars on Another Interurban.—In order to maintain the present high standard of service on its interurban line between Sheboygan and Elkhart Lake without increasing fares or curtailing service, the Wisconsin Power & Light Company has put new one-man cars into service.

Cash Fare Raised in Fort Dodge.—After operating its bus line for a year at an 8-cent cash fare, the Fort Dodge Transportation Company, Fort Dodge, Iowa, has found that a higher revenue is necessary in order to show a profit, and the City Council has authorized the company to increase the rate 2 cents. The new fare went into effect on Nov. 1. The company will not increase its ticket rate of sixteen for $1.

One-Man Cars in Operation. — The Springfield Street Railway, Springfield, Mass., has put one-man cars on its lines to Indian Orchard and Ludlow. The change became effective Oct. 18. The cars start from Victoria Square instead of from Main and Lyman Streets, as formerly.

Lives Insured. — Employees of the Northern States Power Company, Eau Claire, Wis., who have been with the organization six months or more are to receive the benefits of a group life insurance plan which the company has adopted. The policies will be carried by the Equitable Life Assurance Society, according to an announcement of Vice-President R. F. Pack.

Safety Records Discussed. — Motormen and conductors forming the Terre Haute, Indianapolis & Eastern Traction Company unit of the national safety organization of electric lines met recently in the carhouse of the company at Terre Haute, Ind., to honor the men who had made the best recent safety records. In speaking of the results on the Terre Haute lines J. I. Beals, superintendent, said that from June 1 until Aug. 31, this year, the mileage made by the city cars was 854,400, with an average mileage of 7,600 miles per accident. The total mileage on the interurban lines in the same time was 225,000, with an average of 16,000 miles an accident. In September the main line in Terre Haute won by having only five accidents to the 60,000 miles covered; the southeast bus had only one accident in covering 21,500 miles and the Sullivan interurban division had only two accidents in its 28,400 miles.

More About New Cars.—On blotters 6 x 2½ in. the Indiana Service Corporation, Fort Wayne, Ind., has told the story of its "Wabash Valley Flyers" and "Hoosierlands." A picture shows the luxurious cars which leave Fort Wayne daily and make connections at Peru and Lafayette. Patronage is sought on the de luxe cars which operate via Bluffton, Muncie and Anderson. This descriptive blotter is supplemented by an illustrated folder which gives in detail the schedule of these cars, including the parlor-buffet schedule. The new equipment includes five passenger motor cars and two parlor buffet cars built by the St. Louis Car Company at a cost of $35,000 each.

Changes Station Names as Co-operative Measure. — At the suggestion of residents of neighboring communities the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., has changed the names of two of its new stations on the Skokie Valley route. The stations affected and originally named in the $1,000 prize contest of the North Shore Line early this year are the Skokie Manor station, which is now known as Deerpath, and the Wau-bun station, which is changed to Northfield. Deerpath station is located on Deerpath Avenue, just west of Lake Forest, Ill. Northfield station is situated at Willow Road, adjoining the city of Winnetka, in Northfield township. The new names are considered better suited to the convenience of the traveling public.

More Light in Georgia "Snap Shots." —With the October issue, *Snap Shots*, the official paper of the Georgia Railway & Power Company, Atlanta, Ga., makes its début as a twelve-page edition. It is expanding from eight to twelve pages in order to publish news concerning the members of the many companies associated in the Georgia group of the Southeastern Power & Light Company. Heretofore *Snap Shots* has been devoted exclusively to the activities of the Georgia Railway & Power Company. Other properties included in this group are the Central Georgia Power Company, Athens Railway & Electric Company, Georgia Southern Power, Rome Railway & Light Company and the Mutual Light & Water Company. The co-operation of all employees is asked for the November issue of *Snap Shots*.

Foreign News

London Railway Men Return

During the last few weeks a delegation of four officers of the Underground Electric Railways, London, England, has been visiting this country to study the latest developments in electric railway and bus practice. In sending over a delegation this year the London company is repeating a practice which it has followed for several years past, though omitted last year. Each year a different group of officers takes the trip, timed so that they can attend the annual convention of the American Electric Railway Association, of which the London company is a member. Those in the party this year were A. V. Mason, deputy general manager; E. T. Brook, superintendent of rolling stock, and J. B. Mackinnon, superintendent of schedules, all of the London Underground, London, and G. Rushton, production engineer London General Omnibus Company, an allied company.

During the trip the party visited Buffalo, Cleveland, Toronto, Detroit, Chicago, Pittsburgh, Washington, Philadelphia, Newark, Boston and New York. The members returned to England on Oct. 30. While in this country they made their headquarters in the office of B. A. Hegeman, Jr., of the National Railway Appliance Company, New York. Mr. Hegeman is representative in this country of the interests of the Underground Electric Railways. On the eve of their departure Mr. Hegeman honored the visitors with a farewell dinner at the Lotos Club, at which a number of prominent electrical railway men in New York were present.

New Electric Line in Spain Completed

A new electric railroad 23 miles in length, known as the Urola, has recently been completed between Zumarraga and Zumaya. The necessary power is supplied in the form of 30,000-volt, three-phase alternating current from the power station of the Sociedad Hidro-electrica Iberica and is converted to 1,500 volts of continuous current at Azpeitia by means of two sets of transformers and mercury rectifiers. The rolling stock consists of seven motor freight cars. Each vehicle is provided with four 75-hp. motors at 1,500 volts for traction purposes. A converter is installed on each vehicle to enable the controller, the brakes and the lighting to be operated at 110 volts.

British Pre-War Halfpenny Fares Not to Be Reinstated—Restoration of the halfpenny fares in effect in London before the war on short routes of the tramway lines has been abandoned. It was estimated, after consideration by the highways committee of the London County Council, that their reinstatement at this time would result in a yearly loss of about £420,000, unless the passengers increased 10 per cent at the same time.

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Recent Bus Developments

Another Jitney Respite

Local Court Acts in Operators' Behalf, but Ruling by Supreme Court Is Expected Soon

Operators who have been running their jitneys unmolested in the city of Detroit since an injunction ended the harassing steps taken by the Police Department and other city officials have received a further respite from the State Supreme Court. That body has upheld an order issued by Justice John E. Bird in July last enjoining the city from enforcing the jitney ordinance pending a decision by the United States Supreme Court on the merits of the case. The writ of error was obtained by the Red Star Motor Drivers' Association last summer while the majority of the members of the State Supreme Court bench were on vacation.

VACATION ORDER IN CASE OF DELAY

According to the decision, the right is reserved to the defendant in the case, the city of Detroit, to apply for the vacation of the order in question if there is unusual delay in presenting the case to the United States Supreme Court. It is expected that the case will be disposed of in a few months.

Offensives by the city will include filing a motion with the U. S. Supreme Court to advance on the calendar the hearing on the writ of error issued by Justice McReynolds and petitioning the State Supreme Court to fix a bond of from $250,000 to $500,000 on the jitney associations. It is claimed that the D.S.R. has estimated its losses at an amount such that if a decision by the U. S. Supreme Court is not returned until March, five months hence, the bond should be $500,000.

The corporation counsel's office cited that the State Supreme Court in upholding the injunction against the jitney ordinance quoted an opinion from Chief Justice Taft in which it was ruled that a stay of proceedings should be granted in such cases. It is contended that if court had gone still farther in the same decision it would have seen that Justice Taft stated that when such a stay was granted a bond should issue.

Certain points in the case are reviewed briefly in the court decision. On Dec. 29, 1923, a decree was entered in the Circuit Court retraining the city and certain of its officers from enforcing the so-called jitney ordinance. The defendants appealed to the State Supreme Court and the case was argued on Jan. 6, 1926. On April 14 following the Supreme Court reversed the decree and sustained the validity of the ordinance. This decision was not unanimous. On July 1 a motion for a rehearing was denied. On July 24 a writ was issued by the Supreme Court of the United States and the requisite bond was approved and filed, the writ having been allowed by Justice McReynolds. To this writ return was made Aug. 12.

On July 26 a petition for a stay of proceedings was filed in the Supreme Court of the state and this court, being on vacation, the chief justice granted the prayer of the petitioners. The city then asked the court to vacate such order.

It is further stated that it will not be necessary to pass on the contention that the order made by the chief justice alone is void, because if it is a nullity, as contended by the corporation counsel, the application of the plaintiffs for a stay of the court's decree is before the court now in session and should be disposed of.

The bill filed in this case is classed as an injunction bill pure and simple. The decision states that should the plaintiffs' contention be sustained in the United States Supreme Court, irreparable injury would be suffered by the failure to stay the decree of the State Supreme Court.

It is further cited that the allowance of the writ by Justice McReynolds is *prima facie* evidence that a meritorious federal question is involved. The State Supreme Court does not overlook the defendants' claim that the writ was allowed upon the injection of issues not urged in the trial court or the State Supreme Court. Whether such issues were injected and whether the Supreme Court of the United States will consider such issues are questions for that court to determine, not for the State Supreme Court.

New Waiting Station for Milwaukeeans Erected

A new type of waiting station which will afford greater convenience and comfort to street car and bus passengers of the Milwaukee Electric Railway & Light Company has been erected at the intersection of North and Lisbon Avenues at 47th Street, Milwaukee. This shelter, the first of its kind in Milwaukee, consists of a glass-enclosed structure, triangular in shape, placed on a raised concrete platform which forms a safety island in the center of the intersection. The roof is covered with red Spanish tile and has ornamental copper crusting. The interior is lighted at night.

Commission Permits Buses on Any Nashua Street

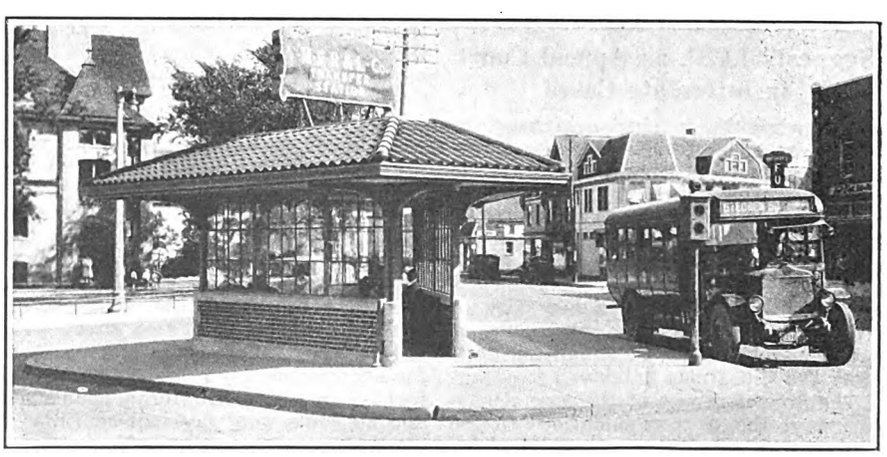
An order made by the Public Service Commission of New Hampshire on Oct. 28 on application of the Nashua Street Railway and the associated Nashua Transportation Company is probably the broadest and most liberal ever issued to an electric railway operating buses.

The commission specifies that service outside the city of Nashua is to be conducted over certain routes in the name of the Nashua Transportation Company, but the order grants to the Nashua Street Railway the right to run buses over any street within Nashua at its own discretion. The only stipulations are that schedules of routes must be filed with the Public Service Commission and that residents of Nashua shall have the right to appeal to the commission in cases where requests for service in certain sections are not granted by the company.

It is the opinion of the commissioners that, under ordinary circumstances, a company starting bus service in a city should be permitted to decide for itself what streets may best be included in convenient and profitable routes.

Municipal Buses in Buffalo Quit

Operation of the two municipal bus lines established last July by Mayor Frank X. Schwab of Buffalo, N. Y., was suspended on Oct. 30 owing to the serious illness of the Mayor. Orders to discontinue the lines were issued by John L. Kelly, the Mayor's secretary. The four other members of the City Council have no knowledge of the contracts between the Mayor and the companies which supplied the service. Recently when the Mayor refused to reveal details of the municipal bus service and its costs the Council rejected the Mayor's proposal to enter into agreements with several other companies to operate additional lines. It was said that it may be a month or more before the Mayor is able to return to his office. The South Buffalo-Main Street line used buses under an agreement with the manufacturer of the buses while the Delaware Avenue-Richmond-North Park route used buses under a lease arrangement with John C. Montana, who operated the Buffalo-Niagara Falls route last summer.



An Escape from the Elements Afforded Milwaukee Passengers

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Massachusetts Commission Frowns on Double-Deck Vehicle

The Public Utilities Commission of Massachusetts, after carefully considering the operation of double-deck buses by the Boston Elevated Railway, has prohibited their use. The elevated has been operating a double-deck bus from the Fenway to Bowdoin Square on a temporary certificate. In its finding the commission states the bus is longer than the Legislature proposes to permit. Moreover, the commission found there was not suitable means of exit, but the elevated agreed to provide an emergency door. With this in use the commission found that passengers leaving the upper deck would be checked by the use of these emergency doors and voted them of little or no use as a means of safety.

The finding, in part, reads:

Buses do catch fire, and we know that buses do capsize. Instances have occurred in this state within a year where buses have caught fire, in one of which serious loss of life resulted.

Instances have also occurred where there have been accidents in which a bus has been overturned. We hestitate, therefore, notwithstanding the means adopted to insure the safety of the passengers, to approve the operation of such a vehicle unless there are reasons for its operation which outweigh possibilities of danger to the passengers.

It has been urged that this type of bus is in successful operation in New York, Philadelphia, Cleveland and other cities. Time may demonstrate that our apprehensions in relation to their safety are not justified. If such should be the case, and it becomes clear that it is not the intent of the Legislature that motor vehicles operating regularly upon the highways are to be limited to 28 ft. in length, application for authority to operate such vehicles may be renewed.

Reading Railroad Modifies Its Plan

After the Reading Company, Philadelphia, amended its application of Oct. 29 to operate buses between Doylestown and Norristown and asked permission to run the buses between Doylestown and Lansdale, a distance of 10 miles, the Philadelphia Rapid Transit Company and the Lehigh Valley Transit Company withdrew their opposition. Thereupon, the application was granted. E. D. Osterhout, passenger traffic manager, said that passenger trains were being operated on the Doylestown branch of the system at a loss. The company desired to economize by withdrawing some of the trains and substituting buses.

Suggests I.C.C. as Appeal Court in Interstate Cases

Following the conclusion of hearings held from coast to coast by the Interstate Commerce Commission since the June adjournment of Congress to consider the matter of bus and truck regulation, the commission has given parties at interest until Nov. 15 in which to file briefs. This means that conclusions of the commission as to the necessity of federal control and the character of such control will not be submitted until after the Christmas holidays.

The annual report of the commission carrying the recommendation to be made to Congress for railroad legislation has been prepared and will be sent to the printer before the briefs are filed in the bus case.

Efforts to vest complete jurisdiction over highway traffic in the commission have been practically abandoned. Considerable support has centered, however, around the proposal of the Bus Division of the American Automobile Association for an innovation in regulation of interstate commerce by the States through their regulatory commissions. Proponents of the plan claim that it is constitutional and will solve the difficulties arising from lack of any form of regulation of interstate traffic.

The Bus Division proposes that in application of the law the Interstate Commerce Commission would retain final authority and that it would constitute an appeal court in cases brought up from the state commissions.

Intervention of I.C.C. Sought in Pennsylvania Case

Counsel for the Schuylkill Railway and the Schuylkill Transportation Company, Girardville, Pa., has filed an appeal to the Interstate Commerce Commission at Washington, D. C., to prohibit the Reading Company, a steam carrier, from operating bus service in Pennsylvania, except under regulations by the commission.

The appeal is said to be based, among other things, upon a decision of the United States Supreme Court. As recently as last May Justice Brandeis is quoted as having stated:

A steam line operating in both interstate and intrastate commerce cannot engage in losing local (intrastate) business "not required for public necessity and convenience," and thus create "prejudice to interstate commerce" derived from profitable high rate interstate passenger and freight business.

Numerous applications for the right to operate buses have been filed by the Reading Company at Harrisburg for approval of the Public Service Commission. Governor Pinchot recently refused to grant a charter for the Reading subsidiary, under which the company proposed to establish bus service in 24 counties of the state, including territory served by the two Schuylkill companies with both railway and bus for a number of years.

South Shore Bus Establishes Commutation Rates

Further deployment of modern merchandising methods in the co-ordinated transportation business is instanced in the recent announcement by the management of the Shore Line Motor Coach Company, joint subsidiary of the Chicago, South Shore & South Bend Railroad and Gary Railways, that bus rates would be reduced nearly 40 per cent in favor of the frequent rider between Gary, Ind., and downtown Chicago.

A new ten-ride bearer commutation ticket rate of $5.50, and proportionately lower rates from intermediate points, was established by the company on Oct. 22 between these two cities. The tickets are transferable and are good for six months from date of sale. The former rate of $1.70 for a round trip and 90 cents one way will continue to apply, however, on all single and round trip tickets to the Chicago "Loop."

The commutation tickets are for use between Gary and Chicago on the Shore Line Motor Coach Company's fleet of new 29-passenger Fageol Safety coaches operating from Grand Rapids, Benton Harbor, Michigan City, and Gary to Chicago. The rates are almost identical with the commutation fares established on Sept. 16 by the Chicago, South Shore & South Bend Railroad, which closely parallels the coach route, between Chicago and Gary.

Bus Changes in Cincinnati.—The Oakley bus line of the Cincinnati Motor Bus Company has been taken over by the Cincinnati Street Railway, Cincinnati, Ohio, while the Norwood line of the same company will be operated by the City Transit Company. Approval of the recent application for the sale of these lines was announced recently by E. D. Gilman, Director of Public Utilities. The Cincinnati Street Railway has also taken over the operation of the Coney Island line of the Cincinnati Motor Bus Company, which will continue to operate only its Erie Avenue-Madisonville line.

End of Summer in Ottawa.—The Ottawa Electric Railway, Ottawa, Canada, recently discontinued its regular sightseeing motor coach trips. No further regular trips will be operated until next spring. The company will, however, supply chartered motor coach service.

Bus Line Extended.—A certificate has been granted by the California Railroad Commission to the Key System Transit Company to operate a California bus service between a point at the intersection of High Street and East Fourteenth Street in the city of Oakland, and a point at the intersection of Ygnacio Avenue and High Street, and intermediate points. This means virtually an extension of its Fernside bus line. The Key System has also been authorized by the Railroad Commission to operate a bus service as an extension of its Thousand Oaks Street car line in the city of Berkeley, Cal. This route will serve a section of the East Bay which is growing rapidly and has had inadequate transportation.

Bus as Transport Factor Grows in Significance.—The title of Electric Railway Section of the Wisconsin Utilities Association has been changed to Transportation Section as it carries a wider and fuller description of the functions of the section.

Company Operates on Temporary Permit.—The Scranton Railway, Scranton, Pa., has secured temporary permits from the Public Service Commission to discontinue operation of its railway from Wilson Creek to Forest City, and to operate buses between Forest City and Carbondale. There was a hearing on the permanent abandonment and application for the operation of buses in Scranton on Oct. 21. The commission has reserved decision.

Would Extend Bus Service.—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has applied to the city for permission to install auxiliary bus service on the south side. This line would extend from National Avenue and Twenty-second Avenue south to Forest Home Avenue.

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Financial and Corporate

Improvement on Third Avenue

$37,893 Net Income Compared with $102,138 Loss a Year Ago—Place of Bus Defined

For the fiscal year ended June 30, 1926, the operating revenue of the Third Avenue Railway System, New York, N. Y., was $14,666,998, an increase of $124,489 over the fiscal year ended June 30, 1925. The operating expense was $11,102,520, or a decrease of $64,332 over 1925. These facts were disclosed in the annual report to the stockholders of the company.

STATEMENT OF INCOME OF THE THIRD AVENUE RAILWAY SYSTEM FOR YEARS ENDED JUNE 30, 1926 AND 1925

	1926	1925
Operating Revenue:		
Transportation	$14,222,084	$14,111,026
Advertising	150,000	150,000
Rent of tracks and terminals	24,399	25,668
Rent of buildings and other property	208,102	189,147
Rent of equipment	50,152	50,980
Sale of power	12,259	15,686
Total operating revenue	$14,666,998	$14,542,509
Operating Expenses:		
Maintenance of way and structures	$2,256,726	$2,408,682
Maintenance of equipment	1,699,862	1,770,359
Depreciation accruals	*399,753*	*650,936*
Power supply	917,503	981,156
Operation of cars	4,872,190	4,985,676
Injuries to persons and property—expended	1,174,784	1,056,056
Injuries to persons and property—reserved	*31,903*	*2,096*
General and miscellaneous expenses	613,108	617,952
Total operating expenses	$11,102,519	$11,166,851
Net operating revenue	$3,564,478	$3,375,657
Taxes	1,036,624	1,044,377
Operating income	$2,527,854	$2,331,279
Interest revenue	197,434	252,532
Gross income	$2,725,288	$2,583,811
Deductions from gross income:		
Interest on first mortgage bonds	$513,080	$541,607
Interest on first refunding mortgage bonds	879,620	879,620
Interest on adjustment mortgage bonds	1,126,800	1,126,800
Track and terminal privileges	18,942	18,418
Miscellaneous rent deductions	8,499	8,293
Amortization of debt discount and expense	22,451	22,451
Amortization of limited franchises	7,469	8,581
Sinking fund accruals	33,480	33,480
Bus operation	16,783	.....
Miscellaneous	60,268	46,697
Total deductions	$2,687,395	$2,685,950
Net income	$37,893	*$102,138*

Italics denote deficit.

S. W. Huff, president of the company, called the attention of stockholders to the results of expenditures for equipment, which had been mentioned in the report of the year previous, as necessary for the company to make in order to stop the downward tendency in receipts. These expenditures had resulted in increased receipts and decreased operating expenses, with a substantial improvement in the financial condition of the company.

It was his belief that in view of the uncertainties that confront the local surface railways, it was important that the companies of the system be prepared, through a strong cash position, either to buy buses for the purpose of engaging in such transportation in a large way or to contend with a certain degree of bus competition. He said that where the company could consistently do so, it had applied for franchises for bus operation which would co-ordinate with trolley lines and serve as feeders rather than as competitors. By such co-ordination the public would receive the best possible service at the lowest cost, and the investment in existing facilities would be protected.

Review of Financial Affairs

President Huff went into detail on the financial status of the company for many years past. He said that there had been a large growth in revenue, but little territorial expansion of the system. This was remarkable when it was considered that a large part of the system served territory in Manhattan which for a generation had been fully developed by a type of building most desirable for supplying travel for surface transportation, and that so large a part of the operation in Manhattan had become congested with street traffic as to make it very difficult to operate cars in the streets with any degree of speed and regularity.

He said "the steady increase in revenue of the Third Avenue Railway System has been due to the vision of its early directors in determining not to confine its operations to Manhattan alone, but to extend the operations of the system into the then undeveloped territory north of the Harlem River." This seemed a perilous venture at that time, but the territory had grown rapidly until now it furnished more than half of the total revenue of the system, and all of its increase in revenue. During the past fiscal year there was a loss of $130,810 in operating revenue in the territory south of the Harlem River with an increase of $255,299 north of the Harlem River.

Westchester Situation Important

The situation in White Plains and Westchester vicinities was reviewed in the report. According to the report the Third Avenue Railway's position at the county seat of Westchester County is an important move for the system and only another step in the path of the policy of progressive but conservative development of adjacent territory. This extension, according to the report, into adjacent territory should protect not only the territory already served, but should mean much for the future prosperity of the company's system.

The system, in addition to all the trolley lines in the Bronx, includes all of the lines in the southern portion of Westchester.

Another Step in St. Louis Reorganization

The committee representing holders of bonds of the St. Louis & Suburban Railway, St. Louis, Mo., on Oct. 26 filed an amended bill of complaint in the United States District Court in St. Louis, Mo., preparatory to formal foreclosure of its mortgage on the properties now a part of the United Railways. The filing of this amended petition is another step toward the final reorganization of the United Railways.

The amended bill asks that the court direct the United Railways to pay all money due under the Suburban mortgages and in default of such payment to ascertain the exact properties covered by such mortgages, that the mortgages be declared a first lien and that the properties covered by them be sold for payment of the bondholders. It is anticipated that hearings will be held on the application before a special master to determine the extent and value of the Suburban properties.

Traffic, Wage and Fare Figures

Electric railway passenger traffic recovered from the slight slump reported for the month of August. During the month of September there was an increase in traffic, thus continuing the record of traffic increase which has been maintained throughout the whole of 1926, with the exception of the month of August.

The number of revenue passengers, including bus passengers, reported to the American Electric Railway Association by 207 companies for the month of September, 1926, compared with the similar month of last year, is as follows:

September, 1926	755,574,986
September, 1925	748,340,801
Increase, per cent	0.97

Average cash fares in cities of 25,000 population and over:

	Cents
Oct. 1, 1926	7.7056
Sept. 1, 1926	7.7056
Oct. 1, 1925	7.5996

Average maximum hourly rates paid motormen and conductors in two-man service by companies operating 100 miles or more of single track:

	Average Hourly Rate, Cents	Index Number 1913 = 100%
Oct. 1, 1926	56.88	208.73
Sept. 1, 1926	56.87	208.70
Oct. 1, 1925	56.25	206.42

Trustee Bids in Pennsylvania Line

Track, overhead and other similar property of the Philadelphia & Easton Transit Company, Easton, Pa., was recently sold at public auction for $51,000. The line, 32 miles long, was built at a cost of more than $1,000,000. It was considered the most picturesque road of its kind in eastern Pennsylvania. It has been in constant operation since Sept. 13, 1904. The purchaser was Augustus H. Sickler, Philadelphia, acting for the bondholders. The real estate and other property of the company will be disposed of at private sale. A bus line will be operated between Doylestown and Easton.

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Public Service to Take North Jersey Rapid Transit

Application for the approval of the sale of the property of the North Jersey Rapid Transit Company has been made to the Public Utilities Commission by Henry H. Parmelee, receiver of the railway. The sale price of $200,000 has been approved by the Court of Chancery. The company operates cars between East Paterson and Suffern. It went into the hands of a receiver in 1912 on application by the Hamilton Trust Company, Paterson, trustee under a mortgage made in 1910 to secure an issue of $800,000 of bonds. The sale of the road to the Public Service Railway has been approved by the bondholders and by the trustee.

Refunding Operation Planned in Worcester

The Worcester Consolidated Street Railway, Worcester, Mass., has up for discussion several important problems in connection with the rehabilitation program. The directors have asked the stockholders for authority to abandon unprofitable lines, to sell any of the track, overhead work and other equipment of these lines.

The stockholders will also be asked for a decision regarding the creating of a single blanket mortgage under which bonds could be issued to take up securities now outstanding. The mortgages referred to are listed as follows: A $1,200,000 mortgage of the Worcester Consolidated Street Railway, dated Nov. 1, 1907; a $500,000 mortgage of the Worcester & Southbridge Street Railway, dated Sept. 1, 1902; a $40,000 mortgage of the Uxbridge & Blackstone Street Railway, dated Oct. 1, 1907.

It is unlikely that any definite move will be made now on the first of these proposals, but the directors, in seeking authority to act, merely wish to be vested with the authority to deal with any lines that continue unprofitable without calling a special meeting of the stockholders on each occasion.

Story of Their Company Told to New Jersey Stockholders

"Public Service Review—1926," a 72-page book in two colors, which explains by text and by pictures some of the many uses of the utility services furnished by the subsidiary companies of Public Service Corporation of New Jersey, is being sent to the corporation's stockholders.

This is the fourth in the series of "Reviews." The first, in 1923, outlined the historical development of Public Service, the book for 1924 told of the physical properties necessary to furnish gas, electric and transit service to most of the people of New Jersey and the book for 1925 was a record of construction and extension projects undertaken by Public Service.

The present volume tells of the manifold applications of electrical energy, the increasing use of gas as an industrial fuel and the basic service performed by local transportation in community development.

The book also presents the consolidated balance sheet of the corporation and its subsidiary companies and other statistical tables showing the operations of Public Service companies.

Issue of Notes Approved.—Issuance of $105,000 of equipment notes by the Central Transportation Company, Trenton, N. J., a subsidiary of the Trenton & Mercer County Traction Company, has been approved by the New Jersey Board of Public Utilities Commissioners. The proceeds are to be used in the purchase of buses.

Operation Statement Shows Improvement. — For the nine months period ended Sept. 30, 1926, the operating revenue of the International Railway, Buffalo, N. Y., was $8,095,985, against $7,980,166 in 1925. Operating expenses and taxes decreased from $6,950,729 to $6,843,938 for the nine months period of the current year. After the consideration of income deductions there remained a net income of $194,611 for the nine months of 1926, against a deficit of $92,271 a year ago.

Bond Issue Authorized.—The Indiana Public Service Commission has authorized the Evansville & Ohio Valley Railway, Evansville, Ind., to issue $56,500 in first refunding 5 per cent bonds to be sold at not less than 87½ per cent of par. Vice-President Millican said the money would be used for general improvements.

Surplus Lower.—For the period from Jan. 1 to Aug. 31, 1926, the gross earnings of the Lake Shore Electric Railway Company, Cleveland, Ohio, were $2,152,788, against $2,128,783 for the 1925 period. Operating expenses and taxes increased from $1,735,551 to $1,856,273. After the consideration of interest, there was a surplus in 1926 of $5,888, against a surplus for the period from Jan. 1 to Aug. 31, 1925, of $102,582.

Bond Payment Affects Terminal Ordinance.—Further delay in consideration of the application of the Pacific Northwest Traction Company for enactment of a franchise ordinance to permit construction of a new terminal on Stewart Street, Seattle, Wash., is the result of the refusal of A. W. Leonard, president of the Puget Sound Power & Light Company, to reduce payments on the railway purchase bonds or to accept bonds in payment of the city's share of the 1919 railway tax. The City Council utilities committee has asked these two concessions in return for enacting the franchise ordinance. Mr. Leonard offered to accept the amount in five equal payments.

Encouraging Report in Buffalo.—The International Railway, Buffalo, N. Y., in the nine months ended Sept. 30, 1926, earned a net income of $194,611 after all operating expenses, taxes and deductions, compared with a deficit of $92,271 in the corresponding period of last year. Operating income was $115,819 greater than in the nine months period last year and operating expenses were $106,791 lower than a year ago. Increased use of one-man cars and greater co-operation on the part of employees are said by the company to be largely responsible for this favorable showing.

Loss in Tacoma.—Figures showing that the Tacoma Railway & Power Company, Tacoma, Wash., has lost more than $500 a day on an average during the month of September are given in a recent combined statistical report to the City Council by the Tacoma Railway & Power Company and the Pacific Traction Company. The figures show that September's loss was $15,881 and that the loss has been $42,127 for the three months since cash fares have been 8 cents and tokens fifteen for $1.

Hears Abandonment Petition.—The Public Service Commission on Oct. 26 held a hearing on the petition of the Hudson Valley Railway, Glens Falls, N. Y., for approval of a declaration of abandonment of two portions of its line, Route 1, known as the Lake George-Warrensburg line, and Route 2, known as the Thomson-Greenwich line. Opposition was offered to the abandonment of the Thomson-Greenwich line, particularly by the Stevens & Thompson Paper Company and other paper manufacturing plants, on the ground that great inconvenience would be caused the residents of this territory if service were discontinued. There were no appearances noted from the village of Warrensburg. Testimony was offered by the railway to show that losses were increasing from year to year. The hearing was adjourned to Nov. 11, 1926, at the office of the commission in Albany.

Combined Revenues Show Gain. — While passenger revenues collected during September by the Madison Railways, Madison, Wis., showed a loss of $752 over the corresponding month in 1925, the combined railway and bus revenues, however, show a gain of $885 over September, 1925. Gross car and bus revenues for September were $31,011, compared with $30,125 for September of last year. Combined railway and bus revenues still continue, however, to fall below the four-year average of 1920-24. There were 452,670 railway and bus passengers in September, compared with 438,482 for the similar month last year, an increase of 14,188. Of this number, 410,792 were carried by the railway. This is 82,695 fewer passengers than the four-year average.

Deficit Increases. — For the two months ended Aug. 31, 1926, the total revenue from all sources of the Interborough Rapid Transit Company, New York, N. Y., was $8,534,419, a decrease of $1,112,695 over the corresponding period of last year. Expenditure for operating and maintaining the property increased $516,205. Taxes payable to the city, state and the United States increased $75,028. Rentals and other income deductions increased $27,788. The net result for the two months was a deficit of $2,095,845. This is $1,731,718 greater than the deficit for the corresponding period of last year. The comparison with last year is influenced by the strike during the month of July of this year, as well as the fact that in July of last year there was a lump sum payment of $770,000 on account of the new advertising contract, against which no similar payment was made to the company this year.

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Legal Notes

FEDERAL DISTRICT COURT. — *Unauthorized Action by City Not Within Federal Jurisdiction.*

The city of East St. Louis adopted an ordinance requiring the removal of certain track from the street, and the railway company took the case to the federal courts under the fourteenth amendment. The district court decided that under the amendment mentioned, if the enactment of the ordinance was within the authority granted to the city by the state, it became a matter of federal jurisdiction, but if the ordinance was not authorized under power granted by the state, such an act is not the act of the state and cannot be enjoined by a federal court. The remedy is by action in a state court. [13 Federal (Second), Rep., 852.]

CALIFORNIA.—*Duties of Motorman and of Automobile Driver to Avoid Collision at Street Intersection.*

While the duties of a motorman and of an automobile driver approaching an intersection are reciprocal, yet from the fact that the street car is confined to its tracks, it is the duty of the automobile driver to give way to its clear passage. When there is failure by an automobile driver to observe the approach of a street car and use ordinary care to avoid a collision therewith, in order that recovery be had, it must be shown that the motorman actually observed the automobile in time to avoid the injury, before the doctrine of the last clear chance applies. [Haber et ux vs. Pacific Electric Railway, 248 Pacific Rep., 741.]

GEORGIA.—*Contributory Negligence in Jumping Toward Street Car to Avoid Injury by Automobile Held Question for Jury.*

Where one who is confronted by a sudden and dangerous situation, or emergency, while signaling a street car to stop at a street corner, a regular stopping place, on account of an automobile approaching directly toward him, or other circumstances likely to impair his judgment or discretion, such person cannot be held as matter of law to be lacking in ordinary care. Whether such person, who, in such emergency, and in order to avoid being struck by the automobile, jumps toward the street car, and is injured thereby, is guilty of contributory negligence so as to defeat an action for damages is a question of fact for the jury to determine. [Bryant vs. Georgia Ry. & Power Co., 134 Southeast. Rep., 319.]

MASSACHUSETTS — *Improperly Registered Automobile Held to Be a Nuisance, Precluding Recovery by Owner for Personal Injuries.*

A married woman kept her automobile registered under her maiden name, although married two years and living with her husband. It was held that the statute requires a motor vehicle to be registered in the name of its owner and if it is not so legally registered, it is a nuisance on the highway. Hence, its owner is precluded from recovery in case of accident. [Bacon vs. Boston E.R. Co., 152 Northeast. Rep., 35.]

NEW YORK—*On Condemnation of Spur, Elevated Railroad Held Entitled to Compensation for Right to Impair Abutting Owners' Easements of Light, Air and Access.*

The city of New York condemned a spur of the Manhattan Railway (elevated) on East 42d Street about two blocks long. In the valuation proceedings, various factors were considered, including the claim of the city that the expense of operation of this spur exceeded its receipts, and that little, if any, traffic was lost because passengers would use a neighboring station, claims of the company for franchise value, easement of light, air and access to abutting property, etc. The courts held that the determination of compensation in condemnation cases is a judicial function and specified $25,000 for the franchise, $120,438 for the physical property removed, $80,000 for additional sums expended to reconstruct a neighboring station because of the removal, and $750,000 for the easement rights. [In re 42d Street spur of M. R., 216 N. Y. Supp., 34.]

NEW YORK—*Permit to Operate Buses Without Reservation of Right of Revocation, Granted by an Ordinance, Is a Franchise*

An ordinance of Oswego, passed May 25, 1925, granted a bus company the right to use certain streets for ten years, but on Jan. 11, 1926, a resolution canceling the permission was passed. The court upheld the position of the bus company, since the grant was one of which it could not be deprived without due process of law and without compensation. [Colonial Motor Coach Corporation vs. City of Oswego, 215 N. Y. Supp., 159.]

NEW YORK—*Duty of Driver of Stalled Truck on High-Speed Railway.*

Where the driver of a truck stalled at a crossing on the track of a high-speed railway remains in the truck for the purpose of saving it from destruction, though he has an opportunity to save himself, he cannot recover damages, although the same degree of care is not required of a man in an emergency that is otherwise demanded. [Fowler vs. International R. Co., 216 New York Supp., 558.]

NEW YORK—*Duties of Pedestrian Crossing a Plaza.*

In a plaza, which was not a regular crossing, a street car has paramount right of way. At such a place, a pedestrian should not assume that a slowly moving car will not pick up speed, and he must exercise increased vigilance if his view of an approaching car is obscured by a taxicab. If he saw the car coming, it is immaterial whether the warning gong was rung [Hinz vs. Eighth Avenue Railroad, 213 N. Y. Supp., 362.]

OHIO—*Rulings of Public Utilities Commission on Bus Certificates Upheld.*

In one decision, the Supreme Court of Ohio passed upon seven different rulings on bus franchises of the Public Utilities Commission. They involved the legality of certain rules of the commission, regarding time for filing applications and protests, power to determine whether certain service is necessary, etc. In all these cases, the rulings of the commission were upheld. [Cincinnati Traction Co. vs. Public Utilities Commission of Ohio, et al. and six other cases, 150 Northeast. Rep., 81.]

OHIO—*Revocation of Bus Certificates by Commission Held Unauthorized.*

The Public Utilities Commission of Ohio revoked the certificate of a bus operator on the ground that he had failed to operate his route. Actually, he had leased his equipment and the operation of the line to another man, but would receive all receipts less operating expenses and a fixed amount to cover the services of his agent or lessee. This was held not to constitute abandonment. [Small vs. Public Utilities Commission of Ohio, 150 Northeast. Rep., 37.]

TEXAS.—*Company Not Responsible for Intending Passenger Struck by Automobile.*

A city ordinance requires street cars to stop at the near side of crossings to receive and discharge passengers when any wish to board or leave a car. The plaintiff stood at such a corner near the track and signaled to an approaching trolley car to stop, but it did not do so. The passage of the car raised considerable dust, and the intending passenger was struck and injured by an automobile following the trolley car, driven by a person unknown to him. He brought suit against the railway company, alleging the injury would not have occurred if the car had been stopped as required by law. The court held that the failure to stop the car was not the proximate cause of the injury and that while it was the duty of the motorman to stop his car to take on and discharge passengers, it cannot be supposed he would anticipate that should he not do so an automobile might run against and injure a person presenting himself for passage. The protection of persons on the street from passing automobiles was not the purpose of the passage of the ordinance. Hence the company was not responsible. [Franklin vs. Houston Electric Co., 286 Southwest. Rep., 578.]

VIRGINIA—*Authority to Abandon Line —Paving Obligations on Abandoned Line.*

The State Corporation Commission has power to permit a discontinuance of street railway operation on particular lines where continued operation would result in confiscation. It is not obliged to order a valuation on all the railway properties to determine whether these particular lines have been operated at a loss. The question of the company's paving obligations on lines so abandoned is a moot question. [City of Hampton vs. N. N. & H. R.G. & E. Co. (two cases), 131 Southeast. Rep., 328-330.]

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Personal Items

C. J. Golden, Mine Union Official, on Pennsylvania Commission

The last vacancy in the Public Service Commission of Pennsylvania was filled on Oct. 29, with the appointment by Governor Pinchot of Chris J. Golden, Shamokin, president of District No. 9, United Mine Workers of America. Mr. Golden will fill the unexpired term of J. Henry Scattergood, which terminates July 1, 1929.

Mr. Golden has been a leading figure among the union miners of the anthracite regions for several years. He is also chairman of the Tri-District Board and the Anthracite Scale Committee. He played an important part in the conference between the operators and miners in the negotiations over wage and other disputes. Mr. Golden is also a member of the Anthracite Conciliation Board and of the International Scale Committee. His eight years membership on the Anthracite Negotiating Committee was cited by Governor Pinchot as evidence of Mr. Golden's fitness for the office.

The Governor has also recently named Richard J. Beamish for appointment to the commission. Mr. Beamish is a journalist now serving on the staff of the Philadelphia *Inquirer*.

Joseph G. Forsthove, district manager of the Illinois Power & Light Corporation at Quincy, Ill., has resigned to become manager of the Kewanee Public Service Company and the Kewanee & Galva Railway, Kewanee, Ill.

W. C. Bartels, recently made traffic engineer of the Wisconsin Power & Light Company, has been placed in charge of the newly created traffic department at Fond du Lac, Wis. The purpose of the new traffic department is to build up both bus and railway business, publish schedules and handle advertising.

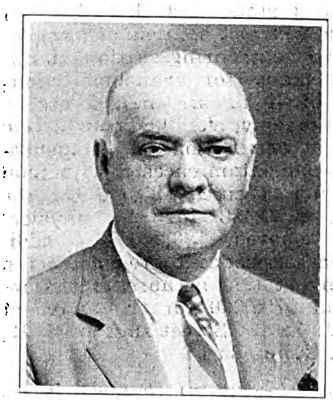
R. D. Morrison, formerly superintendent of the Wichita Railroad & Light Company, Wichita, Kan., has succeeded Joseph G. Forsthove as manager of the Quincy division of the Illinois Power & Light Corporation. For the past ten months Mr. Morrison has been in charge of the railway properties at Venice, Ill.

Harry P. Chandler has been appointed an executive assistant of the Public Service Corporation, Newark, N. J. He has been in the employ of the company and its predecessors for 36 years, and for the last seventeen years has been division agent of the central division for the electric and gas departments.

Charles A. Brann has been appointed superintendent of railways for the Eastern Texas Electric Company, Beaumont, Tex. In this capacity he succeeds Ralph A. Gill. Mr. Brann was formally superintendent of traffic for the Houston Electric Company and early this year was made superintendent and passenger agent of the Galveston-Houston Electric Company. He has also been identified with the El Paso Electric Company, El Paso, Tex.

New Duties Assumed by North Shore Officials

Appointment of John F. Egolf as general manager and Howard P. Savage as assistant general manager of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., was made Oct. 25 in an official announcement by the North Shore Line. This follows the recent appointment of Jesse S. Hyatt, former general manager, as chief engineering assistant to Bernard J. Fallon, vice-president in charge of operation of the four electrically operated railroads in the Metropolitan area, and of Bert W. Arnold, former assistant general manager, to have supervision of motor coach operations of the railroads. These changes were referred to briefly in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 30, 1926, page 829. Mr. Egolf's career has been reviewed previously in these pages.



J. F. Egolf

H. P. Savage

The new assistant general manager is an internationally known figure, having only a few days ago been elected national commander of the American Legion at the national convention in Philadelphia. He has been serving the Chicago Rapid Transit Company as general superintendent of maintenance of way. Mr. Savage entered the electric railway industry in 1913 as a track foreman on the Metropolitan West Side Elevated Railroad. Later he was promoted to track engineer of the "L" lines and then to the position which he held at the time of his new appointment. During the World War he secured a leave of absence and obtained a commission in the 55th Engineers, serving in France from July, 1918, until July, 1919. On his return to civil life he resumed his position with the Rapid Transit Lines, in accordance with the policy of all utilities under the management of Samuel Insull and associates, that every one who was in government service should be restored to his former position or a better one.

Greater Individual Responsibility Under New Pittsburgh Plan

A new form of supervision, whereby the entire structure of the operating department of the Pittsburgh Railways, Pittsburgh, Pa., will be solidified and systematized, has been approved and will begin to function within a few days. The plan is based upon a policy of making each executive assume entire responsibility for his own departmental activities.

The scheme generally reaches to the fundamentals of railway operations. In the new plan J. M. Loftis, veteran superintendent of transportation, will delegate to three superintendents under him the three distinct functions of car operation.

A. J. Fink, formerly assistant to the general manager, has been made superintendent of traffic and schedules.

Frank W. McCarthy, formerly assistant superintendent of transportation, has been named superintendent of car operation.

Another man, so far unchosen, will be made superintendent of trainmen's instruction.

All of these functions, in the transportation scheme, have so far been handled by Superintendent Loftis. The duties will now be definitely divided, as they represent three distinct units of operation.

The trainmen's instruction department will prepare the men and school them before and after they go on the cars, so that they will be equipped to handle cars safely and adequately, and at the same time recognize the value of salesmanship and courtesy.

Mr. McCarthy's department includes the actual operation of the cars and the supervision of the men at the carhouses.

Mr. Fink's department will keep the cars moving and see that the service is carried through. He will have to assist him a traffic engineer; a chief inspector, R. C. Rearick, formerly load dispatcher, and four district inspectors,

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F. A. McCarthy, William Fitzgibbons, Michael J. Carter and Earl Siggins, who were formerly inspectors but will henceforth be in charge of the inspectors of their respective districts.

Simultaneously with the reorganization of the transportation department, the mechanical departments of the company have been simplified and coordinated on a similar plan.

A. H. Leschke, formerly maintenance engineer, has been made operating engineer and will serve both transportation and maintenance departments.

Richard S. Bull, formerly shops superintendent, has been made superintendent of equipment, in charge of both the carhouse and shop departments.

Oscar Williams, formerly head of the way department, has been named superintendent of the way and structures, in charge of all track, rights-of-way, buildings and other structures.

M. W. Cooke, formerly chief of current control, is now also in charge of inclines, with the title of superintendent of power and inclines.

The plan will provide a closer supervision, with one man definitely at the head of each specialized branch of the railway's operation. Hitherto in the transportation department enlarged duties were handled through the appointment of an assistant. The new method groups all of the duties of the department and allocates them to one of the three new positions.

P. L. Smith is now treasurer of the North American Light & Power Company, Chicago, Ill. He has been affiliated with this company since 1916, when he assumed duties in the financial and accounting department. For three years he served as assistant secretary and assistant treasurer of all the companies in the North American Light & Power group.

Dr. Trumbower, chairman of the committee of highway finance of the highway research board, has resigned his position with the United States Bureau of Public Roads to become professor of transportation at the University of Wisconsin. One of his duties will be the development of a highway transport curriculum. He will continue his highway research activities.

Hal M. Lytle, vice-president of the Chicago, North Shore & Milwaukee Railroad, of the Chicago Rapid Transit Company and of the Chicago, Aurora & Elgin Railroad, was recently elected to a similar office by the directors of the Chicago, South Shore & South Bend Railroad and the Shore Line Motor Coach Company. The South Shore Line is a high-speed electrically operated railroad between Chicago and South Bend. The motor coach company is owned by the South Shore Line and the Gary Railways, in equal portions, and serves many of the cities served by the South Shore Line, as well as acting as a feeder for that railroad. The South Shore Line and Gary Railways are subsidiaries of the Midland Utilities Company.

W. D. Allen, general manager of the Hamburg Railway, Hamburg, N. Y., has assumed general managership of the company's new suburban bus line operating between Buffalo and Hamburg.

L. S. Ready Will Succeed C. O. G. Miller on Key System

C. O. G. Miller will resign as president of the Key System Transit Company, Oakland, Cal., on Jan. 1 and be succeeded by Lester S. Ready, chief engineer of the California Railroad Commission. The board of directors will meet on Nov. 12, at which time formal action will be taken on these changes.

It is announced that Mr. Miller is slated to stay as chairman of the board of directors.

Mr. Ready has been a railroad commission engineer for thirteen years, or since his graduation from the University of California. He has been chief engineer for 3½ years. He was an honor student at the university and is one of the most successful engineers on the Pacific Coast.

Mr. Miller has been president of the Key System since its organization. He issued a formal statement announcing his retirement from the presidency and asking the public to support and co-operate with his successor. Mr. Miller said that the new president will give his entire time to his office and will aid in helping to solve the East Bay transportation problem.

Paul S. Clapp Executive Head of N.E.L.A.

Paul S. Clapp, Washington, D. C., has been appointed executive head of the National Electric Light Association. This appointment follows the acceptance by the executive committee of the resignation of M. H. Aylesworth, managing director, who, as noted previously in the ELECTRIC RAILWAY JOURNAL, is to become president of the newly organized National Broadcasting Company, Inc.

Graduated from the Iowa State College at Ames in 1913 as a bachelor of science in electrical engineering, and ten years later attaining the professional degree of electrical engineer by award of his alma mater, Mr. Clapp has an excellent engineering groundwork for the post he is to assume. In September, 1913, he found his first employment in the Chicago factory of the Western Electric Company. In February, 1914, he advanced to the same company's engineering department in New York, remaining there until February, 1917.

In February, 1917, Mr. Clapp became assistant purchasing agent of the Allied Machinery Corporation, a subsidiary of the American International Corporation, remaining until September of the same year, when he was commissioned a first lieutenant in the Signal Corps of the United States Army and became division signal supply officer of the Thirty-third Division at Camp Logan, Tex. Later, while in charge of the field trial and responsible for the final engineering approval of all radio and telegraph apparatus for airplanes, tanks and field sets at the radio laboratories at Little Silver, N. J., he won promotion to a captaincy in the Signal Corps.

From December, 1918, to February, 1919, Mr. Clapp served on the peace commission in Paris as a member of the committee for the determination of damage in allied countries, and afterward he was affiliated with the American Relief Administration for Central and Southeastern Europe. After finishing that work Mr. Clapp for a year assisted in re-establishing cordial relations in the business interchange between American and western European industries and then sailed with Col. William Haskell and his original American Relief Administration party from New York to Russia.

Returning to this country, Mr. Clapp was appointed special assistant to the Secretary of Commerce in engineering, economic and commercial problems of the United States.

Jasper Johnson, general superintendent of transportation for the Aurora, Elgin & Fox River Electric Company, Aurora, Ill., was to leave on Nov. 1 to become manager of through lines and Michigan City, Wis., local lines of the Shore Line Motor Coach Company, operating between Chicago and Grand Rapids, Mich. Mr. Johnson has been with the Aurora, Elgin & Fox River property for sixteen years.

Obituary

F. M. Webster

Frank M. Webster, claim adjuster for the Grand Rapids Railway, Grand Rapids, Mich., for nearly 35 years, died suddenly on Oct. 30. Mr. Webster had not been in good health for some time, but he attended to his duties the day before he was stricken.

Mr. Webster entered the employ of the Valley City Street & Cable Railway, later consolidated with the Grand Rapids Railway, on July 17, 1891. After a year as conductor of a cable car he became claim adjuster, a position he had held since that time. In point of service he was one of the three oldest employees of the Grand Rapids Railway. In spite of the difficulties of his duties, Mr. Webster filled them with rare tact and diplomacy, always fostering the good will that existed between the public and his company.

Mr. Webster was born in Paris township, near Grand Rapids, in April, 1859. His parents were pioneers in western Michigan. He was a 32d degree Mason, being a member of York Lodge, F. & A. M., DeWitt Clinton Consistory, Scottish Rite, and Saladin Temple, Mystic Shrine.

John Larue Forkner, the first treasurer of the Union Traction Company of Indiana, Anderson, Ind., died recently. Mr. Forkner had lived in that city 60 years and had served respectively as sheriff, county auditor, councilman, city clerk and twice as Mayor of the city. He was 82 years old.

Edmond Alfred Hopkins, promoter of the Darby, Media & Chester Railway, now included in the system of the Philadelphia Rapid Transit Company, Philadelphia, Pa., died on Oct. 31 in that city. He was at one time connected in a managerial capacity with a railway property in London, England. He was 69 years old.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Akron Engineers Visit Timken Plant Via Northern Ohio Car

Forty-three members of the Akron Section, American Institute of Electrical Engineers, visited the plant of the Timken Roller Bearing Company in Canton, Ohio, on Oct. 16, to inspect the work of the various departments. Particular interest was manifested by the visitors in the steel mill, where five Heroult electric furnaces are in constant use to produce the highly refined alloy steel used in the manufacture of Timken bearings. The other departments of the steel mill and the bearing plant were also visited. Here more than 160,000,000 Timken bearings have been made. At the conclusion of the visit the experimental laboratories were shown.

In reaching the Timken plant the party used the new Northern Ohio Power & Light Company interurban parlor car. On this car the engineers were able to see Timken bearings in actual operation in the journal boxes.

Car Wheel Contract in Seattle Awarded

A contract for furnishing 200 33-in. and 100 26-in. car wheels for the Seattle Municipal Street Railway, Seattle, Wash., was awarded by the Board of Public Works on Oct. 15 to the Bethlehem Steel Company on that corporation's bid of $34 each for the 33-in. wheels and $24.50 for the 26-in. wheels. The contract involves an expenditure of $9,250. At this same session the Board of Public Works awarded a contract for furnishing 10 miles of No. 2/0 hard-drawn copper trolley wire for the railway department to the Pacific States Electric Company for $16.95 per hundredweight and 10,000 ft. of No. 8 arc duplex two-conductor cable to the North Coast Electric Company for $65 per thousand feet.

Ohio Brass to Have New Office Building

Much-needed larger working quarters will be provided for the general offices of the Ohio Brass Company when the new administration building at Mansfield, Ohio, is completed. Construction work started Oct. 1. The general offices at present are housed in the oldest building of the plant.

The new office building will cost approximately $500,000. It is to be a five-story steel and brick structure with stone trim, 255x52 ft., and having reinforced concrete floors. Construction will be fireproof throughout. The general layout and appointments will compare favorably with the finest factory office buildings erected in recent years.

Provision is made for a 25 per cent increase in office force over present requirements, so that the company is planning well for the future.

Ample space will be provided officers and general sales officials and the seven divisions handling the sales of Ohio Brass products in the five industries served by this company. In addition there will be a permanent display room on the top floor. A conference room, seating 350, will be provided on the fifth floor, to be used for sales meetings and the like.

Little Known Facts About Mica

Very comprehensive is the little book entitled "Mica and Mica Products" which has just been published for distribution by William Brand & Company, New York, N. Y. Little information, strictly technical or otherwise, has heretofore been available on the subject of mica, and this discussion of the subject by Richard Schroeder, a noted German authority on the subject of electrical insulating material, should do much to clear up any misapprehensions existing on the subject of the technical properties of mica. The material contained in the booklet is an excerpt from a series of lectures on electrical insulating materials delivered before various technical institutions and societies of Berlin by Prof. H. Schering. Copies of the booklet will be sent to any railway man interested by William Brand & Company.

Wide Range of Orders Reported by Yellow Manufacturing

Sales by the Yellow Manufacturing Sales Corporation, Chicago, Ill., to electric railways are holding up well. Between Sept. 1 and Sept. 30 the company reports a long list of sales made in this field. Units vary in size from a single vehicle to fleets of considerable size, and the sales cover a variety of types of bodies and chassis.

Sales included orders from the Los Angeles Railway, Los Angeles, Cal., for two 230-in. wheelbase double-deck and one Model X, 21-passenger pay-enter coaches; Virginia Electric & Power Company, Richmond, Va., two units, Model Z-230-in. chassis; Northern Ohio Power & Light Company, five units, Model Y chassis; Wisconsin Public Service Corporation, Green Bay, Wis., one unit, Model X, 21-passenger pay-enter coach; Southern Indiana Gas & Electric Company, Evansville, Ind., four units, Model Z, 29-passenger city service coach; Bamberger Electric Railroad, Salt Lake City, Utah, two units, Model Y parlor coach; Danbury Power & Transmission Company, eight units, Model X, 21-passenger pay-enter coach; Austin Street Railway, Austin, Tex., one unit, Model X, 21-passenger pay-enter coach, and the Evanston Bus Company, subsidiary of the Evanston Railway and the Chicago, North Shore & Milwaukee Railroad, two units, Model X, 21-passenger pay-enter coach.

No Lack of Activity in the Sisson Supply Company

"Pop" Sisson started something in February of this year. The "something" was the Sisson Supply Company, which consists of A. H. Sisson and his two sons, H. R. and Donald M. Sisson. "Pop" Sisson, as he is familiarly known throughout the railway industry, is one of the old-timers in the supply business. So this new venture of his is no wandering into foreign fields.

He started in the electric railway supply business in 1897 as one of the organizers of the Jewett Car Company, located at Jewett, Ill. In 1904 he went with the St. Louis Car Company, first as manager of the New York office and later as general manager of the company. In 1908 he became general manager of the Forsyth Brothers Company in Chicago, and in 1912 president of the Southern Car Company, High Point, N. C. Later he joined the National Pneumatic Company and still later the Columbia Machine Works, always centering his attention upon the various needs of the railway field.

This latest move of his, taken in conjunction with his two sons, is the culmination of a lifetime of training and preparation for just such work as this. The Sisson Supply Company will have for its territory the states of New York, Pennsylvania, New Jersey, Maryland, New England States and Washington, D. C. Among the manufacturers whom the Sisson Supply Company will represent are the following: Massachusetts Mohair Plush Company, Cleveland Tanning Company, Wheeling Corrugating Company, Chaton Fiber Company, Leon R. Wolf Weatherproof Fabric Company, Wright Rubber Products Company and the Industrial Products Corporation. The headquarters of the Sisson Company will be located at 1845 Grand Central Terminal Building, New York City.

Patent Suit Against Interborough Is Dropped

In a patent infringement suit brought by Samuel Thomas Walkup against the Interborough Rapid Transit Company, New York, N. Y., the United States District Court held that the railway had not infringed Walkup's patent on a car door control system for use in cars which are operated in trains. It was claimed by the plaintiff that the Interborough had adopted features of the patented control system which "has for an object to provide a control system whereby the platform men at the stations may operate the doors and whereby the number of cars controlled by a single platform man may be varied as desired . . . improved control system comprises a series of contact rails which are located at the stations above the tracks and at sufficient height to clear the cars, being secured to any suitable part, in this case the roof of the subway station."

The Interborough company was held

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by the court not to have infringed the patents in its door-operating mechanism, since "the defendant did not use a contact rail or a series of contact rails adjacent to which a car or train is adapted to come to rest. The defendant uses motor armature resistance on some of its cars and light resistance on others to reduce the voltage of the third rail. Storage batteries are on all of its cars for the storage of energy to operate its doors." The bill was dismissed by the court on Oct. 18.

Westinghouse "At Home" All Year in Atlantic City

A year-round exhibit by the Westinghouse Electric & Manufacturing Company of Pittsburgh, Pa., has been opened in Atlantic City, N. J. The purpose of this exhibit is to display to the public electrical devices for transportation and marine business, industrial and home requirements. The exhibit is located on the ocean frontage of the Shelburne Hotel, almost opposite the Million Dollar Pier.

Prohibition Director Appeals for Manufacturer Co-operation

An appeal to big business heads throughout the country to assist in enforcing the prohibition law has just been made by Gen. Lincoln C. Andrews, Assistant Secretary of the Treasury in charge of prohibition enforcement, through the Citizens' Committee of One Thousand. This committee has sent copies of General Andrews' appeal to 14,000 business executives located in every part of the United States. The text of General Andrews' letter is as follows:

"Here is an idea which, if made effective, should be tremendously helpful to law enforcement; I believe that you and your organizations are the only agency to put this thing over.

"I know, from personal experience, that the big sales agencies for large manufacturers very often make it a practice to supply generous quantities of liquor by way of entertainment upon all manner of occasions, where their customers are meeting together for one purpose or another.

"For example, I was in the street railway business for some four years before taking this office. On every occasion, where the street railway men get together as in their annual state and national conventions, these agents of railroad supply houses were always present as delightful hosts dispensing unlimited quantities of liquor for the jollification of the occasion. What is true in this business is undoubtedly true in other big businesses.

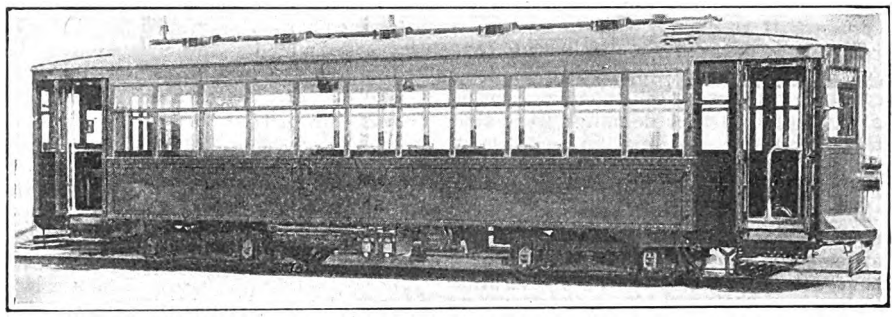
"It always struck me as unreasonable, even from the economic point of view, because in the end the purchaser pays for the costs of salesmanship. But let us look at it from the prohibition point of view. It is generally accepted that big business favors the prohibition law and its enforcement—so far as industrial labor is concerned. Certainly in the railroading world, and in many other businesses as well, management disapproves drinking on the part of employees.

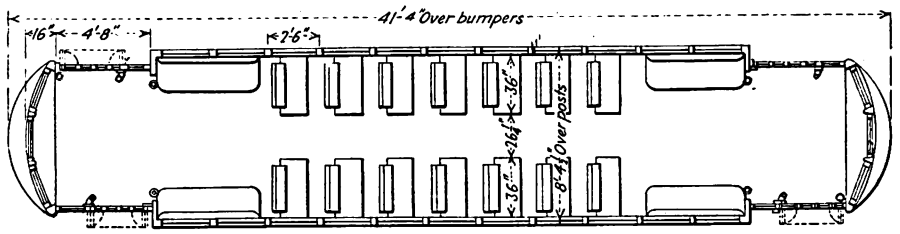
"Now, let us look at the picture. Big manufacturing business, through allowing or rather fostering these expense accounts for large quantities of entertainment liquor, is making a considerable part of the market for liquor, which in turn brings into existence and supports the organized liquor traffic which furnishes the liquor. How inconsistent on the part of these big businesses who claim they want the law enforced. Again, the employees of the railroads, etc., are pretty generally aware of these convivial practices at conventions, etc., and what an unfortunate example to these employees that their management personnel are thus taking these occasions for drinking parties!

"My sole interest in this is the elimination of just that much market for bootleg liquor—a market which is ready to pay any price and is thus sure to have its demand supplied. My thought is that if this picture can be properly presented to big businesses throughout the country they will readily enough agree to cut out this practice. They have only to take the stand that no 'expense money' used for the purchase of liquor will ever be authorized.

"If you can undertake to put this over, I will be much obliged and, of course, you may use this letter in any way you see fit."

Roanoke Cars Now in Operation





Delivery was made some time ago of six light-weight passenger motor cars to the Roanoke Railway & Electric Company, Roanoke, Va., by the J. G. Brill Company, Philadelphia, Pa. These units will be used in city and interurban service in Roanoke and the territory served by the railway. Seats for 44 passengers have been provided, these being of the Brill Winner type.

The principal specifications of the new cars are as follows:

Weights:	
Car body	1,700 lb.
Trucks	10,560 lb.
Equipment (electric and air)	8,570 lb.
Total	36,130 lb.
Bolster centers, length	18 ft. 10 in.
Length over all	41 ft. 4 in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 6 in.
Height, rail to trolley base	11 ft. 0½ in.
Body	Semi-steel
Headlining	Agosote
Roof	Arch
Air brakes	Westinghouse Traction Brake Co. straight air
Bumpers	Channel
Car signal system	Consolidated
Car trimmings	Polished bronze
Center and side bearings	Brill
Control	Westinghouse K-35KK
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote double faced
Destination signs	Electric Service Supplies Co.
Door-operating mechanism	National Pneumatic
Fenders	H-B lifeguards
Gears and pinions	Forged steel
Hand brakes	Peacock staffless
Heater equipment	Consolidated
Headlights	Golden Glow SE-95
Journal bearings	MCB
Journal boxes	3½ in. x 7 in.
Motors	Four Westinghouse 510-A, inside hung
Paint	Flood & Conklin
Sanders	Ohio Brass
Sash fixtures	Brill
Seats	Brill Winner
Seating material	Cherry wood slats
Slack adjuster	American type E
Springs	Brill
Step treads	Universal
Trolley catchers	Knutson No. 5
Trolley base	US-13
Trucks	Brill 77-E-1
Ventilators	Garland Type C-1
Wheels	A. C. & F., 33 in.

Another Chapter in Seattle Car Purchase Story

Plans for the purchase of 80 new cars for the Seattle Municipal Railway are apparently doomed. Corporation Counsel T. J. L. Kennedy has issued an opinion that the Board of Public Works has no power to amend the car purchase contract, as asked by attorneys of the St. Louis Car Company, to which the contract for the cars was awarded. The company submitted several proposed amendments a few weeks ago after a question had been raised as to validity of any bonds issued to pay for the cars. Mr. Kennedy points out that to amend the contract after it has already been awarded would set a dangerous precedent and violate the principle on which bidding and awards are based.

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One of the provisions asked would permit the car builder to rescind its contract if it should fail to receive a railway warrant when due in payment for the cars or fail to obtain immediate cash for any warrant when presented at the bank. Other demands were that the company continue in possession until the cars are actually turned over to the city in the Seattle shops; that the $1,875,000 bond issue be segregated so that payment would be made from an issue designated for street cars only; that all warrants outstanding against the construction fund of the railway department be paid before any warrants in payment for the cars are due to the company; that the contract be automatically extended should there be any litigation concerning the deal or the bonds; that the furnishing of a surety bond by the company depend upon the approval by its attorneys of the marketability of the bonds.

Track and Line

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., plans to double track its Wells-Downer line on Downer Avenue from Edgewood Avenue north to Atwater Road in Shorewood. The total cost of this work will be $26,000. Reconstruction of the Kinnickinnic Avenue tracks between Oklahoma Avenue to the new city limits at Ludlow Avenue will soon be under way. This job will cost approximately $64,900. In Racine extensive railway improvements are under way at the Monument Square curve, where tracks are being torn out and replaced with heavier rails and steel ties.

Goose Creek, Tex.—Right-of-way for the Houston, Baytown & Goose Creek Interurban Railway has been secured and grading and track laying are making rapid progress, according to Harry K. Johnson, president. Track has been laid from Goose Creek to the San Jacinto River, and the contract for the construction of a bridge across the river has been awarded to the Austin Bridge Company. The total cost of the road's construction will be approximately $1,600,000, according to Mr. Johnson. The cars of the new line will enter Houston over the tracks of the Houston Electric Company.

Chicago Surface Lines, Chicago, Ill., has started work on the extension in West 79th Street from Ashland Avenue to Western Avenue, and according to the engineers in charge of the construction the line should be completed in about six weeks. The extension is 1 mile in length. The trolley wires have been strung over the new roadbed. Now the work of excavating in the open space left in the new concrete paving is being done and the laying of ties and rails will he under way within a few days.

Los Angeles Railway, Los Angeles, Cal., will complete the reconstruction of its car tracks in the downtown district by Nov. 1. All rail used was the heavy 116-lb. girder rail. The entire length of track reconstructed in this district will be, when complete, 3.625 miles.

Harrisburg Railways, Harrisburg, Pa., will extend its Market Street tracks to the new John Harris High School following the passing of the ordinance allowing franchise rights for the construction. Under the provision of the ordinance, the new stretch will extend 2,700 ft. east from 21st and Market Streets bringing the end of the track near the main entrance to the school building.

Trenton & Mercer County Traction Corporation, Trenton, N. J., has begun preliminary work in connection with the erection of a carehouse and a garage on East State Street. Nine switches will be placed in front of the proposed building and 750 ft. of new rails and roadbed will be laid on South Olden Avenue.

Trade Notes

Andrew J. Ryan has been added to the list of Kemi-Suede representatives. Mr. Ryan will take care of the Southern territory for the Leon L. Wolf Waterproof Fabric Company, Cincinnati, Ohio.

Evan J. Parker, formerly of the Morgan Engineering Works, Alliance, Ohio, has joined the forces of the Northern Engineering Works, Detroit, Mich., manufacturer of material-handling equipment such as electric and hand cranes, electric and air hoists, foundry equipment, etc. Mr. Parker will have charge of the sales promotion division.

C. W. Sproull of the firm of Allen, Sproull & Allen, Fort Worth, Tex., manufacturers' representatives, recently visited Bridgeport to complete arrangements to represent the Bridgeport Brass Company in the Southwest for the sale of the Bridgeport line of plumbing goods, Plumrite brass pipe and fittings and Bridgeport-Keating flush valves.

R. C. Brower has recently been appointed general manager of the Timken Roller Bearing Service & Sales Company, Canton, Ohio. The company maintains 25 direct factory branches and several hundred authorized distributors. Mr. Brower will make his headquarters in Canton, but will devote a considerable portion of his time in maintaining contact in the field. He is well known in the bearing industry, having been associated with it since 1913, and for the past four years with the Timken company.

Metal, Coal and Material Prices

Metals-New York	Nov. 3, 1926
Copper, electrolytic, cents per lb	13.725
Copper wire, cents per lb	16.00
Lead, cents per lb	8.00
Zinc, cents per lb	7.60
Tin, Straits, cents per lb	69.75
Bituminous Coal, f.o.b. Lines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$9.75
Somerset mine run, Boston, net tons	4.125
Pittsburgh mine run, Pittsburgh, net tons	4.00
Franklin, Ill., screenings, Chicago, net tons	1.725
Central, Ill., screenings, Chicago, net tons	1.45
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, ptr 1,000 ft	$5.75
Weatherproof wire base, N. Y., cents per lb	17.75
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb	11.70
White lead in oil (100-lb. keg), N. Y., cents per lb	15.25
Turpentine (bbl. lots), N. Y., per gal	$0.88

New Advertising Literature

Westinghouse Traction Brake Company, Pittsburgh, Pa., has issued descriptive catalog T-2032, entitled "Motor-Driven Air Compressors." This catalog covers compressor types 3VS and 3VD and is dated September, 1926, superseding the issue of October, 1924.

Southern Manganese Steel Company, St. Louis, Mo., has published a booklet on "Fahralloy" castings, which is a trade name given to a series of alloys developed to meet varying heat-resisting and corrosion-resisting conditions. The pamphlet gives the general characteristics of "Fahralloy," together with illustrations of various forms of castings which are produced.

General Electric Company, Schenectady, N. Y., has issued an illustrated folder intended to show that in every phase of handling of materials G. E. motorized power has paid. Examples are offered of the G. E. locomotive in haulage jobs, the tractor in cutting handling costs, the trucks which save while they serve and the "world of cranes" actuated by G. E. alternating or direct-current motors.

Pyle-National Company, Chicago, Ill., has completed the third edition of its No. 101 general catalog of railway electrical equipment. This latest edition describes a number of recent developments in locomotive headlight case construction, as well as giving data on the Pyle-National Company's established line of turbo-generators and yard floodlights. A representative selection of the Oliver wiring appliances for locomotive, car and shop wiring is included, although the full line of Oliver material is presented in a separate catalog. New and complete information on locomotive headlight mountings and recommended wiring for locomotive lighting is presented, together with tables, diagrams and material lists. Copies may be obtained from the general offices of the Pyle-National Company, Chicago, or from the branch offices in St. Paul, Minn., St. Louis, Mo., and New York City.

R. D. Nuttall Company, Pittsburgh, Pa., has issued bulletin No. 52 entitled "Nuttall Products for Electric Railway Service." This bulletin succeeds bulletin No. 35 of the same title. The later publication, however, is not a reprint of the earlier catalog as it has been completely rewritten and a large amount of new material included. A complete discussion of helical gears for street railway service is included, covering such items as analysis of helical gear meshing, quietness of helical gears, preservation of tooth contour, allowable wear, etc. Further, the publication covers spur gears, super tooth pinions, spread centers, trolley poles, harps, trolley bases, pantagraph trolleys, and various similar items.

Harry M. Perry, Los Angeles, Cal., has issued a leaflet giving new pulley horsepower data. This should be of interest in railway machine shop practice. A description of the advantages and principle of operation of the belt-slacker drive is also included.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

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Volume 68 New York, Saturday, November 13, 1926 *Number* 20

"Pack Up Your Troubles" if You Want to Win Public Favor

MR. AVERAGE CITIZEN is totally uninterested in the troubles of the electric railways. Granting that the industry has received a lot of unfair treatment, there's no good to be obtained by grumbling over it now. Face forward and set about improving the service. Forget excuses and tell the public the noteworthy things that are being accomplished. Such, in substance, was the advice given to members of the Metropolitan Section, A.E.R.A., at its meeting last week.

How this policy has worked to the advantage of the steam railroads was pointed out by C. S. Ching. Some time ago these carriers stopped looking for public sympathy and began to talk service. In public esteem they stand higher today than they have stood for a long while. Electric railways would do well to follow this example. Carrying the argument a step further, another speaker explained why interruptions to service, equipment failures, etc., constitute news for the press, while reliability of service and regularity of performance do not make news. To offset this the railway must definitely undertake to keep the public informed of its progress and accomplishments.

Those who were not fortunate enough to be at the meeting will find food for thought in the abstracts of these two talks, published elsewhere in this issue. Every railway man who attended this inspiring meeting left with a concrete idea that he could take home and use in his daily work.

New York Merchants Would Conserve Transportation Lines

RECOGNITION of the principle that existing transportation systems should be expanded to meet the increasing needs of the community is the feature of a report by the committee on city transit of the New York Merchants' Association, and which has been adopted by its board of directors. This action resulted from the recent recommendation of the city's Board of Transportation to grant new city-wide bus franchises. It is significant that this body of merchants, with neither political bias nor a brief for any particular transportation system, sees that the report "disregards the principle of unification and economic utilization of existing means of transportaton and fails to consider the property rights of companies now operating." True, motor bus franchises are deemed important, but the committee did not believe that the granting of new city-wide franchises was essential or desirable.

Unlike many other reports made by merchants' associations, in this one reference has been made to the best information available. "All disinterested studies which have been made," says the committee, "show that it is not practicable to replace surface lines in New York City by bus routes in any wholesale fashion. On the contrary, a sufficient number of buses to carry all existing traffic would generally lead to hopeless congestion of the streets."

Again, the committee holds that one of the present difficulties with transportation in New York City is adherence to the flat 5-cent fare. Competing bus lines would still further deplete the earnings of the surface lines and make the situation more difficult. Moreover, the move is of doubtful legality. But the existing systems should be encouraged to develop such motor bus lines within their territories as will extend and fill out their service. Any other method, it is held, will merely lead to increased cost and further complication, which would inevitably postpone the solution of New York's transit problem.

All of this is sound doctrine. It is applicable not only to New York but to every city where similar questions have arisen. When the business men and citizens generally appreciate their needs and foster the logical growth of the existing systems the problems of transportation will be much simplified. This is something for all railway men to ponder.

Trolley Bargain Day Again Comes to Town

WHEN good business and good will are tied together the result is a prize package. Residents of Toledo and Atlanta have recently been the recipients of these prize packages by virtue of a contract entered into by a merchandise house and the local railway company. Under the plan promulgated the store executives take a lease of the railway lines for certain hours on certain days; at the same time they extend an invitation to the public to ride free and purchase bargains in commemoration of anniversary sales. The crowds rush to the bargain counters via the railway cars, and speculation arises as to the benefits of the "trolley bargain day" revival in so far as the railway is concerned.

At the outset one is prone to see merely a day's increased receipts resulting from an increase in riding. True, the concomitant of business astuteness is financial gain, but that is only a small and relatively unimportant part of the picture. An intensive study, however, reveals a tendency of more far-reaching importance than the immediate acquisition of extra cash. The scheme binds the trolley still closer to the intimate affairs of every-day life—the trolley becomes the connecting link between man and the necessary habit of shopping.

And what pursuit transcends shopping in importance? To all women and to some men shopping is not a detestable duty, but rather a delectable diversion. Even the most unobservant salesgirl will testify to the meticulous concern and fastidious taste of the average buyer. Newspapers and magazines allot considerable space to giving advice to the prospective shopper and to enumerating the qualifications of the successful shopper.

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In fact, the ideal shopper is in as enviable a position today as the perfect lover.

This important phase of every-day living presupposes transportation to the business districts and, as far as the great majority is concerned, by means of the electric railway cars. Thus, when a merchandising stunt includes trolley transport its promoters are proclaiming the trolley way as the ideal way. They are not only identifying the trolley car with every-day life but are also affirming its increasing usefulness in man's chase for the amenities of existence.

The railway bargain day idea will certainly grow. Perhaps in many localities some such campaign is awaited to awaken either a lethargic people to the serviceability of the railway utility or to win back a vacillating patronage that sees no progress unless in change, even applied to transportation. The prize packages may go to the bargain hunters, but somehow they redound to the glory of their promoters.

Transportation Is Very Closely Related to City Growth

PUBLIC opinion in this country does not usually recognize the close relation of local transportation to city development and growth. One reason may be that electric railways and other means of local transport suffer from the "triteness of long familiarity." Nevertheless, unless there is some method of conveying persons or merchandise to and from any given locality, real estate there would be almost valueless for community uses.

This is strikingly shown by the article by M. Jayot of Paris in this issue. It has a most unusual form of treatment, because of its wealth of data on transportation and its effect on city growth from various cities in Europe and South America. In it the author shows that until the beginning of local public carrier transportation, less than 100 years ago, the largest cities of the world were very different in social and community life from what they are today. So long as the cab and the private carriage were the only means of transportation, the great mass of city dwellers were forced to work, take their pleasures and do their purchasing within easy walking distances. There were no shopping or commercial districts, as these terms are now understood, in the cities of a century ago, and the largest of them contained but a few hundred thousand inhabitants.

Local transportation created not only the modern city; it created modern land values, because it enabled thousands of people to do business at a spot previously accessible only to scores.

M. Jayot's article would be of little value, except from a historical point of view, if it did not teach certain lessons and so help to solve some of the problems with which cities are now confronted. One of these, and probably the most important, is the need in any city-planning project of placing the question of public transportation at the head of the list of problems to be solved. This is true whether the portion of the city being considered is undeveloped territory or already solidly built up. Too often in the past transportation has been put far down on the list in connection with new developments and it has been disregarded almost entirely in the case of sections already developed.

A second question raised by the author relates to the economic side of public carrier development. If local transportation lines have such a vital influence on city development and land values, should not the public control and direct their expansion, even possibly subsidize their service where it would otherwise be unremunerative, because of the great public benefits they produce? An affirmative answer to the first of these questions and even to the second could be given without indorsing municipal operation. In fact, most American cities in a sense do follow the plan of the public direction of expansion when they require certificates of convenience and necessity before the construction of a railway or bus line, and the largest cities go even farther in this direction through their city planning commissions and boards of transportation.

As to the second question, American practice as yet hardly goes to the extent of subsidies, unless some of the special rapid transit contracts, like those in New York and Boston, can be placed in this category. In fact, we in this country have gone rather to the other extreme by placing heavy tax burdens, like the paving tax and park taxes, on street railway undertakings. A person can be opposed to government subsidies for private enterprise yet still believe that electric railway lines should be very lightly taxed instead of being one of the most heavily taxed among the various industries. In France, as in this country, private operation is favored, but the expansion of the local transportation system, at least in Paris, is much more closely directed by the authorities than here. The question of a direct subsidy is still a debated question in France.

Finally, the author suggests some standards by which speeds, capacities and types of local railway lines in cities of different sizes may be determined. Judged by his rules, most—if not all—American cities are far behind in the extent of local transportation facilities which they should have. Whether most French cities have transportation which meets the requirements given, his paper does not state.

Incidentally, the tables presented in the article mentioned should prove of great interest to all transportation men. By these tables American readers can compare their own operations with those of various cities abroad.

A Record of Progress Against Great Obstacles

FEW annual reports made during the last year have emphasized more clearly the appreciation on the part of the management of the changing aspects of surface transportation than does the report recently presented to his stockholders by President Slaughter W. Huff of the Third Avenue Railway, New York City, for the year ended June 30, 1926. Large expenditures for equipment were made by the company in the full belief that they would stop the downward tendency in receipts and the upward trend in the cost of operation. And they have. The results for the year prove it. Receipts have increased and expenses have decreased just as the management believed they would. In consequence the financial condition of the company has improved, and the management believes it will continue to improve. On its statistical side the report shows a change from a deficit of $102,138 for the year 1925 to a profit of $37,893 for the year 1926. That, of course, is heartening to the company's security holders, but the figures do not tell all the story.

Most important is the attitude of the management with respect to problems still before it. These it is look-

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Grumbling Sells No Transportation*

Better Results Can Be Obtained by Telling the Public the Story of Electric Railway Accomplishments than by Talking About Operating Difficulties

By C. S. Ching
Supervisor of Industrial Relations United States Rubber Company

HAVING had about seventeen years experience in the street railway field, I feel that I can speak as one of the family. The concern with which I am now connected is in the manufacturing business—manufacturing products, selling to the public, in competition with other manufacturers. When the consumer gets our product we are many miles away. He buys our product through someone else and he consumes it over a period of months or years. In the street railway business, the railway is in touch with the consumer from the moment he starts to make the purchase until the product is entirely consumed.

> There isn't a poorer bunch of salesmen in the world than the transportation men. . . . Street railways have taken a whining attitude. . . . That has gone altogether too far.

In the year 1920 our advertising appropriation was more than $7,000,000 to get the public to buy our product. The street railway doesn't need advertising of that kind to tell the public about its product, because its salesmen are on the job all the time. Notwithstanding that fact there isn't a poorer bunch of salesmen in the world than the transportation men. I think that the transportation people are the poorest salesmen that God ever let live.

There are a lot of street railway men—and I was one of them—who say when talking about the business with a friend or neighbor, "Keep out of this business. It is a deuce of a job. It is nothing but a dog's life. You have to be on duty 24 hours a day and you get darn little thanks for it and not much salary."

Don't you find that attitude a whole lot in the street railway business? You don't find it in other concerns, yet they probably pay lower wages than street railways do.

We all know that our street railways have been unfairly treated, but Mr. Public is not interested. He says, "Go tell it to the cop." There is nobody interested in your troubles. It seems to me that the street railways have taken a whining attitude. It got into the street railway business about fifteen or twenty years ago at the time when it was discovered that it was not a bonanza. That has gone altogether too far. You have been telling the public a lot of your troubles, and the public doesn't give a darn about your troubles. It ought to. It is its responsibility. But the public is not interested in its responsibilities.

> The public doesn't give a darn about your troubles. They ought to. It is their responsibility. But the public is not interested in its responsibilities.

That attitude on the part of the street railway people as a whole of looking for public sympathy has had its reflection in your men who are out selling your product to your customers, with the result that the street railway man has looked on his job from an entirely wrong viewpoint. Of course, you need money to do things. You have got to have money in order to give the public the service it wants. You have got to get the money from the public in the first place. But the point is that the public will help you only when you tell the story of your accomplishments, and not the story of your troubles.

This matter of public opinion and how it is molded is one of the most intangible things that it is possible for us to consider. Theatrical men, too, have their troubles with public opinion, but if a new show lasts for a week and people begin talking about it, they go to the show and tell others about it. If conversation gets started, "Have you seen that show?" then the show is a success.

It is the contact that each man in the transportation industry has with the people he meets that influences public opinion. If we can get an attitude into the employees of transportation companies similar to that which the American Telephone Company has been able to get into its employees—the spirit of service, the spirit of pride in the job they are doing—then we will have infinitely better salesmen out on the road.

That attitude on the part of the employee is but the reflection of the attitude of the supervisor and the superintendent and the general manager and the president and the board of directors. In other words, you have got to have all up and down the line a group of men connected with the railway industry who feel that it is an important industry, a worthwhile industry, an industry to be proud of. Until that spirit gets across and you get the thought of an important service to the public on every occasion—not through newspaper advertising, but through contact of the people in that industry—the old idea will persist. When you do that, then you are going

*Abstract of a talk given at a meeting of the Metropolitan Section, A.E.R.A., New York, N. Y., Nov. 5.

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to have public sympathy and public support in the things you are trying to do that you can never get by telling people a sad story.

Take the steam railroads throughout the country today. There has not been a time in the last 25 years when the steam railroads of this country were in such good standing with the public as they are today. You don't hear of attacks on steam railroads as you used to a few years ago. I am not speaking about what may happen in Washington before the Interstate Commerce Commission, but I am speaking of public opinion generally. That has come about because of an improvement in the service. They have done wonderful things in the way of efficient management in the last five or six years, and they stopped whining. They stopped looking for sympathy and went out and did a job.

> **Tell the story of what you are going to do for the public —not what the public must do for you.**

One of the characteristic things about the American people is the readiness with which they scrap machinery. The street car itself has been entirely revolutionized in the past twenty years except in the downtown sections of New York. Take the street cars, take the shops, take any of the manufacturing concerns, and you will find that they scrap machinery over night. Power station equipment is one of the best examples of that. Power station equipment is scrapped probably after five, six, or eight years of service for something that is more efficient.

We are the quickest people in the world to scrap old machinery for new. We are the quickest people in the world to adapt ourselves to new methods of transportation or communication. But there is one thing that we ought to keep in mind: we will scrap 50 old machines, but we won't scrap one old idea. That is true very many times. It is harder to scrap old ideas than it is to scrap a million dollars worth of machinery.

In the street railway and transportation business you are in the same position as we in the rubber business. If the leather shoe manufacturers of this country change styles over night, we have got to run to the last factories to have them make up lasts so we can make rubber shoes to fit the change in style, and that means we have to throw away all the old lasts.

> **It is harder to scrap old ideas than it is to scrap a million dollars worth of machinery.**

We are up against competition to meet the demands of the public. The public sets the pace. What the public wants the transportation company must furnish. There isn't the slightest use in raving about buses. All of you remember the agitation and almost the riots and the injunctions and all that sort of thing that went on when people started to transport the public for a nickel in a flivver. It started in California and wound up in Maine six months later. Everyone was excited about it. But no flivver can take the passengers away from you if you are giving equal service. If the people want to ride in flivvers, that is what you will have to give them. If they want to ride in luxurious buses, that is what you have got to give them.

The transportation company can't dictate how the public shall ride. But the transportation company must be on the alert to see what the public wants. There isn't very much use in trying to enjoin buses from operating. It may be effective for a time, but when you do it you are antagonizing a portion of the public that you want on your side of the fence.

It may be unfair competition—which it undoubtedly is—but if the street railway people are not alive to the situation of what the public wants and are not willing to show that they are in a position or anxious to give the type of service the people want, then you are going against public opinion, and you are causing resentment which will be turned against you at a time when you want public approval.

We all know that many of the troubles of the street railways come from the acts of salesmen out selling the service. I don't know how you are going to train employees to be courteous. I don't believe that the sign in the Boston subway, "Please do not expectorate here," has any more effect on the traveling public as far as courtesy is concerned than the "Don't spit" sign on the Interborough. I think they are equally effective. I don't believe that it will do much good to run a school to teach conductors to use the right voice inflection when announcing streets. In Boston at one time we had a school for voice training. That may help the man, but merely telling a man to be courteous is not going to make him so. If we can only instill into that man the pride of accomplishment, a pride in his job, courtesy will take care of itself. The public as a public is not looking for automatons or for artificial people, but it is looking for men who are men and who are themselves. It is all very well to say "please" and "thank you," but it must not be too mechanical. You have to have the real spirit of service behind it.

The public doesn't realize that some of the men are out all night operating a transportation system. They are on call 24 hours a day. They are there to serve no matter what time they go out. The public doesn't realize that. It is accepted as a matter of course.

Tell the story of what you are going to do for the public, not what the public must do for you. Give the story to it in an upstanding, two-fisted, man-to-man sort of way rather than to say, "Well, this street railway business is all shot to pieces, anyway. You wouldn't give us an increase in fare and now the tracks are worn out, there is no overhead construction, no allowance for depreciation. What kind of service do you expect? You are to blame for it, not me."

If we in the street railway industry are going to get public opinion on our side, and public opinion is not at present on the side of the transportation companies, we might as well begin now. Then we first have to make contacts at every possible point. We have got to tell the truth even if it hurts. We have got to have our salesmen on the job and have those salesmen represent us as we want them to, and also have them imbued with the spirit that will make them proud of their own jobs.

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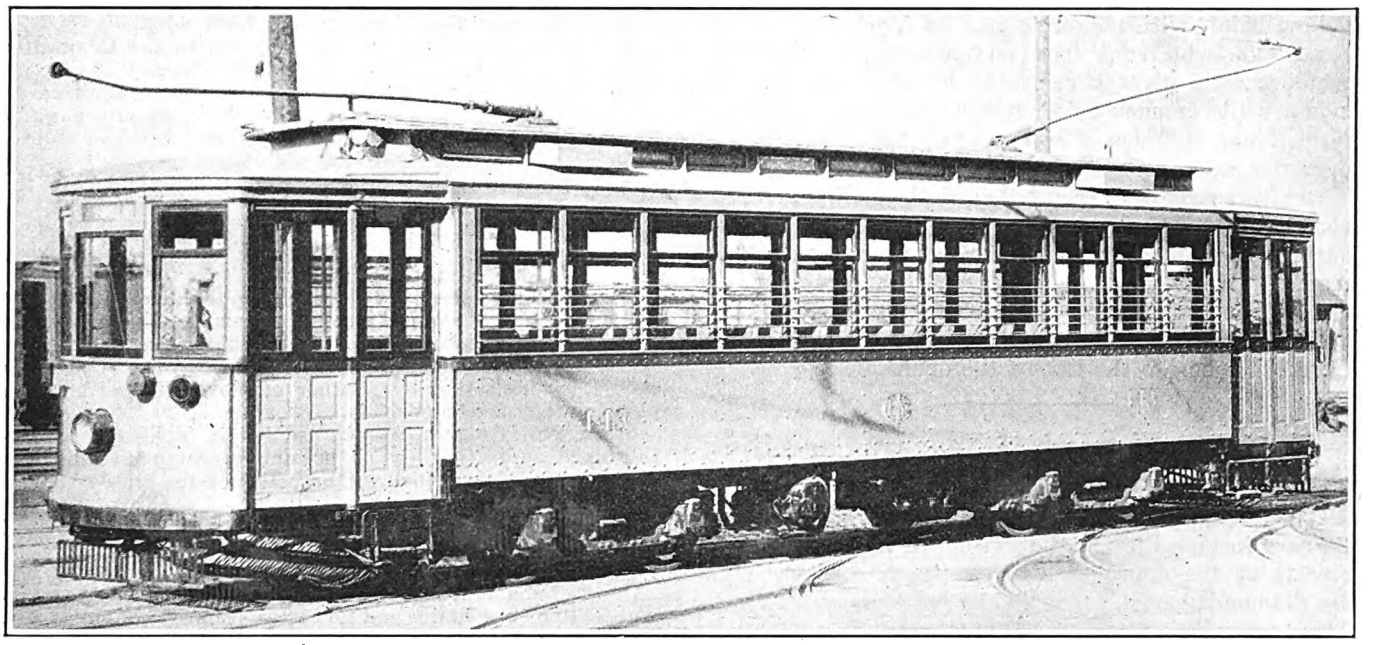


Tri-City Railway Car Remodeled to Meet Modern Needs

Dressing Up an Old Car

Softer Seats, Cabinets for Apparatus, Rubber Tiling on Floor and Better Lighting Have Improved Appearance and Increased Comfort

NEARLY all the cars now in use by the Tri-City Railway, Rock Island, Ill., were bought in 1913. Several years ago the bulkheads were removed and the cars arranged for double-end one-man operation. Believing that street cars should be not only safe but also comfortable to ride in, pleasing in appearance and as nearly noiseless as possible, the management recently undertook to remodel extensively one of these old cars.

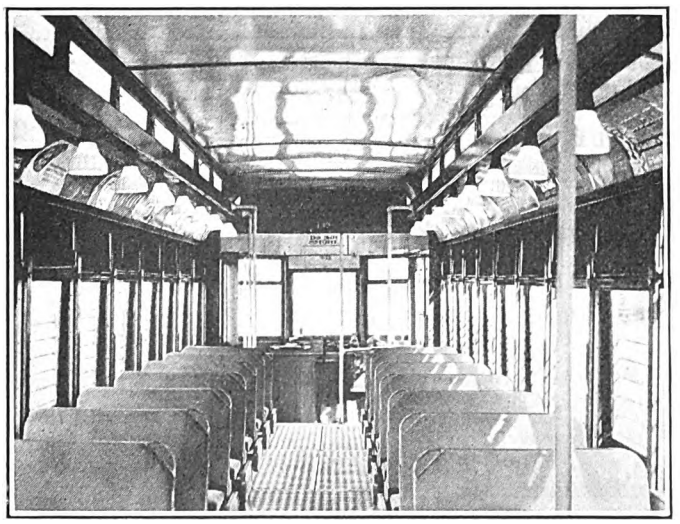
The old rattan seat covering was removed, extra felt padding added and the seat and back covered with Kemi-suede of a light shade. This soft material gives the car rider a more comfortable seat and improves the appearance of the interior. The floor is covered with white and tan rubber tiling in checkerboard design, with edges bound in brass. This has a pleasing appearance compared with the old car slat floor of painted maple.

Further improvement has been made in the appearance of the car by inclosing all pipes, switches, brake staff and door engines in paneled wooden boxes. As the bulkheads had been removed several years ago, the most unsightly part of the car was previously much in evidence. A neat cabinet now incloses completely the controller and air pipes. Dirt and paper can no longer collect in the corners and crevices along the floor line. Cleaning the car is made easier and the sweepers can do a better job.

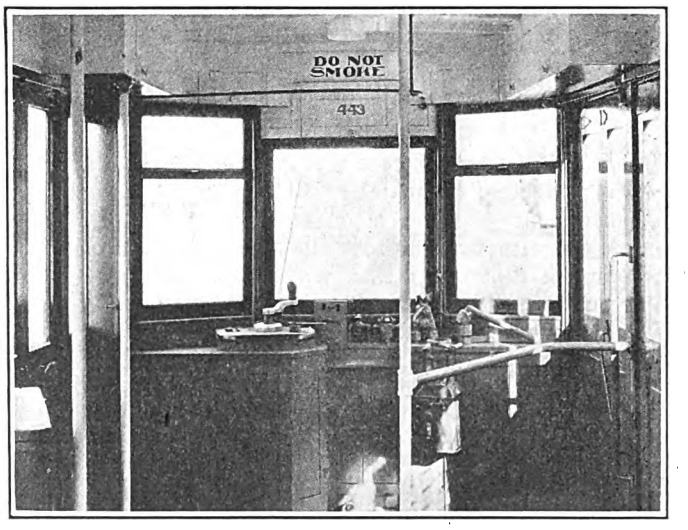
As the car is of the double-end one-man type it was thought desirable to provide a door in the rear whereby passengers can alight. Automatic step treadle doors furnished by the National Pneumatic Company were installed. Electric lighted signs with the words "Exit at Rear" have been placed inside the car, while on the front dash appears the sign "Entrance at Front." A large stop light is carried on the rear dash and when the brakes are applied its red glare gives a danger signal to the driver of any vehicles close behind.

Four ventilators have been placed in the windows of the monitor roof. Electric heaters with thermostat control provide additional comfort to the passengers.

Outside the car was given the usual coat of standard



Kemi-suede Seat Covering and Rubber Tiling on the Floor Improve the Interior Appearance



Controller and Piping Have Been Inclosed in Wooden Cabinets

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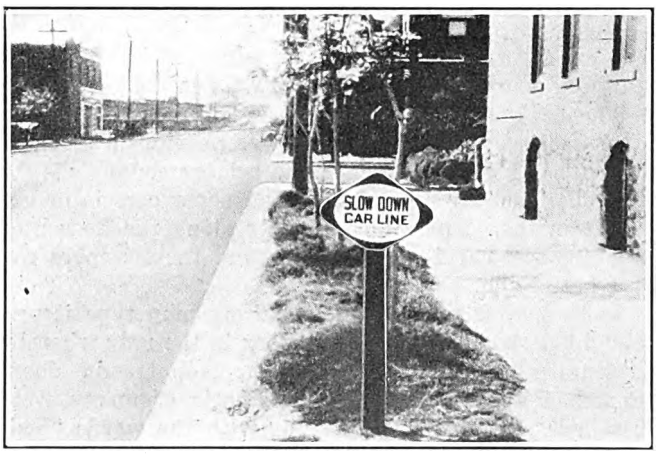
yellow paint, with moldings painted black. An orange band 3 in. wide runs from end to end, just below the windows, and gives a desirable streamline effect. Inside a white enameled roof reflects with good effect the light from eighteen 23-watt lights arranged directly over the seats, nine on each side.

Register rods were removed from the ceiling and foot-controlled pneumatic registers installed. The old roller curtain back of the operator has been replaced by one made of the same material as the seat covering and hung by rings from a rod attached to the vestibule hood. When not in use this curtain is drawn back and inclosed in a box to the left of the operator.

Motorists Warned of Near-by Car Line

PRECAUTIONS taken by the El Paso Electric Company to promote greater safety in the operation of its cars include the installation of warning signs on all streets at the approaches to car tracks. These signs are diamond shaped, supported by posts about 3 ft. high. They carry the warning "Slow Down—Car Line," as



Signs of This Kind in El Paso Warn Automobilists that They Are Approaching an Intersection with Street Car Tracks

shown in an accompanying illustration. The excellent results obtained by the safety work of this company are indicated by the fact that the proportion of gross earnings spent by the claim department for the first six months of the present year was less than 2 per cent. These accomplishments are told in the brief submitted by the company for the 1926 Coffin prize.

Encouraging Suggestions from Employees in Baltimore

WITHIN the last few months the United Railways & Electric Company of Baltimore has established a permanent plan of payment for suggestions from employees either to improve the company's service or to accomplish economies that will not harm the service. The plan is best explained by the following letter which was sent by the president to all employees:

To All Employees of the United Railways:

A permanent plan for payment for ideas which will, first, save money, and, second, improve service to the public, has been agreed upon.

For adopted suggestions from employees which are estimated to produce net operating savings or improve public relations, cash awards will be made ranging from $5 to $100, according to the value estimated for these by the efficiency committee.

The following simple rules have been adopted:

1. Suggestions should be sent directly to the Committee on Efficiency, Room 900, Continental Building.
2. Suggestions must be original, and the committee on efficiency awards reserves the right to reject any suggestions which have already been made and considered previous to the institution of the plan.
3. Employees need not confine their suggestions to the work of their own department.
4. Two or more employees may develop a suggestion together and submit it in the names of all, and the award will be divided equally among them.
5. If the suggestion is one which requires time to present in clear, understandable form, the employee may present to the committee a brief written statement of it as soon as he conceives it, thus entitling him to priority in case the idea should be duplicated by another employee before his own plan is ready for submission.
6. Suggestions should be presented in writing, as carefully and as intelligibly as possible, accompanied by any drawings or plans which in the belief of the employee will make the idea clearer.
7. Department heads are urged to offer employees all possible assistance or advice.
8. Department heads are not eligible for the award.

Suggestions may be sent in at any time—there are no contests, no time limits and no competition. *Trolley Topics*, the company's publication, will announce the making of payments from time to time.

When "suggestions" are received, they are sent to the heads of the departments most interested in them, the name of the person making the suggestion being withheld by the committee and a key letter substituted for it. The department head's opinion of the value of the suggestion is then considered by the committee, and it is possible to make the payment upon the pure merit of the suggestion, not complicated by any other matters. Although the plan was announced only this summer, nearly a score of suggestions were received during twelve days, and several of these are likely to receive merit payment.

The company expressly refrained from calling the payments "awards" or "rewards," preferring to have the employees consider the plan as a simple business arrangement involving fair recognition of good work and industrious thinking.

The Car-Riders' Conscience

COLLECTIONS found in the fare boxes of the Kansas City Railways, Kansas City, Mo., each day contain curios sufficient to start a museum. Anything from collar buttons and stickpin heads to welfare officer stars and jackstones are dropped in the boxes by people who are downright careless or by others so optimistic as to imagine the articles might be mistaken for a token. Sometimes the things deposited are mistaken for tokens, but more often the evasive ones are called back and obliged to pay.

Counterfeiting has become such a problem that the company has installed a machine to sort out the articles. One of the favorite fake fares is a token made from the wood of strawberry boxes. The fakes usually have flippant remarks or "wise cracks," as the user probably terms them, printed on both sides. The most common one is "Did you ever get fooled?"

About 60 tokens from other cities are found every day. All tokens are of uniform size and the foreign ones are harder to detect than any of the other counterfeits. Another trick to which the dishonest passenger resorts is that of trading 15 cents for two tokens and then, thinking the conductor is not looking, dropping a cent in the box.

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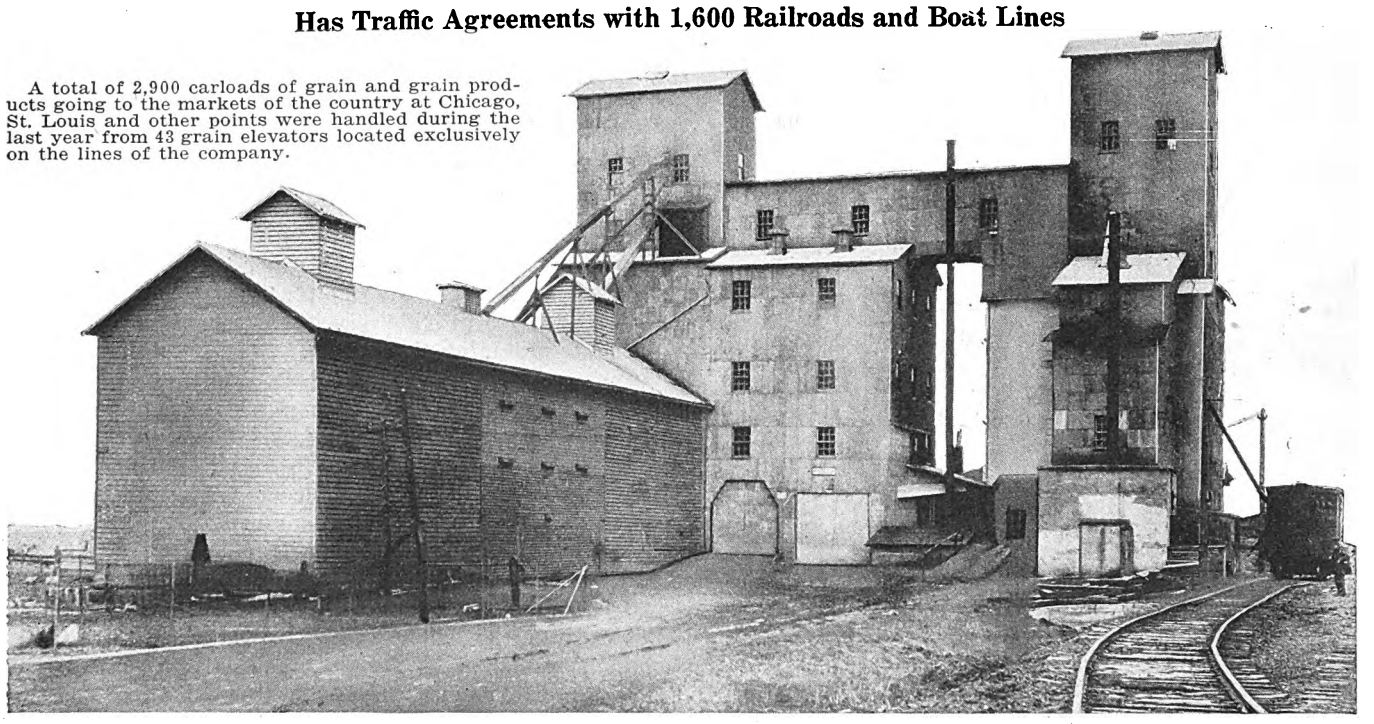
Improved Facilities and Intensive Merchandising

Build Profitable Freight Business

Illinois Traction System Increases Freight Earnings from $1,674,000 in 1924 to $2,209,000 in 1926—Road Handles Carload and Less than Carload Traffic from Coast to Coast—Has Traffic Agreements with 1,600 Railroads and Boat Lines



A total of 2,900 carloads of grain and grain products going to the markets of the country at Chicago, St. Louis and other points were handled during the last year from 43 grain elevators located exclusively on the lines of the company.

WITH 515.1 miles of its total main line mileage of 555 miles paralleled by new state hard roads, the Illinois Traction System saw much of its short-haul freight business taken by trucks. Whether or not such trucking could be done at a profit in competition with the railroad rates was an unsettled question, but that a considerable volume of short-haul business was going that way was an established fact. Furthermore, the hard road construction program and the subsequent truck competition had developed at a very rapid rate and the railway was therefore faced with a grave situation which required prompt and courageous action. The course taken was to improve railway freight-handling facilities on the one hand while engaging in a carefully worked out and vigorously applied business building campaign on the other.

The success of the methods followed is best illustrated by the following figures, given in the brief presented by the company in competition for the 1926 Coffin prize, showing the earnings from freight transportation:

For year ended April 30, 1924.....	$1,674,000
For year ended April 30, 1925.....	1,730,000
For year ended April 30, 1926.....	2,209,000

These figures do not include the freight earnings of the St. Louis Electric Terminal, the Illinois Valley division or switching revenues totaling $359,268.76 in 1925, an increase in these items over 1924 of $23,000.

Physical improvements necessary for properly handling interchange freight traffic have been made on a large scale. Interchange tracks, steam tracks, belt lines around important communities, industry tracks and connections, freight houses and unloading platforms now give access to industries in cities served by the company, facilitate the development of interchange business and place at the service of shippers and receivers of freight physical facilities of a character to insure prompt, reliable and economical service—essential to the building of freight business.

A program of enlarging freight house facilities and the construction of modern new passenger and freight stations in the smaller towns is being successfully carried out in co-operation with the passenger and freight traffic departments, with the purpose in view of continually improving facilities for the handling of all classes of traffic. In pursuance of this policy new passenger stations costing $10,000, exclusive of real estate, and $32,700, including real estate, respectively, were built at Mackinaw Junction and Litchfield, Ill. A combination passenger-express station and store building is being erected at Granite City at a cost of $42,000, including real estate. In Champaign a new freight depot and steam track layout is being constructed at an expenditure of $84,000 for real estate, building and yard trackage.

To provide better power facilities for the handling of

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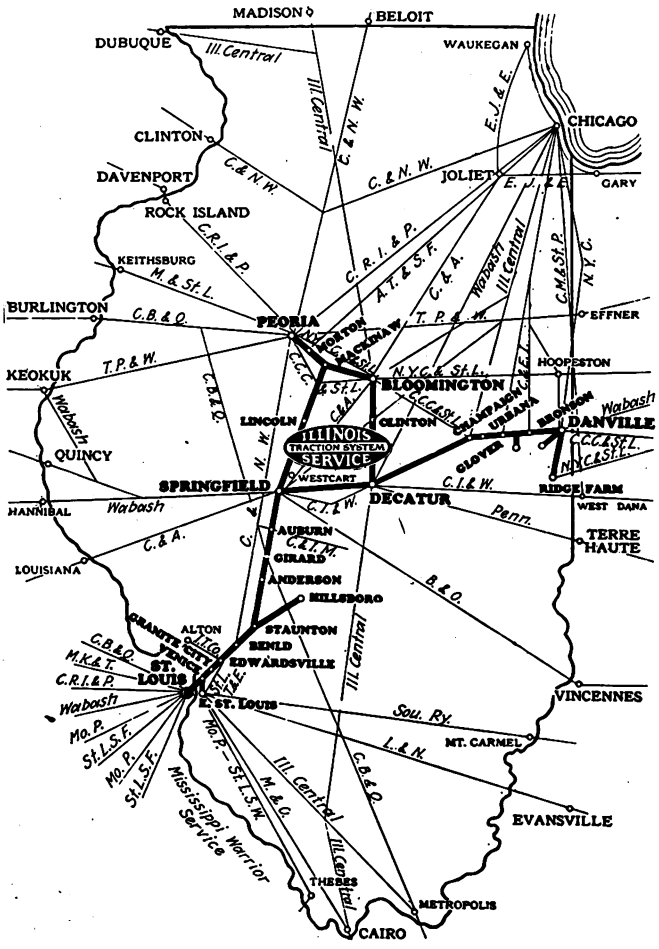


Through Traffic Agreements Have Been Made with 1,600 Railroads and Boat Lines. This Map Shows Through Freight Routings via Steam Railway and Illinois Traction System. Shipments from Coast to Coast Are Handled

heavy freight loads seven automatic substations were installed on a portion of the main division. With this installation, together with a desire to serve communities along the railway which are supplied with power, it was decided to change the frequency of transmission line circuits from 25 to 60 cycles over a considerable portion of the system. This change-over was made without junking the 25-cycle equipment, all of the old equipment being transferred to sections of the line still operating at 25 cycles and used to increase the capacity of existing stations at strategic points or to divide the territory between stations where the distance was uneconomically long. Substation capacity in the territory changed over was increased from an average of 37 kw. per mile of track to an average of 90 kw. per mile of track.

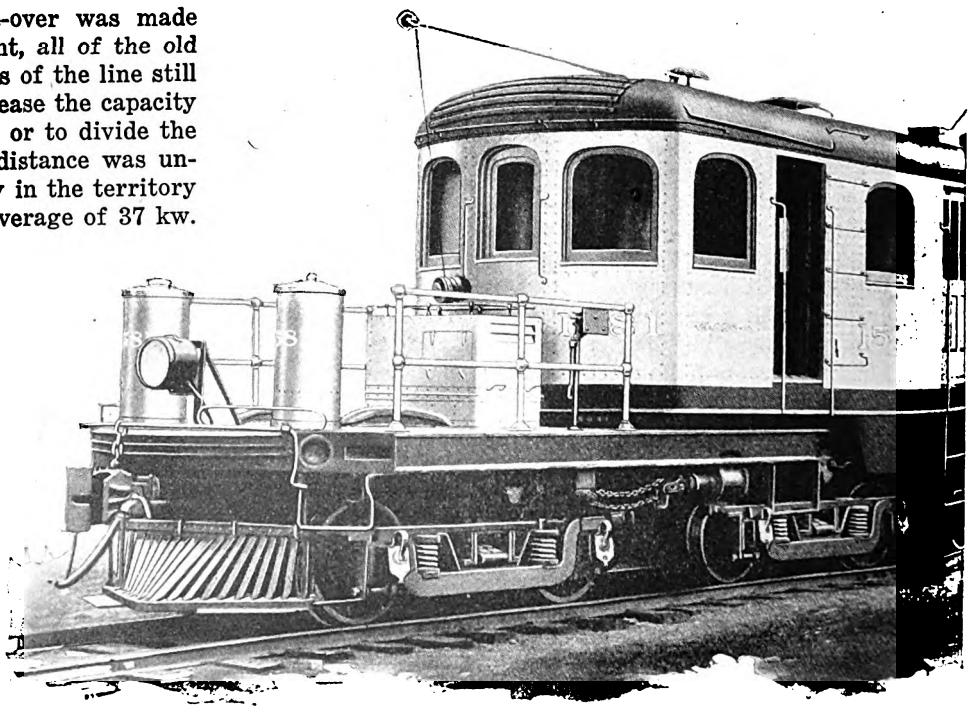
Development and design by the Illinois Traction System of its type C articulated electric locomotive, which was described in detail in the Jan. 31, 1925, issue of ELECTRIC RAILWAY JOURNAL, has been of inestimable value in opening a field of freight haulage hitherto closed by reason of physical obstacles which the new type of locomotive overcomes. The efficiency of this new type of pulling unit is indicated by the fact that the six now in service on the Illinois Traction System constitute only 11 per cent of the hauling units in service, but their use has enabled the road to handle 23 per cent more business during a year than was handled in any previous year in the history of the system.

By virtue of the increased freight train speed possible with these improved locomotives a large increase in freight car-miles has been made. In 1924 the figure for the year was 6,966,723. In 1925 freight car-miles amounted to 9,112,189, or an increase of 2,145,566 car-miles. Since this increase in speed affected many foreign cars, on which per diem charges applied, there was a marked decrease in the total per diem charges notwithstanding a high level for volume of business handled. With the aid of these new locomotives the year 1925 is the first year in the last five during which no embargo has been declared by the road, and this despite the fact that the car mileage throughout the entire year never totaled less than 1,000,000 per month.

All the Illinois Traction System freight cars are equipped with A.R.A. and United States safety appliance standards for interchange with steam roads and they are also arranged in a special manner to go around the company's short radius curves. To accomplish this standard A.R.A. couplers are provided with more side clearance than is the usual practice on steam roads. Brake foundation gear and truck levers are arranged in a manner to provide negotiating short radius curves without tightening the brakes. Cars are built with the bottom framing sufficiently above the wheels to prevent interference. The side bearings are extremly long and the limit of curvature is when the wheels stand at such an angle that they will come in contact with the center sills. This makes it possible to take standard cars around a 47-ft. center radius curve.

The interchangeable equipment operated by the company includes 310 box cars, 254 flat-bottom gondolas, 257 hopper bottom coal cars, nine refrigerator cars, 98 flat cars and 25 ballast cars. In addition to the interchange equipment for freight handling, the company has fourteen express motor cars, 94 express trailers and two special scenery cars arranged for operation on the company's lines, these being non-interchangeable on account of the radial coupler equipment.

At the present time the company's freight haulage



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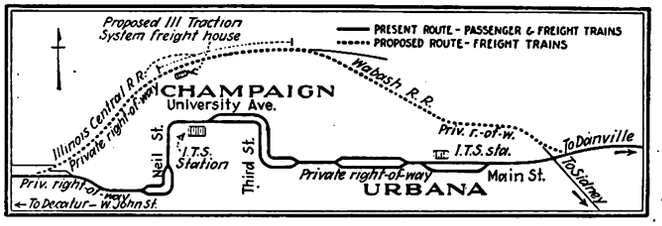
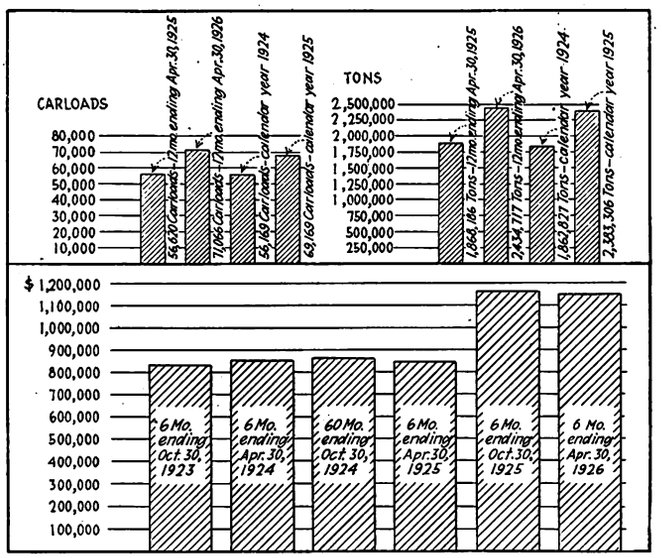
equipment is being supplemented by the addition of 100 steel underframe wood superstructure drop-bottom coal cars of 100,000 lb. capacity. These cars are used for the purpose of allowing handling of coal shipments in one direction and sand and gravel in another direction, thereby preventing one empty haul. They also can be utilized by local coal dealers who use portable elevators for loading coal in wagons from drop-bottom cars. Further, this type of car can be utilized where clamshells are used for unloading purposes, thus making the car a general utility car for coal, sand, gravel, crushed rock and other similar material. The particular feature in design is that although the car has a flat bottom, which makes possible top unloading, it also has a drop-door bottom corresponding to an ordinary hopper car.

By the successful negotiation of an agreement for the electrification by the Illinois Traction System of the main tracks of the Illinois Central and the Wabash Railroads at Champaign-Urbana, the electric railway will have, by the addition of a small amount of connecting track, a belt line for freight use in these twin cities where franchise and equipment limitations do not permit it to send freight trains through the streets. The electrification of the tracks of the Illinois Central Railroad extends from Staleys, Ill., to Champaign, Ill., a distance of a little less than 4 miles, and the electrification of the tracks of the Wabash Railroad from Champaign to Urbana, a distance of 2 miles. This, together with the small amount of connecting trackage required, gives a very important belt line at a relatively small cost and at a saving of duplication of investment in railroad trackage in those cities. The new route also eliminates a number of sharp curves and provides an additional interchange for the Illinois Central. Securing the consent of these two steam railroads for this electrification of their own main lines for this purpose is looked upon as something much out of the ordinary in the electric railway field. On this belt line and within three blocks of the business district of Champaign a large piece of property has been bought. Here the company expects to construct a modern freight house with steam track layout having a capacity of twenty cars. The new belt line will permit handling increased carload business through elimination of track obstructions and franchise limitations. It enables the length of trains to be increased and thereby



Duplication of Investment Was Saved in Acquiring a Belt Line Around the Cities of Champaign and Urbana by Electrification of Portions of the Illinois Central Railroad Main Line and a Section of the Wabash Railroad. Map Shows Old and New Routing

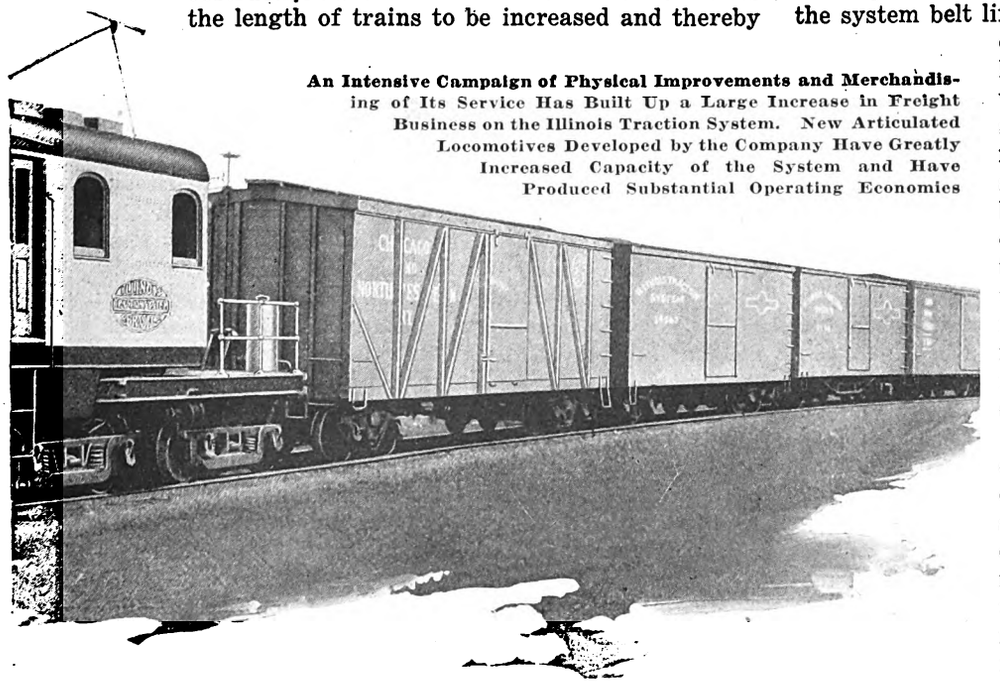


Increases in Carloads, Tonnage and Freight Earnings Were Made by the Development of Through Freight Business on the Illinois Traction System. Improved Facilities Made the Increase of This Business Possible

reduces operating cost. At the same time freight house and steam track facilities will be improved. The line haul will be decreased from 6.24 miles to 5.78 miles, the belt line being actually shorter than the main line. Elimination of freight operation from the streets of Champaign and Urbana will permit continuous haul for all classes of freight with no restrictions on equipment.

Completion of the belt line at Champaign will give the system belt line service around all of its principal cities. It already has in operation belt lines around Springfield, Decatur, Edwardsville and Granite City, thus speeding up and facilitating freight movement where it had once been slowed down or even made impossible by city track conditions or city franchise provisions. Steam track facilities have been greatly increased during the year in Peoria, Springfield, Bloomington and Edwardsville. Special platforms for the unloading of automobiles from freight cars have been built at several points.

When truck competition cut seriously into local business it was concluded by the management that the salvation of the property lay in the development of long-haul freight business, and it was therefore necessary to win an equal traffic basis for the arrangement of through rate tariffs and interchange with the steam railroads.



An Intensive Campaign of Physical Improvements and Merchandising of Its Service Has Built Up a Large Increase in Freight Business on the Illinois Traction System. New Articulated Locomotives Developed by the Company Have Greatly Increased Capacity of the System and Have Produced Substantial Operating Economies

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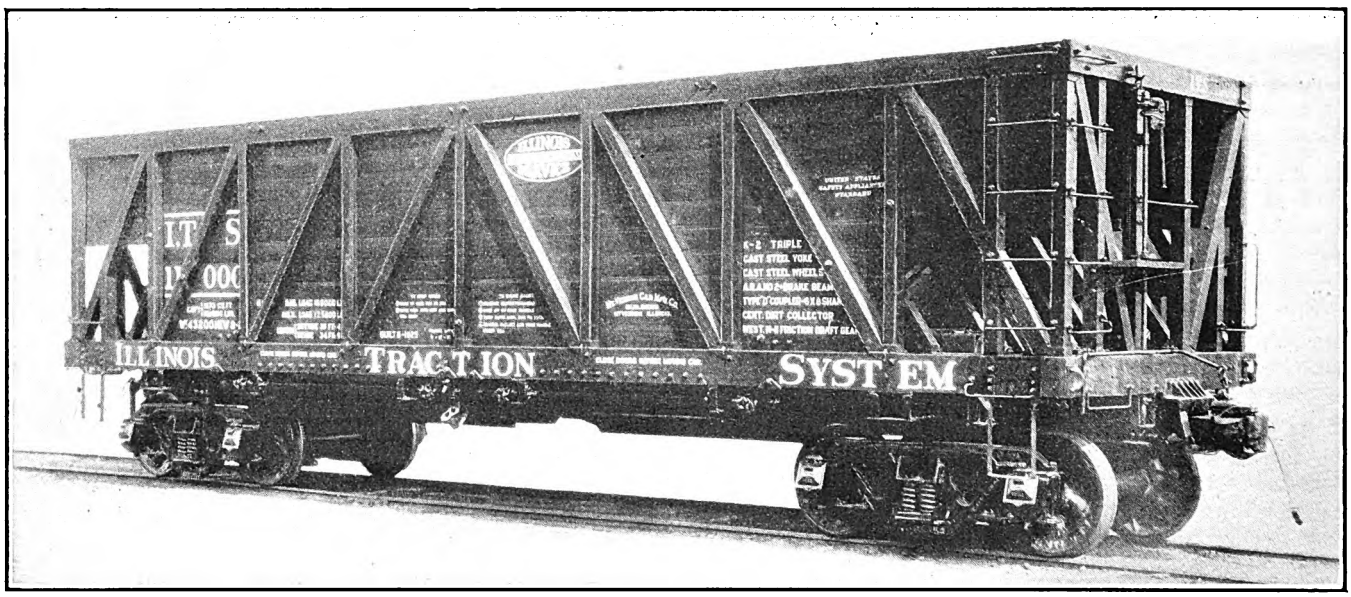
This campaign for recognition was carried on with such success that the road now has traffic agreements with approximately 1,600 existing common carriers, railroads and boat lines reporting to the Interstate Commerce Commission. The Illinois Traction System is now handling carload and less than carload freight traffic from coast to coast and from Canada to the Gulf of Mexico.

In order to stimulate the long-haul traffic the company has recently established off-line general agents in important freight originating distant points as follows: New York, Pittsburgh, Cleveland, Detroit, Chicago, Milwaukee, Minneapolis, Kansas City, and Tulsa, Okla. These agents are working on a per car commission basis on traffic originating in defined territories. Expenses of the agents are paid by themselves. This arrangement has given the Traction System wide advertising and has secured hundreds of cars of freight which would have otherwise been lost to competing roads.

Much freight as well as passenger business has been picked up through tips furnished by the "Go-Getters Club," employees who have sent in tips relating to future movements which might be secured by the company's agents. Names of those who give these tips are published in "Current Topics," the company's house organ, and much interest has been stirred up among the employees in this work. As an aid in the building of freight business, the traffic department issued an industrial and shippers' guide of 130 pages to encourage closer relations between the company and manufacturers, shippers, merchants and receivers of freight on the system. This guide, which was distributed among shippers, covers the towns and cities located on the Illinois Traction lines, giving a list of all stations, industries in each, their location as to railroad and facts about the cities themselves, their resources, populations and development.

In carload shipments the company made an interesting showing during 1925 with 28,635 cars of coal, 6,989 cars of sand and gravel, 3,908 cars of forest products, 2,900 cars of grain, 2,625 cars of petroleum and petroleum products, 165 cars of potatoes, 3,349 cars of iron and steel, 2,462 cars of brick, 1,413 cars of automobiles, 640 cars of cement, and other carload shipments of hay, butter, cheese, wool, hides, coke, ores, salt, asphalt, sugar, syrup, molasses, boats, lime, plaster, implements, household goods, furniture, beverages, textiles, canned goods and other articles of various kinds. Carload shipments during the year amounted to 62,417, an increase over the preceding year of 14,876. Less than carload shipments during the same year reached a total of 92,194 tons, showing a substantial increase over the year before.

As the company has its own bridge across the Mississippi River and terminals in the heart of St. Louis, merchandise is loaded daily there for the principal points along the lines of the system. Next morning delivery of such shipments is made at local destinations. Important traffic arrangements have been made with connecting lines for the handling of less than carload merchandise. This year an arrangement has been made whereby the merchandise loaded one day in Chicago on the Santa Fé Railroad is received at Morton, Ill., by the Illinois Traction System, transferred to Peoria, Ill., and the next morning put into the various set-out cars loaded from that point. The scheduled time on such shipments from Chicago to St. Louis, Springfield, Decatur, Bloomington and other points is second morning delivery from Chicago. This is practically as good freight service as that given by the direct steam roads operating between Chicago and St. Louis.



One Hundred New Steel Underframe, Drop-Bottom Coal Cars Recently Acquired by the Company May Be Unloaded with Clamshells or by Dumping the Contents. This Makes a General Utility Car for Unloading Coal, Sand, Gravel or Other Similar Material

Installation of charcoal heaters has enabled the company to secure a substantial share of the potato movement from the Minnesota district to its own territory during the winter. During the year ended April 30, 1926, 269,673 tons of coal were handled over the system from the coal mine at Gillespie, Ill., owned by the Virginia Coal Company. During the same period hundreds of tank cars of oil were handled from the Oklahoma fields and the Wood River-Roxanna district. A total of 2,900 carloads of grain and grain products going to the markets of the country at Chicago, St. Louis and other points were handled from 43 grain elevators located exclusively on the lines of the company. Close contact between the car distributing department and these elevators has resulted in eliminating the annoyance and difficulty from car shortage with which grain elevators have so frequently contended. Bread is shipped daily from St. Louis to points as far distant as Peoria, Decatur and Champaign, being delivered between 7 and 8 o'clock each morning.

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Transportation a Vital Factor in City Growth*

By M. Jayo!
Inspector-General of Local Transportation in the Prefecture of the Seine, Paris

The vital relation of transportation to city growth is proved by the experience of different cities, especially Paris. The author also shows the effect of the construction of transportation systems on land values and points out the need for careful consideration of transportation questions and provision for adequate carrier service in city planning. A method is suggested for determining the necessary speeds and carrying capacities of local transportation lines in different circumstances. The article is accompanied by most interesting tables

THE topic of the relation between city planning and transportation will be discussed under the three heads which formed part of the recommendations of the speaker on this subject at the last meeting of the International Tramway, Interurban Railway and Bus Association.† This speaker, Georges Delavenne, member of the Municipal Council of Paris and president of the Paris Transportation Commission, offered for adoption three conclusions, which were as follows:

1. Local city transportation system assists in distributing the population of the city, in encouraging the movement out from the center and increasing to some extent the ability of the city to gain inhabitants.

2. Transportation lines are also necessary in building up undeveloped territory, but their routes in such districts should be laid out under the direction of an impartial and disinterested commission.

3. Transportation lines should seek to supply a service providing a maximum of speed, consistent with the physical and other limitations present, and capacity at all times, so far as it can be done with economy in operation and first cost.

Effect of Transportation on City Growth

This subject is not a new one to be considered by the international association. It was discussed at length by Mr. Dausset at the 1912 convention and by Mr. Delavenne at the 1924 convention. The latter was particularly happy in his outline of the genesis of modern cities when he said that in their first stage, without transportation, they begin by becoming congested at their centers, but with the expansion of local transportation a centrifugal movement develops and results in an increase in the demand for transportation much in excess of the increase in population. This is clearly shown in Table I, which is based on reports secured from questionnaires sent out by the international association.

This table, however, shows no constant relation between the second and the third vertical columns.

Mr. Brunhes says in his "Geography of Humanity," "A city is not an independent unity; it is affected by the soil on which it rests, the climate in which it exists and the means by which it lives." Transportation cannot be considered the only factor in the growth of cities, but it is doubtless an important, even indispensable, factor of such growth.

The first evidence of the need of local transportation in a growing city is from within. It comes when the demand for ground for new residences and new industries is so great that they can find it only in the suburbs. Without transportation these additions to the city's social and industrial life must either develop new social and business centers close to where the people live or else these enterprises cannot locate within the city at all. With the introduction of transportation the inhabitants can choose their homes on the basis of the time required to travel between the points where they live and their places of work, rather than upon the distance between the two. The city then enters a new phase of its evolution.

Points Illustrated by Paris

It is through this evolution that the city of Paris passed during the nineteenth century. In 1800 it had an area of a little more than 13 square miles. Its average density was 159 inhabitants to the hectaire (or about 64 to the acre), but commerce and manufacture were confined to very small establishments, the center of the city was closely congested and the suburbs were sparsely inhabited. Between 1800 and 1817 there was an increase of 165,000 inhabitants, but local transportation was almost entirely by cab. It was not until the period from 1836 to 1841, the epoch of the development of the steam railroad, that the city began its rapid growth, and in 1856 it had reached a population of

TABLE I—INCREASES IN PERCENTAGE BETWEEN 1910 AND 1925

	Per Cent Increase in Population Served	Per Cent Increase in Passengers Carried	Per Cent Increase in Rides per Inhabitant per Year	Per Cent Increase in Car-Miles Run per Year
Glasgow	36	106	53	54
Leeds	15	84	53	15*
Brussels	0	75	76	41
Paris	12	105	82	...
Marseilles	14	64	43	35
Bordeaux	55	40	10*	51
Strasbourg	13*	58	74	41
Prague	6	53	47	29
Zurich	9	60	47	..
Geneva	5	0.7	5*	..
Amiens	2	47	44	..

*Decrease.

*Abstract of paper presented at the biennial meeting of Union Internationale de Tramways, de Chemins de Fer d'Intérêt Local et de Transports Publics Automobiles, Barcelona, Spain, Oct. 10-16, 1926.

†See ELECTRC RAILWAY JOURNAL for Aug. 2, 1924, page 171.

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1,174,436. This period was accompanied by a great decrease in population density in the central sections.

The first common carrier enterprise in Paris was in 1828, when Mr. Baudry received authority to establish a system of buses and eleven lines were put in service. By 1836 the number of buses in operation in Paris reached 378, and in 1856 all of the bus companies were consolidated into one system. In general, the lines operated to the city limits, where they connected with suburban bus lines, and all, of course, were operated by horses. In 1856, also, the General Omnibus Company, the consolidated company, received a franchise to build two street railway lines, and in 1854 the first section of the steam Belt Railway was put in service. Tables II and III give statistics of the Paris local transportation system up to 1890.

TABLE II—STATISTICS OF LOCAL TRANSPORTATION IN PARIS, 1855 TO 1890

Miles of Route	1855	1865	1875	1885	1890
Omnibus	94	183	163	146	150
Tramways	..	18	37	175	183
Belt lines, steam	..	16	24	26	33
Total	94	217	224	347	366
Passengers Carried in Millions					
Omnibus	36	104.6	115.6	105.7	114.5
Tramways	..	2.8	15.2	136.1	135.6
Belt lines, steam	..	4.9	13.9	31.0	34.0
Total	36	112.3	144.7	272.8	284.1

TABLE III—RIDES AND TRANSPORTATION EXPENDITURE PER INHABITANT, PARIS

Year	Total Population	Average per Inhabitant Rides	Expenses in Dollars
1861	1,696,741	56	$3.53
1866	1,825,274	72	4.19
1876	1,988,806	99	5.18
1886	2,344,550	136	5.98
1891	2,424,705	155	6.56

The three decades from 1860 to 1890 were accompanied by an increase in population of about 50 per cent, with a rapid growth in all sections. The suburbs grew most rapidly, but in 1891 there were three sections in the center of the city with a population of nearly 400 to the acre.

We are now approaching the time of the construction of the Metropolitan subway, the electrification of the tramways and the use of automobile transport, which, beginning with 1900, had a decisive influence on the distribution of population, particularly the development of the suburbs. Recent statistics are shown in Table IV.

TABLE IV—PASSENGERS (IN MILLIONS) CARRIED IN LOCAL TRANSPORT, PARIS

Year	Bus	Tramways	Subway
1911	135.7	426.4	428.8
1913	246.2	477.4	467.5
1915	*	396.6	405.9
1917	19.9	508.5	588.3
1919	95.4	589.9	726.6
1921	245.9	626.3	637.5
1923	337.5	682.3	704 8
1925	344.5	720.0	793.8

*Service largely discontinued because of war conditions.

Figures from Buenos Aires

Somewhat similar results have followed the expansion of transportation systems in other cities. Thus, up to 1869, the city of Buenos Aires had no means of local public transport. It had a population of 177,787 with a density of population in four sections in the center of the city of about 173 inhabitants to the acre, while the density in the outer sections was less than one-tenth of this number.

The first street railway lines were put in operation in 1870, and in three years had developed a traffic of 12,000,000 passengers, corresponding to 56 rides per inhabitant per year. Seventeen years later, or in 1887, the system was carrying more than 36,000,000 passengers annually, or an average for rides per inhabitant of 96. There had been an increase in density of population in the center of the city in the four sections mentioned of from 10 to 34 per cent, but by far the larger part of the additions to the population was in the suburbs. The latest figures (1924) from Buenos Aires show a population of 1,838,561, with 807 km. (504 miles) of tramway track and the number of passengers per year about 650,000,000.

Relations Between the Increase in Land Values and Railways

Speakers at the 1910 convention in Brussels and at the 1912 convention at Christiania pointed out the close relation between railway development and land values, and especially the rapid increase with railroad extensions of values of land near the center of the city. Thus, a quarter of an acre at the corner of Madison and State Streets in Chicago, which sold in 1830 for $20, changed hands in 1836 for $25,000, in 1856 for $45,000 and in 1894 for $1,250,000. Somewhat similar figures could be cited from the experiences in many other large cities, made possible only because of transportation. As the creator of these values, the city should participate to some extent in this gain, as by the purchase of tracts in areas to be developed by new transportation lines, by assessments on real estate so improved or in some other way. Transportation extensions should also be made in a systematic way under government direction properly to develop the new territory.

In Paris these developments are under a city planning commission whose authority extends over all of the departments of the Seine, with powers to lay out streets, parks, sewer systems, water systems, extensions of existing transportation systems, etc., but the extent to which the transportation systems may be guaranteed against an operating deficit because of an unremunerative fare to develop these outside areas is still a debatable matter in France.

Questions of Speed and Capacity

The close relation indicated between transportation and city development emphasizes the need of both speed and capacity in the transportation system. The actual rate of speed required by the cars varies with the circumstances. In a town of small area a moderate speed is adequate, but in a large city, with distant suburbs, the matter of speed becomes of the greatest importance. Mr. Jayot, in his thesis on city planning, has endeavored to give the rate necessary under different conditions. "Let us assume," he says, "in a city practically in the form of a circle, that the time of travel from the circumference to the center should be twenty minutes, of which fifteen minutes is spent on the transportation line and five minutes walking and waiting for cars, and that the density of population should not exceed 200 per hectaire (about 73 per acre). Then, by a simple calculation, the following conclusions are reached:

"Walking (at a speed of 2½ m.p.h.) becomes too slow when the city reaches a radius of more than § of a mile. This radius corresponds to a population of 60,000 inhabitants and some transportation system, either tramway or bus, is necessary. Such systems (with speeds of 7½ m.p.h.) should answer for cities until the radius

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reaches 2 miles, or corresponding to a population of not more than 600,000 inhabitants. Then faster transit is needed. Local subway lines (speed 15½ m.p.h.), with local stops, answer for cities up to a radius of 4¾ miles, or with from 600,000 to 2,400,000 inhabitants. Express rapid transit lines with schedule speeds of 25 m.p.h. or more become necessary where the radius is 6½ miles and the population reaches 6,000,000."

With the speed between termini determined, the next question is how it may be obtained by different means of transit. Within cities it appears difficult to increase the speed of vehicles on the public streets. Actually in Paris the tramway lines have an average schedule speed of about 7.2 m.p.h., with a maximum of 9.4 m.p.h. and a minimum of 5 m.p.h. Motor bus lines make an average schedule speed of 8.4 m.p.h., a maximum of 15.5 m.p.h. and a minimum of 6.4 m.p.h. The figures received by the international association from a questionnaire from various cities in Europe and the Argentine give about the same rates of speed, as shown in Table V. By the use of express buses, such as were put in service on a few lines in Paris in 1925, scheduled to make a minimum number of stops, a considerable gain over the figures mentioned above have been secured, but the amount of such service installed has been limited because the gain in time on most routes has not made the service worth while. In Paris the average distance between stopping points for passengers for both buses and tramways is 375 m. (1,230 ft.).

On the Paris subways the average schedule speed is 15½ m.p.h., although the stations are only about 1,640 ft. apart.

The Council of the Seine recently passed favorably on a proposed monorail system between Paris and St. Denis, a distance of about 2.1 miles, where it is expected that a speed of 50 m.p.h. can be made, or the run can be made in 3½ minutes, without any stops. The monorail will be about 50 ft. above ground, supported on columns 500 ft. apart. If constructed, it might throw some light on possible rapid transit lines of the future.

TABLE V—ELECTRIC RAILWAY DATA FROM DIFFERENT CITIES IN 1925

City	Population Served, in Thousands	Passengers Carried Annually, in Millions	Annual Rides per Inhabitant	Average Number of Cars in Service	Average Capacity per Car, in Passengers	Average Schedule Speed	
						In Kilometers	In Miles
Argentine							
Buenos Aires	1,839	559.6	304	2,835	(c) 40–50	(c) 11	6.9
Belgium							
(ac) Brussels	900	224.5	249	839	45	12	7.5
Czechoslovakia							
Prague	720	173.5	240	438	45	12	7.5
Denmark							
Copenhagen	735	134.7	183	(d) 908	27–52	13	8.1
France							
Paris tramways	4,568	1,065	407	(e) 4,298	(c) 47–56	(c) 11.5	7.2
Paris subways		793.8	407	18.40	83–100		
(a) Lyons	1,000	181.8	182	741	35–76	12	7.5
(b) Lille-Roubaix	650	50	77	149	46–100	12	7.5
(a) Marseilles	618.8	171	276	715	39–55	9	5.6
Bordeaux	407	95.2	233	386	42	10	6.2
Toulouse	250	46.4	185	178	40	9.8	8.11
(a) Strassburg	211.4	45.2	213	320	38–84	12	7.5
Great Britain							
(c) London		180		416	78	9.6	6.0
Glasgow	1,433	460.7	325	1,086	62	15	9.3
Leeds	558.5	144.8	259	284	70	12.8	8.0
Holland							
(a) Amsterdam	712.2	129.4	181	(f) 568	26–50	12.2	7.5
Rotterdam	601.8	60.0	99	236	35–70	13.5	8.4
Italy							
Turin	500	190	380	530	45	12	7.5
Norway							
Oslo	320	85.0	265	230	44–86	10.8	6.8
Poland							
Warsaw	992.4	220.5	222	431	52	12	7.5
Posen	218	23.6	107	112	48	11.7	7.3
Spain							
Barcelona	1,000	238.7	238	630	38–90	10	6.2
Sweden							
Stockholm	440	119.0	270	500	55	12	7.5
Göteburg	251	65.0	258	(g) 299	48	13	8.1
Switzerland							
(a) Zurich	205.5	52.2	254	290	40	15	9.3
Basle		34.0		204	40	15	9.3
Geneva	163	18.9	116	112	34–58	13	8.1

(a) figures are for 1924.
(b) an interurban line.
(c) figures relate to tramways only.
(d) of which twelve are motor buses.
(e) of which 1,368 are motor buses.
(f) of which eleven are motor buses.
(g) of which nine are motor buses.

ADEQUATE CARRYING CAPACITY

The second condition mentioned was for the transport lines to be of a carrying capacity adequate to the needs, so far as can be done with economy in operation and first cost. Capacity, in turn, is dependent on both headway and capacity of the unit vehicle. Most of the companies replying to the questionnaire of the international association increase their capacity during rush hours by the use of trailers, although most of them admit that trailer operation reduces the speed. In Paris the carrying capacity of the motor car is 49 passengers and of the trail car 56. The motor buses in Paris have a capacity of 38 passengers if of the four-wheel type and 48 passengers if of the six-wheel type. A train of five cars on a Paris subway has a carrying capacity of more than 60 passengers per car.

The headway on individual street railway lines of heavy traffic in Paris is two minutes, reduced to one-half minute where several lines use a common trunk. On the bus lines the headway is one minute for lines separated and 25 seconds for lines using a common trunk. In consequence these lines have for tramways with trail cars an hourly capacity of about 3,600 people and the bus lines have about 2,500 people. The subway line has, during nineteen hours of the day, an average hourly capacity of 8,000 passengers, but during the rush hours this is considerably increased. The accompanying table gives some statistics on this speed and other data of a number of cities in western Europe.

Key System's Boat Launched

WITH appropriate ceremonies and in the presence of a notable throng, including city officials and men and women of prominence in the bay region, the new ferryboat *Peralta*, which is the first of two boats now being constructed by the Key System Transit Company, was formally launched at the Moore shipyards in Oakland, Cal., Oct. 14. The new craft will be ready for service about Jan. 1. The boats will be known as the *Peralta* and the *Yerba Buena*. Peralta is the name of an old Spanish family whose history is interwoven with that of the East Bay section. The family of Don Luis Maria Peralta was the first to settle in the East Bay. Yerba Buena was the name given by the Spanish to what is now the city of San Francisco.

There was another ferryboat known as the *Yerba Buena*, the first to be built for the Key System. This craft has now been sold, but its name will be given to the new boat, largely for sentimental reasons. The two new boats will be ready for launching in October and will be placed in service before the first of the year. Lines of a battleship have been followed in their construction, giving them a striking and solid appearance. Each will cost $849,565. They were designed by Hibbs, McCauley & Smith.

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North Shore Uses New Equipment for Dispatch Freight

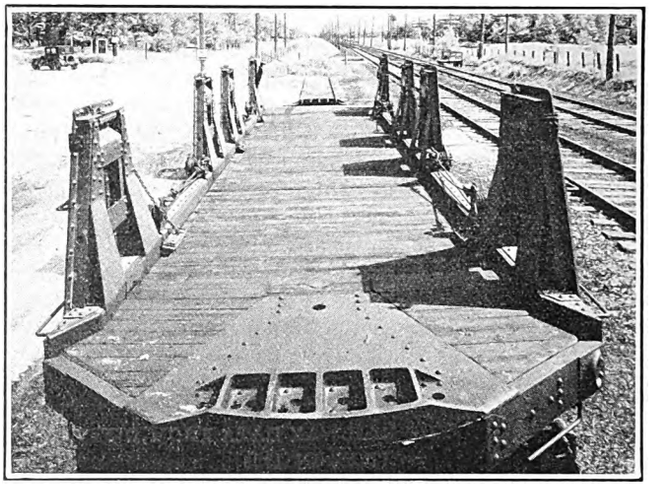
AN INNOVATION in the handling of less than carload lots of freight will feature this phase of service on the Chicago, North Shore & Milwaukee Railroad as flat-car and trailer equipment specially designed for the North Shore line is placed in regular operation between Chicago and Milwaukee.

This is the first equipment of its kind to be used on any railroad in the United States. It differs from equipment somewhat similar in nature in that the automotive trailers are mounted on the flat cars without the wheels being removed. Special runways are provided whereby two trailers are mounted on each flat car. Interlocking devices hold the trailers securely in place during rail transit.

The trailers eliminate all extra handling of shipments, since they are loaded at the point of departure and unloaded at their destination. After being loaded they will be hauled by motor truck to a central point where they will be mounted on flat cars. Deliveries of the trailers will be made in similar manner to all parts of the cities served by this new type of equipment.

Since the North Shore trains enter Chicago over the elevated tracks of the Chicago Rapid Transit it is not feasible to provide freight car facilities in downtown Chicago. This form of pick up and delivery is practically a necessity to successful operation. For some years it has been the custom to pick up and deliver freight in automotive equipment and transfer it to rail cars at the southern end of the surface section of the North Shore. This required double handling at these terminals and the consequent checking. This equipment will therefore avoid the extra handling of merchandise.

The first of the order of flat cars and trailers has already been delivered, and the balance of the order is scheduled for delivery by the middle of November.



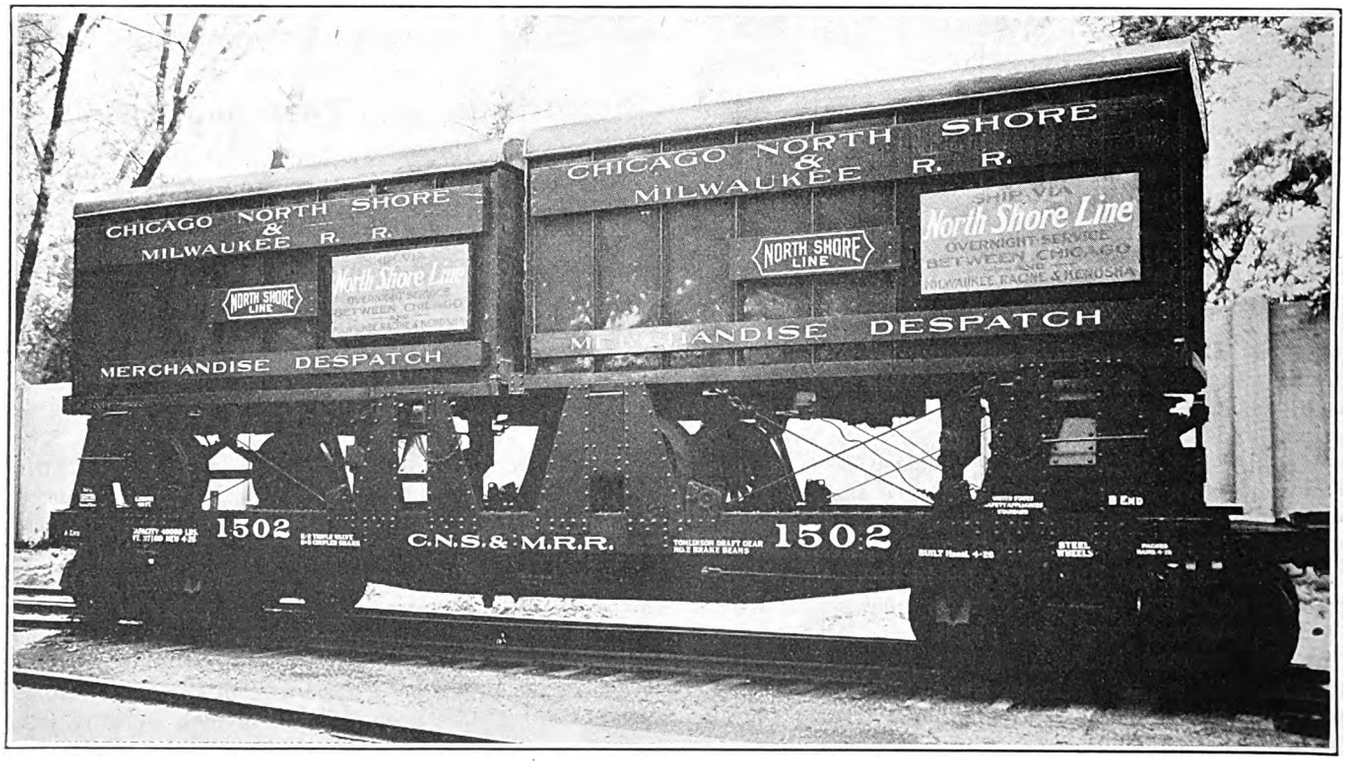
One of the Rail Car Trailers Used on the North Shore for Holding Two Steel Box Automotive Trailers Used in Shipping Dispatch Freight between Chicago and Milwaukee

New chassis also have been ordered to convert trailers now in use to the interlocking type.

The trailers are of 8-ton capacity each, with 7x17-ft. metal container bodies manufactured by the Trailmobile Company of Cincinnati, Ohio.

Car Heater to Utilize Motor Rheostat Losses

AN ELECTRIC heater, designed to utilize the energy usually wasted in motor rheostats, has been installed on one of the cars of the United Railways & Electric Company of Baltimore. Patents to cover it have been applied for in the name of the company's engineers, who conceived the idea. The heaters are beneath the seats and can be grouped in any desired manner to possess approximately the same ohmic resist-



New North Shore Merchandising Equipment Consisting of Two Steel-Box, Rubber-Tired Trailers that Can Be Shipped Intact on Their Own Wheels on a Special Flat Car. The Trailer Units Are Built by the Trailmobile Company

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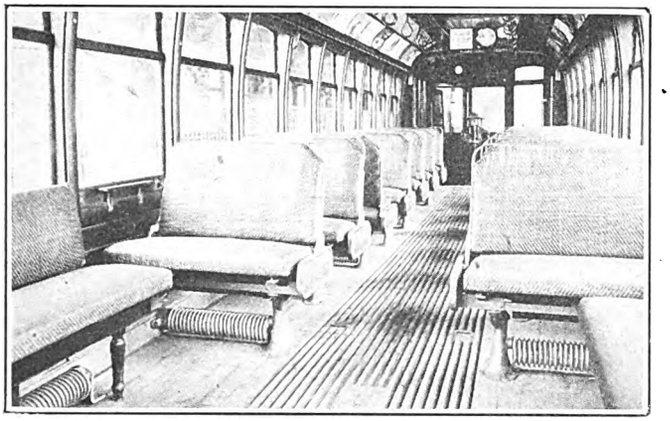


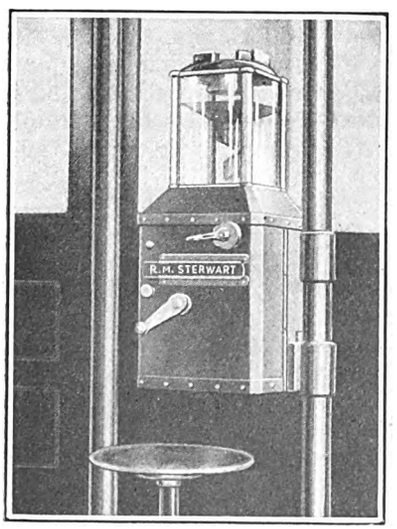
One Car in Baltimore Is Equipped with Heaters Which Utilize the Energy Usually Dissipated in Motor Rheostats. In Warm Weather They Can Be Put Out of the Circuit in Whole or in Part

ance as the exteriorly located rheostat. Means are also provided whereby the exterior rheostat or resistance may be used selectively, depending upon the season of the year or the temperature. This selection is made by a simple switch or control device, easily operated by the motorman or conductor and necessitates no change in the wiring of the controller or other parts of the car, aside from certain additions. The heaters can be grounded in the case of a short circuit.

As shown in the illustration, the heaters are arranged to replace the ordinary foot rest. Later designs are provided with guards so that passengers will not come into direct contact with the heater cases.

Operator's Name Carried on Fare Box

CAR operators of the El Paso Electric Company are known to the passengers by name. After experimenting with various methods of posting the operator's name for the benefit of the passengers, such as placing a nameplate in the vestibule or on the bulkhead, the company has selected the side of the fare box as the most satisfactory location. The operator's name is stamped on an aluminum nameplate which fits into a slot on the side of the fare box. The letters are raised while the background is painted blue. These plates are light and compact, being no larger than a pocket comb, and are easily carried in the trip-sheet holder. One operator's plate is removed and that of his relief inserted at the time register readings are taken, thereby making it unlikely to forget to make the change. Another advantage of this location is that in changing ends the name, being attached to the fare box, is always changed. Moreover, the visibility of this location is particularly good.



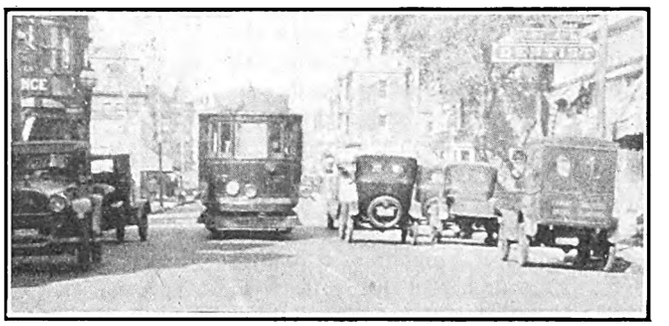
To Personalize Its Railway Service the El Paso Electric Company Places Each Operator's Name on the Fare Box of His Car

Track Shift Relieves Traffic Congestion

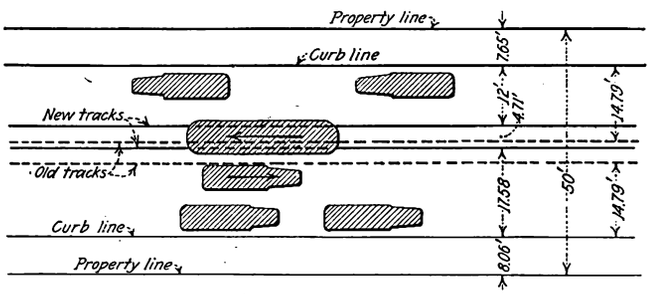
Location of Single Track Slightly Off Center on Narrow Street Gives Room for Double Line of Vehicles on Left and Single Line on Right

BY SHIFTING its track on Acushnet Avenue 2.79 ft. away from the center of the street the Union Street Railway, New Bedford, Mass., has made a substantial contribution to the relief of traffic congestion. Formerly with the car tracks in the center of the street it was impossible on account of vehicles parked along the curbs for a moving automobile to pass on either side of a street car. With the tracks offset it is now possible for an automobile to pass on the east side and many annoying delays have thereby been eliminated.

Acushnet Avenue is a north and south business street with stores on both sides. Its width from property line to property line is 50 ft. Approximately 8 ft. is taken on each side of the street for a sidewalk, leaving 34



Southbound Car on Offset Tracks Passing Northbound Automobile Without Interference



Track on Acushnet Avenue, New Bedford, Mass., Has Been Shifted 2.79 Ft. to One Side, Giving a Clear Roadway of More than 15 Ft. Between a Car and the Curb on the Left-Hand Side

ft. for vehicular roadway. With a 9-ft. car in the center of the street the clear roadway on each side was only approximately 12½ ft. This was insufficient for a moving automobile to pass between a parked machine and a car. When an automobile was moving in a direction opposite to that of a car, considerable maneuvering was necessary before the passage could be arranged.

On this street the cars operate in a southerly direction only and the tracks have now been moved 2.79 ft. off center toward the right, or west side. This gives a clear space on the left or east side of slightly more than 15 ft. between the car and the curb, sufficient for one line of parked automobiles and one moving line. Thus under the present arrangement northbound automobiles move freely on this side of the street. Southbound automobiles must travel behind southbound street cars. The offset continues for a distance of fourteen blocks or a total of 3,579 ft.

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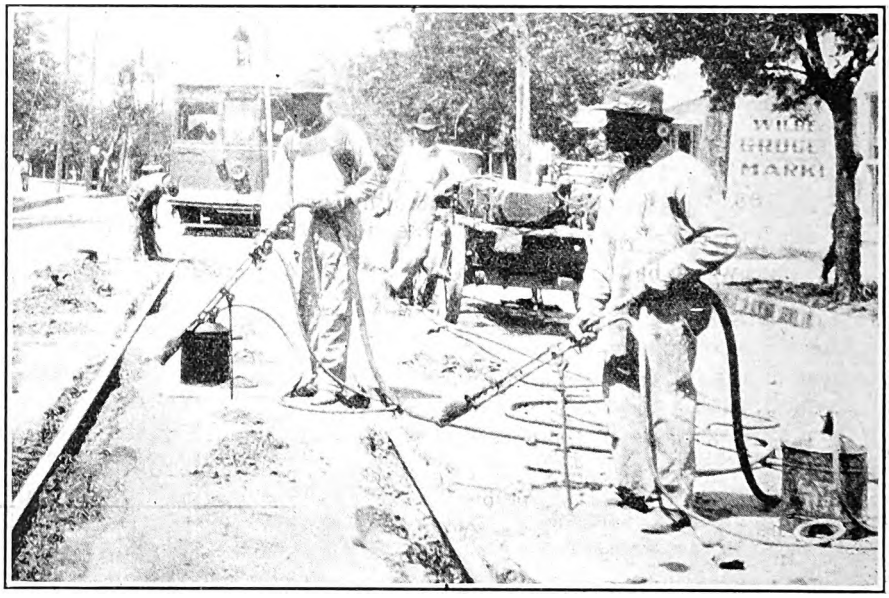
Maintenance Notes

Kerosene Preheaters Make Possible Asphalt Work in Cold Weather

KEROSENE - BURNING preheaters constructed in the local shops of the Northern Texas Traction Company, Fort Worth, Tex., have been used with success in emergency patch paving of asphalt. Necessity in this case was the mother of invention. A street was repaved by this company last winter and the asphalt torn out while the weather was fine, but when the new asphalt was to be replaced a day or so later the weather had turned cold and rainy. By the use of the preheaters the old asphalt was dried out and heated so that the new asphalt coated rock could be properly worked.

The preheater consists of a 2x6-in. burner tube and ⅜-in. air pipe with cutoff valve that connects the burner tube to the air compressor. A ⅜-in. fuel pipe and flexible hose extends to the kerosene supply. The heater is arranged with a staff so that it can be held in position and directed at one point.



Preheaters Made by Northern Texas Traction Shown in Use on a Street in Fort Worth. These Burners Make It Possible to Work with Asphalt Coated Rock During Wet and Cold Weather

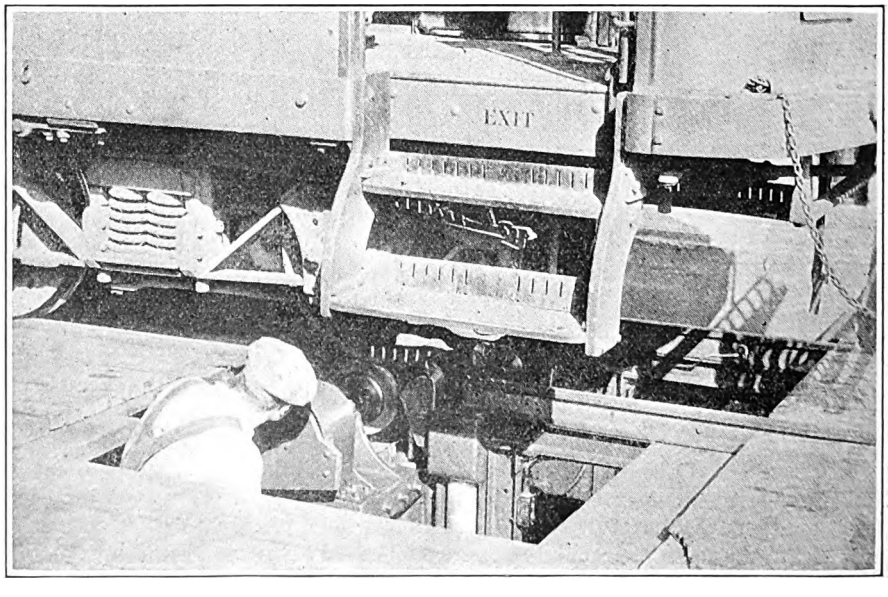
Los Angeles Railway Finds Pit Grinder Saves Time

IN A recent trial of a new pit grinder just installed in the shop of the Los Angeles Railway a pair of wheels were ground and put back into service in one hour and 35 minutes. The same operation would have required several hours with the former method of grinding wheels in vogue in this shop.

The grinder is installed in the pit below the tracks and is driven by a 20-hp. electric motor. When flat wheels are detected the car is pulled over the center of the grinding wheels and a pair of screw jacks with the bases resting on the platform are placed so as to lift the truck and car body so that the wheels will be normally about 1 in. above the rail. Gap rails in the track are then removed and the grinding wheel is brought into position by means of a screw. The car wheels are revolved by the motors geared to them.

The machine is double-ended so that two wheels can be ground at the same time. The rotating of the wheels is cut down to the desired speed by a special combination of resistor units. The grinder is equipped with a fan which exhausts, through a system of pipes, dust and particles of metal detached in the grinding process. These are forced into a receiving chamber. After the wheels are ground the gap rails are replaced and the jacks lowered until the wheels rest on the tracks so that the car can be rolled away.

Where it is necessary to grind the wheels on trailer axles which are not equipped with motors the axle is driven by a special arrangement of pulleys, gears and sprockets which have been designed by the staff of the mechanical engineer of the rail-



Grinding a Pair of Wheels with the New Pit Grinder in the Shop of the Los Angeles Railway

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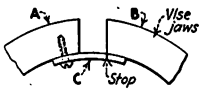
way. Previous to the installation of this grinder, wheels had to be removed from the truck and brought to a stationary grinder for truing up. This operation was slow, tedious and expensive. Increased traffic made it necessary to use some other means and the pit grinder is the result.

Your "Rough Riders" are dangerous, uncomfortable and unprofitable. Eliminate them by improved maintenance.

Stop on Coil-Straightening Vise Saves Workman's Time

IN REWINDING railway motor armatures which have strap wound coils it is the usual practice of electric railways to strip off the old insulation and reinsulate the coil. After the old insulation has been removed an important part of the preparation of the bare copper part is to straighten it in a vise before reinsulating. Owing to the shallowness of the vise jaws, the placing of a coil in the proper position for straightening may consume considerable time.

In order to provide an easy method of aligning the coil in the straightening vise, the Brooklyn-Manhattan Transit Corporation, in its department of electrical repairs, has its straightening vises provided with curved clips which extend underneath



Curved Clip Underneath Jaws of Straightening Vise Enables the Workman to Place Armature Coils in Position for Straightening Without Difficulty

the full width of the jaws when they are open. The accompanying illustration shows the construction. *A* and *B* are the two jaws of the vise and *C* is the curved clip which extends underneath. This clip does not interfere with the movement of the jaws, but acts as a stop so that the coil can be dropped into position quickly.

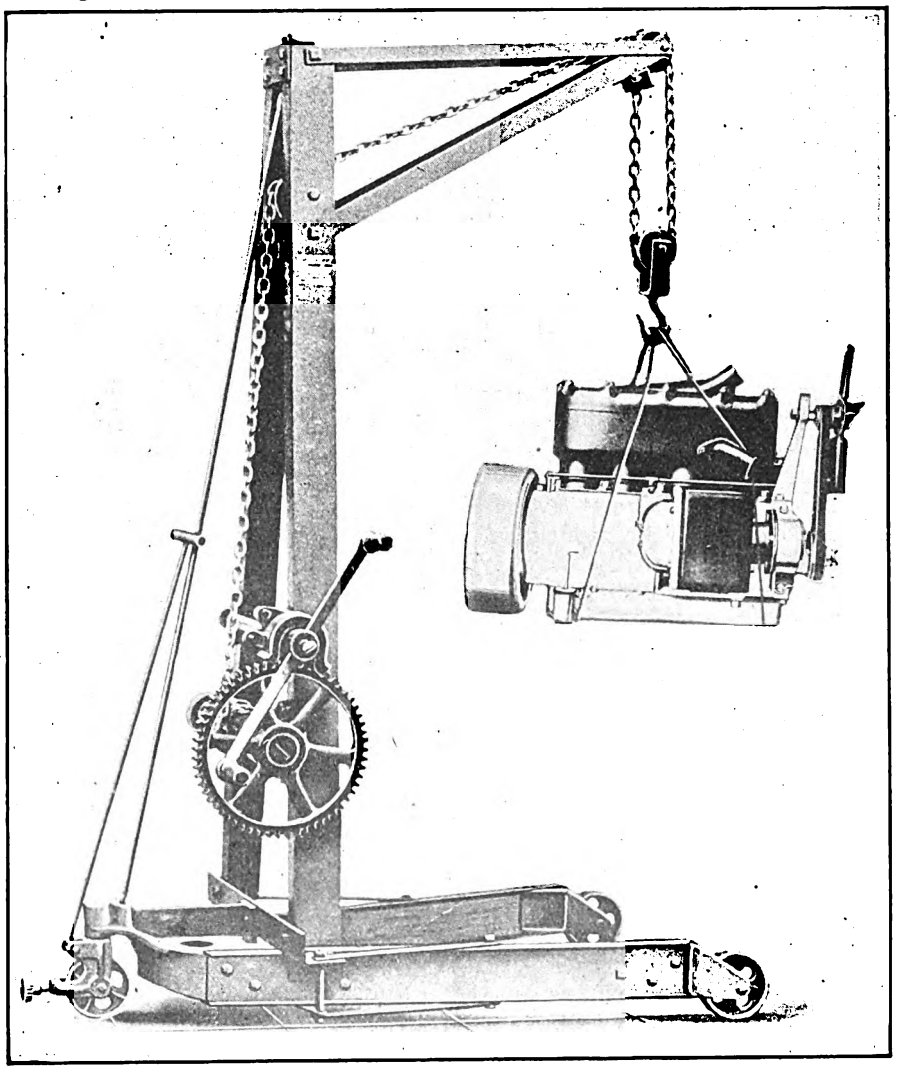
The usual operation is for the workman to open the jaws sufficiently so as to receive the coil and with one hand he drops the coil into position, while with the other he operates the vise handle to squeeze out any kinks from the coil leads. The curved clip eliminates trouble of alignment and a little experience enables the workman to straighten coils rapidly.

New Equipment Available

High-Lift, Deep-Overhang Floor Crane

WHERE shops are not provided with overhead cranes or some type of overhead traveling hoist, portable floor cranes are a convenient accessory. Heavy parts can be removed directly from cars and transported to workbenches for overhauling by one man without much exertion. In order to provide a floor crane which is light and which at the same time has high lift, deep overhang and a low base, the Manley Manufacturing Company, York, Pa., has brought out a new type. Different styles of this crane provide for a lift from the floor varying from 6 to 7½ ft. and with an overhang varying from 30 to 38 in. The weights of the cranes range from 300 to 770 lb. The base is constructed so that it may be run under a car body or motor car. The structure is on the cantilever bridge principle. The base is a combination of steel and heavy I-beams. With the heavy base and light superstructure the center of gravity is low. The light superstructure also makes it possible to have a deeper overhang with a higher lift and a lower base than would otherwise be possible unless danger of the cranes becoming topheavy resulted. The operating handle provides a leverage of 12 to 1 when in its center position and the handle may be pulled through a slot to its extreme length so as to double the leverage ratio, making it 24 to 1. A steel drum is provided for the chain so that it will not crowd or slip down from one convolution to another.

The wheels have wide faces and are fitted with roller bearings so that



Crane of One-Ton Capacity for Handling Equipment of Passenger Cars and Light Trucks. It Has a 7-Ft. Lift and 35-In. Overhang

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transportation of heavy equipment can be carried out easily by one man. A small wheel is provided in the center at one end for steering. This can be locked to make the crane immovable while it is being loaded or unloaded. For bus overhauling the crane can be used instead of an incline for raising one end of the bus while working under the chassis. There are no thrust bearings, worm wheels or complicated parts to cause trouble.

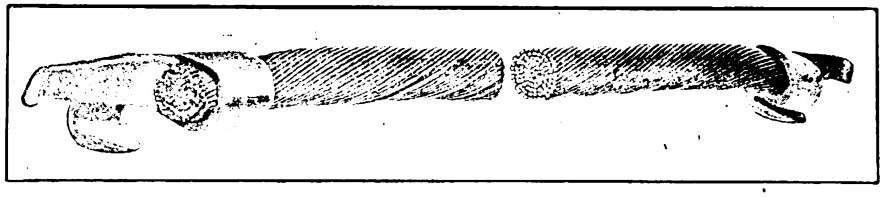
New Features in Line Switch Equipment

IMPROVEMENT in operation and decrease of need for maintenance are accomplishments claimed for new line switch equipment for type K control brought out by the Westinghouse Electric & Manufacturing Company. There are three new major pieces of equipment, a type UM-2-A magnetic line switch, a TC-2 control and reset switch and a TA handle switch, connected to a type K controller, all of which embody many features not included in older equipment.

The new equipment does not affect the present standard scheme of connections. It can be installed in place of the present line switch equipment without changing the cables on the car. The line switch is a lightweight unit especially designed to prevent freezing of contacts and false opening or closing. The blowout and arcing parts are designed to handle heavy overloads and short circuits quickly and effectively. An air trip cylinder is also provided for use with standard type of control safety devices.

The control and reset switch is much lighter and the mechanism is more accessible than the older type. It is equipped with a blow-out arrangement that eliminates the necessity of a blow-out coil, which in the older type switches was the source of annoyance because of the space it occupied and danger of open circuits. The switch is inclosed in a black molded Moldarta box with a hinged cover. All parts are easily accessible.

The handle switch takes the place of the ratchet switch, with more satisfactory results. It is mounted on the top plate of the controller instead of at the bottom as in the ratchet switch. By inclusion of a certain amount of lost motion between the main operating handle and the main drum shaft provision has been made for a set of make and break control contacts. This lost motion insures the breaking of the circuit to the operating coil of the line switch before the main drum starts to move to the "off" position. This eliminates arcing and burning of the controller. No change is involved if the safety control devices are applied on top of the handle. The over-all height of the controller with the TA handle switch is no greater than with the standard handle.



This Arcon "F" Bond May Be Applied to the Rail Base

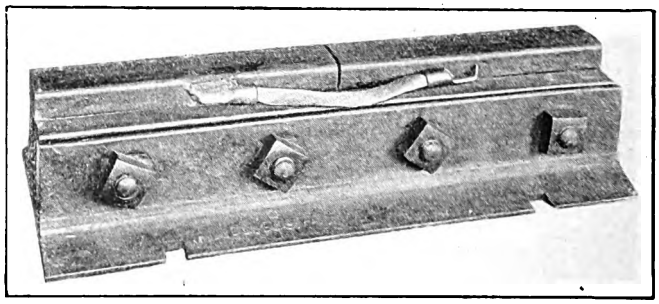
Three Types of Rail Bonds

COMPLETE absence of metallic pockets which interfere with the welding arc is claimed for three new types of rail bonds being manufactured by the American Steel & Wire Company of Chicago, Ill. These are known as Arcon bonds and are for application by the copper metallic arc welding process.

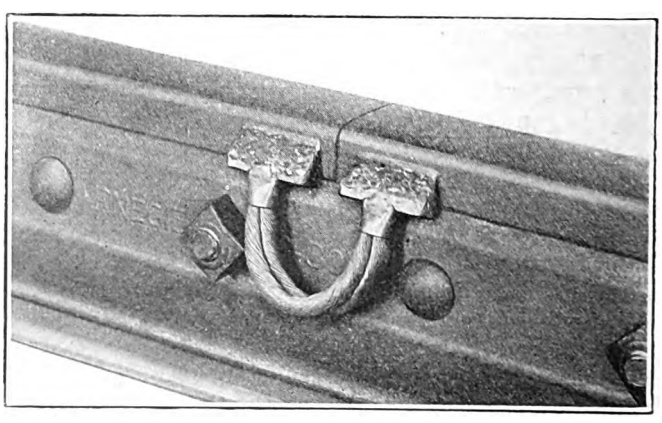
The first of these is the Arcon "A" bond, which is a U-shaped steel terminal bond for application to the rail head. Designed to provide a free and open welding space the steel terminals tilt the bond to clear the splice bars. The heavy steel lugs retain the welding metal and the metal can be built on a slope to the top of the rail to deflect wagon wheels and similar foreign objects. The strand is positioned in the terminals to insure a homogeneous weld between the strand ends and the head of the rail with easy arc manipulation. A seamless steel sleeve dampens and absorbs vibratory stresses in the strands and protects it from the heat of the arc.

A special design was worked out for the Arcon "C" rail bond with the idea in mind of its application to the rail head when a Weber joint is used. The steel terminal design is such that all parts of the terminal rail and conductor are accessible for welding. A low resistance all copper connection is easily and quickly accomplished. Accompanying illustrations show both "A" and "C" bonds actually applied to rail joints.

If it is desired to apply the bond to the rail base around the splice bar the Arcon "F" bond may be used. The steel terminal is designed to co-act with the angle of the rail flange to retain the welding metal. In this long flexible bond complete fusion between the strand ends and the rail base is accomplished with a minimum amount of welding electrode. All unnecessary retaining walls have been eliminated so as to permit easy penetration by the welding arc. A heavy hook is provided to hold the bond in place preparatory to welding. This hook is so designed that it will fit easily between rail and tie.



Arcon "C" Bond Is Designed for Use with Weber Joints



Arcon "A" Bond Applied to Rail Head

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Association News & Discussions

Motor Carrier Regulation Considered

Railroad and Utilities Commissioners Discuss Important Phases of Transportation at 38th Annual Convention in Asheville, N. C.—Factors in Bus and Truck Control for Interstate Service a Leading Topic

EDITOR'S NOTE—That the industry may be informed, in this issue is published a telegraphic report of the proceedings of the annual meeting of the National Association of Railway and Utilities Commissioners held in Asheville, N. C., Nov. 9-12.

This report contains a synopsis of committee reports of interest to the electric railway industry. Discussion of interstate bus regulation, uniform bus accounts, service and fares of electric railways are included. In next week's issue will be published extracts from these reports in more detail.

The trend of thought in the minds of state regulatory authorities is of vital interest to every utility. The JOURNAL has covered the meeting for the electric railway industry in order that this information may be available promptly.

REPRESENTATIVES from the Public Utilities Commissions or similar regulatory bodies of some 30 states met in Asheville, N. C., Nov. 9 to 12 for the 38th annual convention of the National Association of Railroad and Utilities Commissioners.

Several subjects of interest to electric railway men were included in the reports presented by standing committees and in addresses delivered during the meeting. Regulatory problems connected with the operation of motor vehicles were given an important place on the program and occupied a considerable part of an entire day's session. President A. G. Patterson, chairman of the Alabama Commission, in his opening address outlined a number of factors connected with the motor vehicle subject. His view was that existing state authorities should be employed as the agencies by which regulation, both intrastate and interstate, should be carried out. He also expressed the view that "in devising such legislation the rights and interests of existing carriers by rail or by boat should of course not be ignored." A more complete extract from Mr. Patterson's address relating to this subject will be printed next week.

In discussing common carrier rates the president made a strong plea in favor of checking the tendency since the war for the encroachment of federal upon state authority in regulation. A similar view with respect to the extension of federal authority was expressed by many speakers during the convention, including Commissioner J. J. Esch of the Interstate Commerce Commission. This latter view was contained in an address the subject of which was the commerce clause of the American Constitution.

Further reference to the matter of automotive regulation was made in the reports of the committees on state and federal regulation, motor vehicle transportation, express and other contract carriers, and by the special committee on motor vehicle legislation. C. C. McChord, counsel of the National Automobile Chamber of Commerce, discussed the interstate regulation of motor vehicles from the automotive viewpoint. A brief outline of the position taken by the Motor Bus Division of the American Automobile Association in preparing a bus regulatory bill for presentation to Congress was given by S. M. Markell, attorney for the automotive interests. Mr. Markell urged the expediency of concentrating effort on the passage of interstate bus regulatory legislation independent of truck regulation on the ground that such action involves no recession from the principle that both bus and truck transportation should be regulated. He pointed out that opposition to truck regulation is more determined than that to bus regulation, and that the problems presented by the truck are considerably more complicated than those involving the bus.

A decided difference of opinion arose in the discussion. Commissioner Ivan Bowen of Minnesota voiced strong opposition to any federal legislation on the subject on the ground that this would be another step toward extension of federal authority and also that it is highly desirable to insure the development of a competitive form of transportation, which he claimed would help hold freight rates to a minimum. Although Minnesota commissioners were alone in this extreme position there was considerable difference of opinion regarding the matter of advocating bus legislation separate from the control of trucks. The question was finally disposed of by a resolution leaving in the hands of the committees on motor vehicle transportation, motor vehicle legislation, and state and federal legislation the power to carry on the work of supporting legislation before Congress looking to the regulation of automotive vehicles in interstate commerce.

The committee on statistics and accounts of public utility companies indorsed the classifications for bus companies with annual operating revenues of more than $100,000 and those with operating revenues of less than $100,000 adopted by the American Electric Railway Association.

In the report of the committee on service of public utility companies of which J. F. Bell, lieutenant-colonel, Corps of Engineers, United States Army, was chairman, a strong statement was made in favor of giving more consideration to good service than to cheap fares in the regulation of electric railways. Extracts from this report will be published in next week's issue of the JOURNAL. Indorsement of the recommendation of the National Conference of Street and Highway Safety regarding the establishment of automobile stops at dangerous railroad crossings is contained in the report of the committee on safety of railroad operation. Experience in Minnesota, where such a law is in effect, is presented to show the reduction in accidents and fatalities that has resulted.

A strong indorsement of the indeterminate form of utility franchise was carried in a resolution presented by Commissioner Esch of Wisconsin.

Addresses were delivered during the convention by Joseph B. Eastman, chairman Interstate Commerce Commission; John H. Small, chairman Rivers and Harbors Congress; John J. Esch, Interstate Commerce Commission; M. H. Aylesworth, president National Broadcasting Company; Alexander Forward, secretary-manager American Gas Association; Carl D. Jackson, member American Bar Association committee on uniform regulatory law. Short discussions of relations with the regulatory commissions were made by representatives of

COMING MEETINGS OF *Electric Railway and Allied Associations*

***Nov. 16-18*—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.**

***Nov. 17-18*—Iowa Electric Railway Association, operating and maintenance section, annual convention, Fontanelle Hotel, Omaha, Neb.**

***Nov. 17-18*—Central Electric Traffic Association, regular meeting, Fort Wayne, Ind., Keenan Hotel, 9 a. m.**

***Nov. 19*—New York Railroad Club—annual meeting. Engineering Societies Building, New York City, 8 p.m.**

***Dec. 3*—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.**

***Dec. 6-9*—American Society of Mechanical Engineers, annual meeting, New York City, Engineering Societies Building.**

***Jan. 25*—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.**

***Feb. 3-4*—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.**

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several public utility associations and companies.

John F. Shaughnessy, chairman Nevada Public Utilities Commission, was elected president for the ensuing year. Other officers elected were Henry G. Wells, Massachusetts, first vice-president; Lewis E. Gettle, Wisconsin, second vice-president, and James B. Walker, New York, secretary.

The next meeting of the association will be held during the third week in October, 1927, at Dallas, Tex.

American Association News

Public Not Interested in Railway Troubles

STRAIGHT from the shoulder talks by C. S. Ching, supervisor of industrial relations United States Rubber Company, and Walter Drey, vice-president and general manager *Forbes Magazine*, advising electric railway men to stop telling the public their troubles and to begin advertising their accomplishments, were the features of a meeting of the Metropolitan Section, A.E.R.A., held in the Engineering Societies Building, New York City, Nov. 5. Abstracts of the outspoken comments of these speakers appear elsewhere in this issue.

High spots of the recent Cleveland convention were outlined in a short talk by Guy C. Hecker. He quoted figures showing the amount of space used for the exhibits and spoke of the unusual interest displayed by the public. The proceedings of the various affiliated associations were briefly summarized for the benefit of those who had been unable to attend the convention.

A. L. Hodges presented the report of the secretary and stated that the membership of the Metropolitan Section is now 1,164. The report of the treasurer was also read by Mr. Hodges. Following the talks by Mr. Ching and Mr. Drey, officers were elected for the coming year. The program was concluded with several excellent entertainment features.

The new officers are: President, T. R. Langan; first vice-president, R. F. Carbutt; second vice-president, P. W. J. Smith; third vice-president, C. F. Scott; secretary, A. L. Hodges; treasurer, George H. Ord. Three new members were elected to the executive committee, one more than usual owing to the election of C. F. Scott to a vice-presidency. The new members are J. F. Lamb, W. G. Straight and W. J. Stanton.

Railway Outlook Has Changed*

To Furnish Local Transportation Regardless of the Type of Vehicle Is the Duty of the Industry—Public Favor Must Be Wooed, Not Taken for Granted

By WALTER DREY
Vice-President and General Manager *Forbes Magazine*

DESPITE the fact that a newspaper man if he were charged with the responsibility of running a railway couldn't meet the problems half as well as you meet them, yet he feels perfectly justified in criticising the work that you are doing. When you are in a public service business—and it isn't purely a burden that faces you as transportation men, because it faces every other public utility—it is not merely a problem of delivering 100 per cent service, whatever the conditions may be. After you have delivered such service you have got to be constantly telling that public such service as you have delivered to them is 100 per cent.

The reason why a transportation company must use advertising in order to maintain its public relations in the proper fashion is this: We people in the newspaper business are concerned with news, and you only reach or get into the news columns when something happens that is news. When a man does what he is expected to do, that is not news. In other words, if a man leads a decent, exemplary life and goes home to his family every night and raises his children as they should be raised, he can live that way from the cradle to the grave and he probably will never see the front page of a newspaper. But let that same man run off with another's man wife, or let that man do something outside of what he is expected to do, and he immediately becomes "news" and his activities have to be reported.

By the same token, when anything goes wrong on the railway, that is news and will find its way into the newspaper columns. When everything goes right on the railway that isn't news. That is just what you are expected to do, and you don't see the light of day as far as the news columns are concerned. It therefore becomes the job of the transportation company to tell the story of the operations in the form of advertising, to capitalize every possible resource that you have in telling your own story.

One of the chief problems today in public relations is to establish in the minds of the public the idea that you are at least trying to do the right thing, regardless of the lapses you have, because whatever you do will never be perfect. When you once do that, you will get an entirely different attitude with your public and with your community. When once I am fundamentally convinced that the man who is serving me is trying to do the right thing, I will excuse a lot of lack of service, whether it is my butcher, my baker, or my candlestick maker. When I get the idea that the man I am trading with is not trying to do the right thing, even though he gives me what appears to be 100 per cent service, I am still suspicious of him. He loses my trade regardless of the quality of the goods or the perfection of the service that he performs.

My mind goes back to the time of a meeting of the American Electric Railway Association three or four years ago at Washington. For the previous five years the electric railway industry as a whole hadn't been sure of its own future. Then a brand-new idea took hold of the men in this business, because suddenly the realization came that they weren't in the electric railway business at all, that they were in the transportation business, that the transportation business was essentially a controlled monopoly, that it didn't make a bit of difference whether the vehicle was propelled by gas, by gasoline engine, or by electric motor, or what-not, that the business of this industry was to haul the greatest number of people in the most comfortable way at a fair profit to themselves. The moment that thought took hold, it marked the rise of a new day, and it marked an epoch so that the people who were identified with the industry once more saw opportunity and a chance to be rewarded for the service that they performed.

That is where the electric railway industry stands today in the public mind. We don't think of you as operating any particular type of vehicle, but we do hold you responsible to give us the very best service that it is possible for you to give under any given conditions.

To my mind, the hardest pill that any group of men had to swallow was that which transportation men took when they accepted the bus. When a man has been trained for years to believe in the supremacy of electric power to meet any and all conditions under any and all circumstances, by the time he reaches middle age it is difficult suddenly to realize that mechanical development has created a situation where the thing which he thought was omnipotent has limitations. It is a tough pill to swallow. It was a very, very difficult thing for the traction men to take, but they took it like men.

Electric railway conventions today are no more like the conventions of three years ago in morale, in spirit, in attitude, than day is like night. That condition has been brought about within the last two or three years. One other thing remains to be done. You have got to tell the public your story.

It is like this: A fellow goes out to court a girl and he woos her. When he woos her he is constantly putting his best foot forward. Then he marries her. After that he may continue wooing her for a year or two, and then comes that stage of take-it-for-granted—you are here, and I am here, and everything is all right. The street railway industry was married to the public for 25 years, and after that they came mighty close to getting a divorce. Then came the realization that a new courtship had to be started, that the industry had to woo the public all over again. Now you have started wooing and you have won your public once more, don't take your public for granted. Continue to woo the public as long as you are on the job.

*Abstract of a talk given at a meeting of the Metropolitan Section, A.E.R.A., New York, N. Y., Nov. 5, 1926.

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The News of the Industry

Hearings Begun in Kansas City

Start Is Made on the Discussion of Questions Involved in Settlement of Franchise Extension Matter

At last week's meeting of the special committee of the City Council of Kansas City, Mo., appointed to negotiate with the Kansas City Public Service Company in devising provisions for a new street railway franchise it was decided to hold two night meetings or hearings each week following the next scheduled meeting, set for Nov. 10.

Dean's Statement Interpreted

The statements made two weeks previously before the Council committee by Dean H. E. Riggs of the University of Michigan, in connection with valuation figures he had set upon the local properties for the federal court, were again discussed at the Council franchise hearing last Thursday afternoon. Both Mayor Beach and Councilman Henry L. McCune interpreted the statements to be that Professor Riggs meant that the valuation of the property in its present condition should be about $18,000,000, but after the projected rehabilitation program is completed the property should be evaluated at approximately $25,000,000.

The dean's statements were read before the meeting, and it was pointed out that he had said, "after the property has been put in good shape to operate, it ought to be allowed earnings on a capitalization of $25,000,000."

Judge McCune also referred to the valuation of $18,000,000 mentioned in Dean Riggs' report to the federal court, in which he also stated that about $7,000,000 would be required to rehabilitate the property; the Judge contended these references tended to bear out the fairness of the proposed valuation figure of $18,000,000.

President States His Case

William G. Woolfolk, president of the company, said he was of the opinion that his company could not accept a valuation as low as $18,000,000. In explanation, he cited the Interstate Commerce Commission's ruling that when a property is purchased at a low price all expenditures for rehabilitation must go into the capital account of the operators. Mr. Woolfolk also expressed the belief that Dean Riggs had said the property had a valuation of $25,000,000 on Jan. 1, 1925, which definite statement appeared at one point in the dean's recent testimony, in answer to a direct question.

In speaking of fares in connection with the probable earnings of the company, Mr. Woolfolk made the following statement before the committee:

Kansas City cannot expect for some time to get a lower rate of fare than that provided for in the extension franchise. We believe that in a new franchise valuation provision should be made for cost of materials and supplies getting lower; this would reduce expenses and could be used to lower fares.

For several years we do not expect to earn much above operating expenses. Provision should be made so we could earn $2,000,000 to $2,500,000. In five years the receivers averaged $1,934,108 a year. With conservative and economic operation we know we can do better than that. With necessary improvements and new equipment, we believe the road in a few years will be able to earn $2,500,000 a year.

We would be glad to see the present ordinance stand, if we could earn 6 per cent on the valuation it permits. Taking the original valuation of $25,000,000 and bringing it down to date by adding to it the cost of permanent improvements as soon as permitted by its provisions, we would be permitted to earn 6 per cent on a valuation of $43,000,000. But we know that could not be done.

We want a franchise which will permit the company to earn a fair return on the present rates of fare; also any new money which may be put into it, other than maintenance and repairs.

In his testimony last month Dean Riggs recommended 8 per cent as a fair return for a public utility, which he said would leave 2 per cent for depreciation, or for amortization at the end of a 50-year period.

The Council committee has asked Fred W. Fleming and Francis M. Wilson, until recently receivers of the property, and E. M. Stayton, city member of the board of control of the company, to testify at the next hearing.

Planning Board Agrees with Boston Elevated

In the pending discussion between the Boston Elevated Railway and the Mayor of Boston over the construction of a subway under Governor Square, so as to eliminate some of the traffic congestion on the surface, the Elevated scores through a new proposition which comes from the Metropolitan Planning Division. It would cost about $5,000,000 to build the subway, on which the Elevated company would have to pay the rental, but it would cost only about $1,400,000 to carry out the suggestions of the Planning Division. This plan would lift Beacon Street traffic over Commonwealth Avenue so as to eliminate both trolley and auto congestion in the street; there would be no crossings of lines. There would be a ramped viaduct, ornamental in design, a sort of two-level highway overpass from Commonwealth Avenue to Beacon Street.

While this is only a suggestion, it is important because it comes from a body which two years ago advocated a subway at this point. Today the Planning Division says that it is a serious matter to suggest that the car riders of Boston assume an added burden of several million dollars which they would have to pay for the cost of the subway. The proposed viaduct would not interfere with any future extension of the subway in Commonwealth Avenue, Beacon Street or Brookline Avenue.

Another Chicago Snare Ahead

Sectional Favoritism Basis for Opposition Which Blocks Appointment of Citizens' Traction Committee

The plan to appoint a citizens' advisory committee on Chicago traction matters, which was drafted and approved by the local transportation committee of the City Council, went awry on Nov. 4 when it was ensnared in a sectional battle in the Council.

Seven prominent Chicago business men were to have been appointed to the committee at that time by the City Council. The names proposed for the committee were James Simpson, Rufus L. Dawes, George Woodruff, Patrick Nash, Stuyvesant Peabody, John Hayes and George F. Nixon.

After several hours of debate, it developed that the principal objections to the plan was that Loop interests were being favored to the detriment of outlying wards. Mayor Dever's message to the City Council on the previous day, in which he urged that immediate steps be taken toward construction of a downtown subway system, paid for by special assessment and the city's traction fund, was also cited as further indication of this sectional favoritism. It is now considered unlikely that the proposal will again be brought up for discussion for another two or three weeks.

Assessment Plan Advocated

That there would be serious trouble ahead for any such plan as contained in the report of the citizens' subway commission, which was presented last August to the City Council (see ELECTRIC RAILWAY JOURNAL for Aug. 28) and which served as a basis for the recommendations in Mayor Dever's recent message to the Aldermen, was likewise made evident at the meeting of the local transportation committee.

One of its most bitter opponents was Alderman John Toman, who stated that he would fight the plan when it comes up for consideration on Nov. 16 because it permits only 35 per cent of the cost of subways to be assessed from property owners. He especially resented the suggestion to take moneys from the city's $45,000,000 traction fund for this purpose. He said:

The special assessment ought to be for at least 75 per cent of the cost of the subways. Daniel L. Turner, consulting engineer of the New York subway commission, said in a report three years ago that subways increased the value of property 75 per cent. It has been shown that the subways in Manhattan boosted values seven times and in the Bronx 5½ times. Take the Michigan Avenue link bridge right here in Chicago, costing $14,800,000. The plan commission showed two years ago that the bridge had increased property values $90,000,000. The figure is now probably more than $100,000,000. Property owners should certainly pay more than 35 per cent of the cost.

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Denver Tramway Case in Supreme Court

City Attorney Henry E. May and Assistant City Attorney Thomas H. Gibson of Denver, Col., on Nov. 5 presented to the United States Supreme Court a petition in which they seek reversal of the decisions of Federal Judge Robert E. Lewis in favor of the Denver Tramway. Among other things they contend:

The trial court was without jurisdiction. The franchise is a contract between the people of Denver and the company. The franchise stipulates a 5-cent fare. The federal court cannot set aside the 5-cent fare provision of the franchise because the question of confiscation cannot enter into the enforcement of a contract. If you make a bad bargain, it is your own fault.

The brief is based upon a decision of the United States Supreme Court, to wit:

Provisions in ordinances granting franchises to railways that the rate of fare shall be not more than 5 cents or that the grantees shall not charge a higher fare are contractual.

Attention is directed to the decision of the Colorado Supreme Court, to wit: "No perpetual franchise can be granted in Colorado."

Judge Lewis' decision was to the effect that the franchise between the city of Denver and the Denver Tramway, which contained a 5-cent fare clause, was "perpetual." He did, however, authorize the company to charge an 8-cent fare.

Strike on Massachusetts Interurban Put Off

The strike planned by the workers of the transportation and freight departments of the Boston & Worcester Street Railway, South Framingham, Mass., to go into effect on Nov. 5 was deferred by the carmen until Judge Edward F. Pierce of the Massachusetts Supreme Court could confer with officials of the company and a committee of the employees. Conductors and motormen alleged that no attention has been paid to their demands for more wages and recognition of the union.

When the strike was voted, the following statement was given out:

Patrons of the Boston & Worcester Street Railway are notified that the motormen, conductors, one-man car operators, bus operators and others employed in the freight and transportation departments are going to suspend work on Nov. 5, at 12:06 a.m.

We regret the necessity of doing this, but for more than a year we have been trying to get the receiver of the property to deal with us. He declines to recognize our union, which has been organized on this property for thirteen years. We have been to the Supreme Court several times to get relief, but the receiver has blocked every attempt we have made to get it done.

We have been acting with him and the officers appointed by him since February, 1925, when he was appointed, and we believe were doing so under our contract. He treats this contract as just a mere scrap of paper. On Aug. 10, after eleven months of effort to accomplish something with the receiver, our meeting voted to suspend work and left the time of such suspension in the hands of the committee and international officers.

For nearly three months we have been endeavoring to arrive at some sort of an agreement with the receiver and have been blocked at every turn. We are giving the patrons of the road ample notice of this suspension.

A statement by the receiver discloses that the union had asked authority to negotiate a new contract through outside parties, not responsible to the court. The receiver in reply asked the union to take its petition to the court in August, with the offer to have his attorney go along. P. J. O'Brien, Springfield, Mass., for the union, urged a postponement until Judge Pierce could act on the petition.

Merchants Want Railways of New York to Operate Buses

The committee on city transit of the Merchants' Association proposed on Nov. 10 that the Board of Estimate should consider the rights of existing transit companies in the granting of new bus franchises and grant such franchises only to existing companies in Manhattan, the Bronx, Brooklyn and Queens for extension of present lines.

The proposal was incorporated in the committee's report of a consideration of the Board of Transportation's recommendation to grant new city-wide bus franchises, and the report opposed this recommendation in that it "disregards the principle of unification and economic utilization of existing means of transportation and fails to consider the property rights of companies now operating." Among other things the report said:

We believe that the existing surface, bus and subway lines should be encouraged to develop bus lines within their territories as auxiliaries and feeders whenever circumstances render such action desirable or practicable. Any other method of handling the question of surface transportation will merely lead to increased cost and further complications which would inevitably postpone a solution of the transit problems of New York City.

Provided equitable terms for any required new bus franchises can be agreed upon with the companies specified, we suggest the following as a basis for combining serviceable existing facilities with new and additional motor bus routes when shown to be necessary:

For Manhattan—The existing motor bus system of the Fifth Avenue Coach Company in combination with the lines of the New York Railways Company now controlled by it.

For the Bronx—The Third Avenue Railway system controlling the Union Railway Company, and other lines extending into Westchester County.

For Brooklyn—The combined trolley lines of the Brooklyn-Manhattan Transit Company and the Brooklyn City Railroad.

For Queens—Co-ordination under unified control of such existing surface lines as are serviceable, with such additional bus lines as may be desirable.

New Chattanooga Cars Praised

Public felicitations are due the Tennessee Electric Power Company for the public spirit recently exhibited in providing Chattanooga with the handsome new cars, as nearly noiseless as they can be made, and which are attractive and comfortable. Public utilities do not always show so marked a consideration for the comfort and the needs of their patrons, and when railways at last come to realize that in order to maintain competition with other modes of transportation they must provide equal accommodation with respect of comfort, ease of traction and promptness in reaching destination, it is for the public to show appreciation. There is every reason to believe that the public will show its appreciation of the company's enterprise by patronizing the cars liberally.—*Chattanooga Times.*

Gerard Swope Talks on Industry Responsibilities

At the annual dinner of the Associated Business Papers, Inc., and national conference of business paper editors held at the Hotel Astor, New York, on the evening of Nov. 10, with 300 in attendance, Gerard Swope, president both of the General Electric Company and the National Electrical Manufacturers' Association, spoke on "The Responsibilities of Modern Industries," dwelling on these as they concern, first, the industry itself; second, the public; third, the employee, and, last, the shareholder. Mr. Swope praised the business papers as interpreters and counselors in the formulation of high industrial standards.

Donald Kirk David, assistant dean Harvard School of Business Administration, spoke on "Aims and Responsibilities of Education in Merchandising," and there was a presentation to W. H. Ukers in recognition of his services in establishing the standards of practice of the Associated Business Papers. M. C. Robbins of the Robbins Publishing Company made the presentation. Malcolm Muir, vice-president of the McGraw-Hill Publishing Company, Inc., was toastmaster.

Court Upholds St. Louis Parking Provision

The St. Louis Court of Appeals has upheld a St. Louis city ordinance which prohibits parking of automobiles in the down-town shopping district. The measure went into effect on Jan. 26, 1926, and applies to the district bounded by Carr, Market, Fourth and Twelfth Streets. The decision is of interest to the local railway and bus companies, since it will enable them to avoid the delays incident to automobile owners trying to park in the downtown streets.

The ordinance was attacked by John E. Corvey, an attorney, who was fined $5 and costs by City Court Judge Rosecan on July 8, last, for parking his automobile on Market Street. Mr. Corvey had sought to set the ordinance aside on the grounds that it bore the date "Jan. 25, 1925," instead of "1926." He also attacked the constitutionality of the law. Concerning the mistake in the date showing the approval of the Mayor, Judge Daues held that the ordinance automatically took effect within twenty days, since Mayor Miller had not vetoed it, even if the error in date could invalidate the approval.

15 per Cent Rate Increase on Elgin Road Deferred

An increase of approximately 15 per cent in suburban passenger rates scheduled to become effective Nov. 12 by the Chicago, Aurora & Elgin Railroad, Aurora, Ill., has been postponed until next May. The petition was filed last June and a favorable decision was handed down by the Illinois Commerce Commission early this week. The proposed rates, made necessary by rapidly mounting labor and operating charges, were approximately equal to those charged by several competing steam railroads.

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Steam Versus Electricity

Trained Observer's Inspection a Vivid Argument for Railroad Electrification —Merits of Both Roads Outlined

Pursuant to an order from the editor of the Chicago *Tribune*, James O'Donnell Bennett of the staff of that paper rode from Chicago to Milwaukee by the new electric line of the Chicago, North Shore & Milwaukee Railroad, 85½ miles, and returned by the old steam cars, 85 miles, making copious, prompt and careful notes on cost, speed, cleanliness, comfort and civility as offered by the respective roads. On the whole, the little trip seemed to him about the most vivid argument for electrification of railroads that there is—and for the new spirit that seems to go with electrification.

Both trains on which Mr. Bennett rode were on time, but the contrast in the appointments of the two was "striking," to use a much-maligned word. The porter on the electric train wore spotless white linen; the patient soul on the steam train, who dusted and dusted and dusted, wore hot blue cloth. The washroom facilities on both trains were practically identical, save that the electric equipment was more on a doll house scale. On the steam train the magazine vendor shouted his wares; on the electric train the porter brought you the latest magazines bound in neat black folders.

As the reporter ciphered it out the long and short of it is that the Chicago & North Western steam railway saved him eighteen minutes, which, as he is not an important person, did not matter much to him. It also saved him from eye strain because its roadbed is solid as the rock of ages and its rolling stock like steel safes; hence little jolting of the car and no swaying when he was reading.

The Chicago, North Shore & Milwaukee electric railroad saved him 74 cents, which is half the price of a good meal or of a tolerable reprint of some great book. It also pampered any self-esteem by treating him—in the matter of those fleeting courtesies which are so sweet a solace to a traveler—as if he were an important person. Above all it sent him from its train as he came to it—clean, good natured and rested. From the other line, owing to inevitable smoke and grit from the engine he departed with only one proper destination —and that a bathtub.

In the course of his account of the trip Mr. Bennett set down distinctly the relative merits of the two roads under the heads: Cost, speed, cleanliness, comfort and civility. According to him civility on the electric line was perfect. It was watchful and alert, and it was tireless without being oppressive. Upon leaving Chicago the porter brought each passenger an afternoon newspaper (free), and 35 minutes out he served iced water and peppermints from a tray. All questions were answered with precision and promptness. Deportment of the electric station personnel in both Chicago and Milwaukee was the same. Mr. Bennett never saw better treatment of passengers.

On the steam line civility was good to fair, shading off either to curtness or to slapdash. There was no offense intended or conveyed, but the employees certainly made you know your place as a passenger, "while the electric people treated you like company." Neither personnel knew Mr. Bennett was a reporter. The steam line civility was weakest in the stations—at the ticket windows—where the employees inclined to abruptness, sometimes answering questions scantily or with weary resignation. They displayed no interest in a passenger's bewilderments or anxieties. As Mr. Bennett stated it: "They were there to sell tickets, not to pamper you."

The sole annoyance on the electric was the swaying of the cars under high speed, making reading of small print difficult and legible writing impossible. In this connection Mr. Bennett said:

> In the diner luncheon became an adventure in dish balancing for me and a disaster for the tablecoth. Passing from car to car while train was moving was dangerous, and the conductor anxiously warned passengers not to do it, and gave them a helping hand when they insisted on making the move. Manifestly the roadbed needs heavier ballasting and perhaps heavier rolling stock. Ventilation of cars was admirable and temperature right.

Franchise Discussed at Jacksonville

Management Sets Forth Reasons Why a Thirty-Year Extension is Necessary—Operating Statement Offered as Testimony of Company's Position

PUBLIC hearings are being held at Jacksonville, Fla., on the proposed new 30-year franchise for the Jacksonville Traction Company. The existing grant has four years to run. Several of the city's clubs have indorsed the plan of a new franchise fair to both city and company. The franchise now pending before the Council was introduced in August by Councilman George J. Garcia. If the grant is passed by the Council it must be approved by the voters before it becomes valid.

At one of the recent hearings Mr. Garcia explained how it was that he came to act as sponsor for the new grant. He indicated that as a champion of better railway service he had conferred with John P. Ingle, manager of the company, but that Mr. Ingle had told him the banks would not loan the company money on a short franchise to make the extensions and improvements desired by the company and demanded by the public. Mr. Garcia then said:

> I verified his statement, from a number of bankers. Then I told Mr. Ingle to draw up some kind of a bill and I would introduce it to "start action." What I want is better service and I'm going to do everything in my power to get it. I believe if the city takes over the railway, it can be successfully operated, but if it does not, then let the company try to get a new franchise. Above all, we want better service.

Another recent speaker was Giles Patterson. His most important concern appeared to be about the question of safeguarding the city's interests. In making his recommendations, Mr. Patterson stressed the necessity of access by the city to the company's records and the need for careful examination of the situation before a franchise is granted. He suggested that a new franchise require the company to file with the city all data covering its financial operations.

Mr. Ingle feels that the officers of the company are entitled to ask the city to relieve the railway of the 3 per cent franchise tax and the expense of paving in order that earnings may be more nearly sufficient to attract the additional capital the company must secure from time to time to enable the system to keep pace with the growth of the city and yet at the same time keep the fare at as low a figure as possible for the benefit of the car rider.

Mr. Ingle was quoted as follows:

> I believe that as a matter of public policy the street car should be regarded as the poor man's means of transportation and everything should be done to make the cost of a ride as low as possible. All burdens levied on the company tend to increase the fare, for in the last analysis we all realize that they are reflected in the fare and are paid by the car rider.
>
> But there is another reason, and that is the financial ability of the company to continue to give adequate service with the additional investment of $750,000 we intend to make if a proper franchise is allowed and at the present fare.
>
> Our financial statement for the year ended Aug. 31, 1926, is as follows:

Gross earnings	$1,584,731
Operating expenses	858,058
Balance	726,673
Taxes	122,041
Balance	604,632
Depreciation	175,000
Balance	$429,632

> This balance of $429,632 represents 8 per cent on an investment of $5,360,000 and while this may not be all that the owners of the property are legally entitled to receive it might be regarded under the circumstances as fairly good.
>
> Let us see what will happen to our balance of $429,632 after we replace our 5 per cent bonds with 7 per cent bonds, make the added investment of $730,200 and give the increased service that we contemplate.
>
> First we will run 737,800 more car miles which at 20 cents per car-mile will add to our operating expenses $147,560.
>
> We will lose $30,600 on the operation of the buses,
>
> Depreciation on the added investment at 3½ per cent will be $23,950.
>
> The additional investment will increase our taxes, we must estimate, $10,000. Additional interest on the $1,245,000 bonds when we replace these 5 per cent bonds with 7 per cent will be $24,900. This gives a total increase in expense of $288,120.
>
> We estimate that with the added service our gross earnings will increase 5 per cent, or $79,240, which, deducted from the added expenses of $288,120, leaves a net increase in cost of $208,880.
>
> If this net additional expense is deducted from the present balance of $429,632 we have left only $220,752, which is only 8 per cent on an investment of $2,760,000, and no reasonable person can claim that this is a fair return on a fair value of the property being used in serving the public.

Advertisements Tell Railway Story. —The Duluth Street Railway is running in the newspapers a series of statements for the information of its patrons and public upon matters pertaining to street car service in the city of Duluth, Minn. The advertisements are signed Twin Ports Electric Lines. The first statement was called "Fare—7 Cents to Regular Patrons." The next statement dealt with the cost of the ride.

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One-Man Cars on Nineteen Routes in Buffalo

With the extension of one-man car service to the Main Street and Kenmore lines, the two longest and most heavily patronized local lines in Buffalo, N. Y., the International Railway is operating one-man cars on nineteen routes in the city, leaving two-man crews on only four lines. One of these four routes the company is seeking to abandon entirely and on one of the others the company is unable to operate one-man cars because of the refusal of the city to grant permission to construct loops at the end of the route. It is the intention of the railway eventually to operate one-man cars on every local line in Buffalo.

Twice the City Council of Buffalo has made unsuccessful appeals to the Public Service Commission to prohibit one-man car operation. A renewed request was made in a general bill of complaint filed by the city against the company to the state utilities board two months ago.

Alton Deal Approved

The Illinois Commerce Commission on Nov. 5 issued a certificate of convenience and necessity to the St. Louis & Alton Railroad, which will operate the old Alton, Granite & St. Louis Traction Company's interurban line between St. Louis, Mo., and Alton, Ill. The Illinois commission also approved the purchase by the new company of the traction company's property from Louis Clements, special master, and E. M. Gregory, receiver for the Alton, Granite & St. Louis Traction Company, for $999,000.

Changes in Seattle Service

Operations of the Seattle Municipal Street Railway in Seattle, Wash., will be curtailed in one direction and expanded in another within a short time. The buses on Tenth Avenue Northeast, heretofore operated by private parties, began operation Nov. 1 under municipal ownership. Ten buses will travel the entire length of the avenue. Discontinuance of shuttle service on several lines is also announced, including the Youngstown and Ray Street shuttle lines, as well as curtailment of service on the Lake Burien, Mercer Street and Boston Street shuttles. It is estimated that these curtailments in service will reduce operating expenses approximately $100,000 a year.

Rapid Transit Proposal Advanced at St. Louis

Another step toward the rapid transit system proposed for St. Louis, Mo., was taken by the rapid transit committee of the Aldermen when it ordered Associate City Counselor Farris to prepare the drafts of legislative measures needed to pave the way for the system.

These bills will provide for the legal status of a proposed rapid transit commission, the extension of rapid transit bonds for fifty years and for the placing of special assessments against property benefited by the proposed system.

C. E. Smith, consulting engineer for the city, has estimated that it will take about fourteen years to complete the rapid transit program outlined in the recent report. About two years will be needed to pass the necessary legislation. The next two years would be devoted to building the down-town subways, and another fixe years for the second phase of construction, the extension of the tubes to Grand Boulevard. Finally five years would be devoted to the last stage of construction, the extension of the system to the city limits. Should St. Louis in the meantime decide to extend its city limits to the Franklin, Jefferson and St. Charles Counties lines it would take considerably longer to complete a rapid transit system to provide for the needs of the added territory.

The aldermanic committee has not decided whether to provide for a subway or elevated system.

Ten-Cent Fare Sought in Kingston

The Kingston Consolidated Railroad has applied to the Public Service Commission for authority to charge a 10-cent cash fare, three tickets for 25 cents, and transfer privileges with the Kingston City Transportation Corporation, operating buses in Kingston, N. Y. The present fare is 8 cents.

In its petition the company says the total revenue in 1924 was $200,610 and total expenses $178,782, leaving $21,828 available for return upon its property used in giving transportation service in Kingston, or 3.4 per cent. Total operating revenues from Nov. 1, 1925, to Oct. 1, 1926, were $123,237 and the expenses of operation $93,622. Taxes paid were $10,443. The amount available for return upon its property and contingent expenses was $19,533.

Total operating revenues on the bus line from March 10 to Sept. 30, 1926, were $31,888 and total operating expenses $25,484. Taxes paid were $240, leaving $6,163 available for return and contingencies.

The Mule Car Has a Day in Nashville

The Nashville Railway & Light Company put on a big parade on Oct. 29 in Nashville, Tenn., demonstrating the 60 years of progress from the mule car to the railway parlor coach. Public inspection of the first mule car, first electric car and ten new cars parked on Eighth Avenue North between Broadway and Church lasted from 2:30 p.m. until 5 p.m. The parade, which boasted of a gold sword presented to Gen. Andrew Jackson, was led by the "President Andrew Jackson," a model of the ten new cars, costing $150,000. Distinguished Tennesseeans live again in the coach names, namely, Andrew Jackson, James Robertson, founder of Nashville; John Sevier, first Governor of Tennessee; President James K. Polk, and others. Each new car seats 44. They are finished in red, olive and white, have automobile-type brakes, wide, convenient doors and steps, leather seats. Gone for 37 years, the old mule car returned for a day and the occasion was a festive one.

Relief for St. Paul Property Denied

The amendment to the charter of St. Paul, Minn., which would have enabled the City Council to relieve the St. Paul City Railway in whole or in part of certain charter and franchise requirements relating to street paving and maintenance was lost at the election on Nov. 2. Although the vote was about 60 per cent for the amendment, the law requires a 60 per cent majority of the votes cast at the election. A neglect to vote at all was against passage of the amendment. The proposed amendment in its purport did not relieve the company, but it enabled the Council to act in these matters in such measure as might be deemed best for the interests of the city. The relief would have totaled $117,000 a year.

Thus the Council may not act even though the present fare rate of 8 cents and six tokens for 40 cents was fixed by the Minnesota Railroad and Warehouse Commission on the theory and a strong suggestion that relief along the lines indicated would be given the company. Rate of fare is dependent upon cost of service, and it had been urged on voters that street paving and maintenance under the city charter and the franchise are part of the cost of service.

International Railway Against Higher Fare Opponents

The International Railway, Buffalo, N. Y., has brought an equity action in the United States District Court against members of the State Public Service Commission, the board itself, the cities of Buffalo, Niagara Falls, Lockport, Tonawanda and North Tonawanda and the villages of Lancaster and LaSalle. The action asks for temporary and permanent injunctions restraining the defendants from interfering with the collection of new fare charges set forth in the tariff filed by the company with the commission in September.

In its complaint the International Railway charges that the state is compelling the plaintiff to operate its lines at a rate of fare alleged to be confiscatory. The company asks United States District Judge John R. Hazel to designate two other judges to hear and determine with him the plaintiff's application for an interlocutory injunction and to hear evidence in the final determination of the equity suit. The company says its valuation should be fixed at $100,000,000 instead of the $22,000,000 fixed by the New York State Public Service Commission several years ago in a former rate proceeding similar to the present one.

The institution of the equity suit by the International Railway is the result of the refusal by the state commission to issue an order allowing the traction company to put into effect the tariff of increased fare charges which it filed on Sept. 16. The company seeks to increase its local fares in the city of Buffalo from 8 cents or two tokens for 15 cents to a 10-cent fare. Half fares in Buffalo would be increased from 3 to 5 cents. In the city of Niagara Falls it would increase local fares from 5 cents to 8 cents or two

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tokens for 15 cents. It is proposed to charge half fare of 5 cents to children between the ages of five and twelve years. Local fares in Lockport, now 6 cents, would be increased to 8 cents or two tokens for 15 cents. LaSalle local fares, now 5 cents, would be jumped to 8 cents or two tokens for 15 cents. Interurban fares on the Buffalo-Niagara Falls and Buffalo, Lockport and Olcott divisions would be increased from the present charge of 2½ cents a mile to 3 cents a mile.

"L" Lease Argument Enrolls Services of Edward A. Roberts

Edward A. Roberts, transit expert and consulting engineer, of New York, has been engaged by the United Business Men's Association in connection with the discussion of the Frankford "L" lease, now under consideration by the Public Service Commission. Mr. Roberts attended the first hearing. He is preparing a list of questions concerning the earnings of the Philadelphia Rapid Transit Company. Harold M. Evans, representing the City Club, the Northeast Philadelphia Chamber of Commerce and the Civic Club, charged on Nov. 5 that complete facts with regard to the lease of the Frankford "L" to the Philadelphia Rapid Transit Company had not been brought out before the commission.

Chicago Surface Lines Loses to City in Paving Decision

A decision was handed down by the Illinois Supreme Court in Chicago recently declaring that the Chicago Surface Lines must pay for repaving when the city has torn up the street between its rails for installation or repair of sewers and water mains. This gives the city a potent weapon, it is believed, in its present negotiations with the Surface Lines for a new franchise. The decision ends a fight which has been in the courts for ten years and upholds a decision of the Appellate Court, which had reversed a Circuit Court ruling against the city.

Franchise Extension Defeated in Barberton

The franchise granted the Northern Ohio Power & Light Company by the city of Barberton last August was rejected by the voters at a referendum election on Nov. 2 by the narrow margin of 220 votes.

A study of the result shows that sections of the city where working people reside approved the franchise, while the so-called better residential sections voted against it. The company took the position that the issue was a civic one and that it was as much to the city's interest to approve the ordinance as it was to the company's.

Since the rejection of the franchise, the Council has offered to repass the ordinance under the pledge that no referendum will be called. The company has not decided to accept the proposal, feeling that it went too far in the defeated ordinance in agreeing to pay for paving between the rails.

The ordinance which was defeated provided for an increase in fare between Barberton and Akron from 10 cents to 12½ cents and for an increase in the city of Barberton from 5 cents to seventeen tickets for $1, four tickets for 25 cents, or a 7-cent cash fare.

The ordinance, a ten-year grant, provided for practically double-tracking the entire Barberton line at a cost of about $150,000. It granted the city the right at each four-year period to examine the company's books to determine the rate of fare for the following four-year period. Control of service reposed with the city.

In Appreciation of Roanoke's Electric Railway

In commenting on the general principle of the skip-stop system on electric railways, the Roanoke *Times* of Oct. 22 takes occasion to generalize on the system in that city. The comment runs as follows:

Railway service here is all that the public has a right to expect—indeed, it is far better than Roanoke deserves, everything taken into consideration. The railway has had anything but the best of it in its dealings with the city fathers. Nevertheless, it has gone right ahead making improvements to the service, making additions to the equipment, giving the city the very best available at all times. The railway has done its part toward solving the traffic problem in Roanoke. It cannot be accused of having laid down on the job ever.

The system in Roanoke is operated by the Roanoke Railway & Electric Company.

"Seeing Greater Chicago," a New Surface Lines Guide

A valuable sightseeing and route-guide by which residents and visitors to the big city can see Greater Chicago has been published by the Chicago Surface Lines. This is a 48-page illustrated pamphlet, including a map showing the system of the Surface Lines, the principal points of interest and direct lines of transportation. All directions given in the "Seeing Greater Chicago" presume starting from the "Loop." For additional information sightseers are asked to call the Chicago Surface Lines, at Dearborn 8800.

Piedmont & Northern Extension Plan Revived

Action was taken at a meeting of the directors of the Piedmont & Northern Railway, held in Greenville, S. C., on Nov. 3 looking to the completion of the system from Charlotte to Durham. This action was in the form of a resolution asking the stockholders to approve the expenditure necessary for the new trackage.

Two links of the line have been built, between Charlotte and Gastonia in North Carolina and between Spartanburg and Greenwood in South Carolina. The plan of the late James B. Duke, builder of the line, was thwarted by the World War, which halted all construction plans of this kind. Some months before Mr. Duke died, two years ago, discussion of the extension of the road was renewed and it was understood that plans for construction were being made. These plans were again halted by the death of the promotor.

The road is standard gage and is electrically operated. The operating company is affiliated with the Duke Power Company. The distance from Durham to Greenwood is 300 miles.

The stockholders will meet in Greenville on Dec. 8.

Hearing on St. Louis Fares Nov. 16

The Missouri Public Service Commission at Jefferson City, Mo., on Nov. 16 will hold a public hearing on the application of Receiver Rolla Wells of the United Railways, St. Louis, for an increase in fares from 7 cents to 8 cents or two tokens for 15 cents.

The original application was filed last June, but a few weeks ago Receiver Wells filed a request for an immediate increase in fares pending a final decision.

The city has opposed the increase unless a complete audit of the company's books reveals that more revenue is actually needed. The city officials also favor segregation of the revenues of the city and county lines, contending that city riders should not be compelled to carry the load for county riders who are transported at a loss.

Interstate Trainmen Receive Wage Boost

A voluntary increase of 2 cents an hour was made in the wages of the trainmen of the Interstate Public Service Company, Indianapolis, Ind., effective on Oct. 1. The new scale, in cents per hour, is as follows:

For first-year men, 41; second-year men 42; third-year men, 43; fourth-year men, 44; fifth-year men, 45, and for men employed longer than five years, 46.

Railway at Dover, N. J., Protests Against Bus

The Morris County Traction Company, Dover, N. J., is opposed to having Arthur J. Seldney operate a bus between Morristown and Wilsonville, N. J. Appearing before the Public Utilities Commission recently, C. W. Fields, superintendent of the railway, declared that the bus had caused a decrease of at least 16 per cent in the number of passengers carried on its line between Morristown and the State Hospital at Morris Plains. The Lackawanna Railroad, which had entered an appearance in the case, advised the commission it would not oppose. The commission reserved decision.

Fare Hearings Resumed.—Hearings on the petition of the United Traction Company, Albany, N. Y., for an increase in fare scheduled before the Public Service Commission on Nov. 15 has been postponed to Nov. 30. Testimony on the application will be taken on the basis of segregated revenues and expenses in accordance with the ruling of the commission that the company must show its profits and losses by cities lines.

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Recent Bus Developments

Amended Petition in New York Case

An amended petition for a bus franchise in New York City has been submitted to the franchise bureau of the Board of Estimate by the Service Bus Corporation. The supplemental petition is designed to meet additional requirements laid down by John H. Delaney, chairman of the Board of Transportation, who has favored granting franchises for bus operation in Manhattan, the Bronx, Brooklyn and Queens to the Equitable Coach Company.

The new offer is in the form of a letter to the board signed by Ernest M. Howe, mananging director of the Service corporation. It petitions for a ten-year franchise, with a ten-year renewal privilege rather than a 25-year franchise, as in the original petition, and would give 3 rather than 2 per cent of the bus line's earnings to the city. Original offers to operate on a straight 5-cent fare basis with free transfers within a borough and half rate to school children stand.

The Service Bus Corporation also indicates that it will accept a franchise for the Borough of Manhattan only or a permit for any other boroughs except Staten Island added as the board may desire.

Bus Service to Argentine District at Kansas City Discontinued

The Kansas City Public Service Company, Kansas City, Mo., on Oct. 26 applied to the Kansas Public Service Commission for permission to discontinue its bus service to the Argentine district of Kansas City, Kan. The bus service was originally installed to replace railway service during the period in which the Twelfth Street Viaduct was closed to cars. The recent restoration of railway service to the Argentine district made the continuance of the bus service unnecessary.

Shore Line Coach Company Seeks to Abandon Eight Miles

Permission to discontinue its service between Schererville and Crown Point, Ind., a distance of 8 miles along its Hammond to Crown Point route, was asked in a petition filed on Nov. 3 with the Public Service Commission of Indiana by the Shore Line Motor Coach Company, a subsidiary of the Gary Railways and Chicago, South Shore & South Bend Railroad. The service from Hammond to Crown Point has been operated for the past five years and for more than two years the route has been operated at a substantial loss. The certificate was acquired by the Gary Railways in September, 1924, and later transferred to the Shore Line Motor Coach Company.

Charles W. Chase, president of the company, in referring to the poor earning situation, said that on May 1 of this year, feeling that the service rendered might not have been of a type to induce travel over the route, the street car type of motor coach was taken off and 24-passenger International parlor coaches were put on this run. This change, however, failed to stimulate riding, so that about a month ago the service was reduced from five to three round trips a day. This also failed to improve the earning situation, he explained. The deficit for the last two months was more than $2,000 a month.

Ordinance Would Regulate Bus Operation

Charging that the city and intercity buses now operating in and out of Manitowoc, Wis., are partly responsible for increased traffic congestion in the downtown section, an ordinance is to be presented to the Common Council for passage under which all buses using the city streets would be regulated as street cars. Under the proposed ordinance buses would hereafter load and unload passengers in the downtown section within the street car zone instead of at the sidewalk. Objection is also directed against intercity buses parking at the sidewalk because of the lack of station facilities. Consequently, recommendation has been made to compel these companies to establish their own bus stations.

Pennsylvania Case to I.C.C.

Electric Railway Contends Bus Service Conducted at Loss by Steam Line Is Inimical to Provisions of Commerce Act—Novel Points Raised Against Railroad Seeking to Compete in Electric Railway Territory

IN ITS appeal to the Interstate Commerce Commission against the Reading Company, to which reference was made in the ELECTRIC RAILWAY JOURNAL for Nov. 6, the Schuylkill Railway asks that the commission command the Reading Company, a steam carrier, to refrain from engaging directly or indirectly in the business of owning, leasing or operating buses in Schuylkill County, unless and until the terms and conditions of engaging in such service shall be approved by the commission's certificate of public convenience and necessity. It also asks the commission to make such further order or orders as that body may consider proper.

This is another move in the proceeding by the Schuylkill Railway, an electric line, to prevent the steam carrier from operating buses in territory now served by the electric railway by both bus and trolley. The electric railway and its bus operating subsidiary, the Schuylkill Transportation Company, charge:

1. That the practice of the defendant in operating local trains (specifically mentioned) at a loss is a practice directly in violation of the interstate commerce act of 1887 and its amendments and supplements, in this: that the said practice causes undue, unreasonable and unjust discrimination against interstate commerce by carrying on intrastate passenger transportation between the points hereinbefore mentioned at rates or fares on a substantially lower level than the rates or fares fixed and collected in interstate passenger traffic passing through the same points on the same rails. The losses incurred in and by the operation of the local trains aforesaid must be and in fact are met from the common fund produced by the defendant's interstate and intrastate business. The carrying of freight is the only service conducted at a profit by the defendant. The greater part of the freight traffic of the defendant consists in the transportation of anthracite and soft coals and most of the earnings from that source come from interstate business. The complainants therefore charge that the defendant is paying its intrastate traffic losses incurred in the operation of the trains aforesaid with and out of freight earnings principally derived from interstate traffic to the undue and unreasonable advantage and preference of intrastate commerce and to the prejudice of interstate commerce.

2. That the said unlawful practice and undue, unreasonable and unjust discrimination against interstate commerce may be removed by increasing the rates of fare on the said trains operated at a loss as aforesaid, or abandoning the trains.

3. That the proposed bus service if permitted would be only a continuation of the said unlawful practice in another form.

4. That the commission has power under the interstate commerce act of 1887, section 13, as amended by the transportation act of Feb. 28, 1920, section 416 (U. S. Statutes at Large 66 Congress, Sec. Session 1919-20, page 484), to cause the said unlawful practice as now carried on by the defendant to be removed as aforesaid, and to require that the defendant shall not undertake the proposed bus service without the commission's express approval of the terms and conditions of its financing and operation.

Wherefore, the complainants pray that the defendant may be required to answer the charges herein, and in particular to show in detail the earnings and entire cost of operation of all the trains hereinbefore mentioned, and that after due hearing and investigation an order be made commanding the defendant:

1. To remove the said unlawful practice.
2. To cease and desist from the aforesaid violations of the interstate commerce act.
3. To establish and put in force and apply in the future to the transportation of passengers between the points aforesaid in lieu of the fares hereinbefore named, such other fares as the commission may deem reasonable and just, but in no event less than the cost of operating the trains aforesaid or otherwise.
4. To cease to operate the said trains.

According to the complaint the steam railroad is substantially parallel with the electric railway between numerous points in Schuylkill County and between those points the two lines are competitive as regards strictly local and intrastate passenger business. There are no traffic agreements or understandings between the complainant and the defendant. The competition between them is unrestricted. The complainant, however, carries nothing but local passengers, while the defendant carries not only a great passenger traffic, which is mostly through traffic and interstate traffic, but also its immense anthracite coal freight traffic. Schuylkill County is the center of the anthracite mining industry served by the defendant and the larger part of the said coal carriage is interstate traffic. In comparison with the total amount of through and interstate passenger and freight traffic of the defend-

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ant on and over the said competitive portion of its line in Schuylkill County, the amount of the defendant's local passenger traffic on that portion of its line is extremely small.

The electric railway charges the steam carrier with asserting, in proceeding before the Pennsylvania commission, its hope and expectation to overcome possible bus operating loss by increasing the number of bus passengers carried beyond the number now carried on its trains. The complainants seek to show that the defendant's hoped for and expected gain cannot be realized because there is no substantial amount of passenger traffic to be gained by the defendant for its buses except by diverting traffic from the competing lines of the Schuylkill Railway and other electric railway and bus companies now long and well established in the fields. It is charged that instead of the advantages now offered to the public by train service the defendant will by the proposed bus operation offer the public no transportation which is not already afforded by the complainants and other electric railway and bus companies. The electric railway avers that the proposed bus investment and operation by the steam carrier can only result in greater losses than the defendant now admits that it suffers in train operation and will suffer in bus operation.

Another Indiana Service

A coach line between Michigan City and South Bend, Ind., was established Oct. 23 by the Shore Line Motor Coach Company, a subsidiary of the Chicago, South Shore & South Bend Railroad, under an order of convenience and necessity recently granted by the Indiana Public Utilities Commission. The route is approximately 35 miles in length and parallels for most of the distance the tracks of the Chicago, South Shore & South Bend Railroad. The fare on the coach route will be the same as that charged on the electric trains. One morning and one afternoon coach in each direction between the two Indiana cities constitutes the initial schedule of the coach route. The Shore Line company operates 25 other routes in northern Indiana, southern Michigan and in Illinois.

Buses of Minneapolis Railway May Operate Over Parkways

A long-contested point has been settled by the park board regarding use of the parkways by the buses of the Minneapolis Street Railway, Minneapolis, Minn. The board by a vote of ten to four passed a regulation by which buses may operate over parkways upon payment of a license fee based on weight of vehicle, length of route and number of trips scheduled. The tax fee is put at 20 cents operation unit of "transportation of one ton over 100 miles of park highway." The application must be approved by ten members of the board and the fee paid upon receipt of permit. Applications must be filed with the board as well as the Minnesota Railroad and Warehouse Commission. Other lines utilizing parkways as a route between Minneapolis and St. Paul will be brought under the regulation, which was passed Nov. 4. They do not pick up passengers on the parkway.

Connecting Bus Line in Minneapolis Aids Transportation

The first trial of a connecting bus line instead of construction of a crosstown trolley line has been successful in Minneapolis, Minn., according to the findings of the Minneapolis Street Railway. The line has been installed on a newly paved crosstown street at Thirty-eighth. It connects the Bryant Avenue line on the west with the Minnehaha line on the east. The regular railway fare of 8 cents or a token sold at the rate of six for 40 cents is charged. Transfers are accepted and given to the electric lines crossed. This is eight blocks south toward the city limits from the Lake Street trolley crosstown line. The running time of the Thirty-eighth Street line is fifteen minutes. Eight to ten minutes headway is given in the day time and fifteen minutes after 8 p.m.

A second bus line has been installed on Lowry Avenue on the north side, which is equally important and is well patronized.

Railway Takes Over Neenah Line

The A. C. Homan Bus Line of Menasha, which has been supplying bus service in the vicinity of Neenah, Menasha and Appleton, Wis., in competition with the interurbans and buses of the Wisconsin Traction, Light, Heat & Power Company for the last five years, has been purchased by the traction company. The price involved in the transaction was not disclosed. The service provided by the Homan lines will be continued without interruption. The last obstacle to the sale of the line was the lack of assurance from the city of Neenah that other bus competition would not be permitted. That barrier was finally hurdled when the city agreed in the future to frown upon any attempt by a competing company to enter this field. On its part the company promised that no increase in fares would be asked and that the present standard of service would be maintained.

In outlining other bus activities of the company, A. K. Ellis vice-president of the traction company, stated that his company intended to start a bus line between Milwaukee and Green Bay and another between Fond du Lac and Madison.

The Purple Swan Versus the Blue Goose

A bus controversy between St. Louis, Mo., and Belleville, Ill., started on Nov. 2 when the Purple Swan bus line opened service from St. Louis to the Belleville, Ill., court house square via the St. Louis Municipal Bridge for a 30-cent fare. Promptly the Blue Goose line, owned and operated by the East St. Louis & Suburban Railway, East St. Louis, Ill., met the price cut and rearranged its schedules to meet the Purple Swan competition. The Blue Goose line had been charging 45 cents.

The Blue Goose line was started by the same management that now controls the Purple Swan company. It formerly charged 35 cents for the trip. The East St. Louis & Suburban Railway charges 39 cents by electric railway for the trip from St. Louis, Mo., to the Belleville square. The Blue Goose line operates on a certificate of convenience and necessity issued by the Illinois Commerce Commission. It does both an intrastate and interstate business. The Purple Swan line handles only interstate passengers and has no Illinois bus permit.

Further Bus Inroads Likely in Westfield

The Springfield Street Railway, Springfield, Mass., which a few months ago substituted buses on all lines in Westfield except a crosstown line, is now considering the use of buses to replace this trolley crostown service. Roy Chambers, manager of the Westfield lines, has already aproached the City Council concerning this proposed change. At the conference it was brought out that the line had operated at a loss. The railway in presenting its tentative plants for the new bus lines proposes to ask for a trial license through the winter months with the understanding that should buses prove inadequate trolley service would be continued. Two trolley cars are operated on the line.

The question will be taken up at the next meeting of the City Council. Opposition is likely to develop before the matter is settled, since other licenses to operate buses instead of trolley cars were granted by the City Council only with the understanding that this one crosstown line would continue to serve the city.

Would Substitute Buses.—The Westchester Street Transportation Company, Inc., subsidiary of the Third Avenue Railway, has applied to the Public Service Commission for authority to substitute buses in place of trolley cars on tracks in White Plains, N. Y., starting from the New York Central station and running through Main and Grove Streets to the Post Road and south on the Post Road to the White Plains-Scarsdale line. The company has a five-year grant in White Plains.

Adequate Bus Service to Be Substituted.—The City Council recently approved the Northern Ohio Power & Light Company's proposal to abandon operation of cars on the North Howard Street line between Federal Street and the intersection of Cuyahoga Falls Avenue and Main Street, Akron. Adequate bus service will be furnished to supplant the cars, the application stated. The company was also granted permission to remove street car tracks in North Howard Street, between the Little Cuyahoga River bridge and York Street. The installation of permanent bus lines will extend to all the points affected except between Glenwood Avenue and Olive Street. A tentative agreement is being considered by the city and the company officials to abandon the Grant and Bowery Street car lines. The distance included in all changes is about 2½ miles.

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Financial and Corporate

Hemphill & Wells to Manage Poughkeepsie Property

Hemphill & Wells, New York, have assumed the management of the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., following the withdrawal of the J. G. White Company as operating managers. Directors who have retired are Joseph K. Choate, vice-president of the White Corporation; J. I. Mange, president of the Associated Gas & Electric Corporation, which at one time held an option on the road, and Frank B. Lown. Their successors are Albert W. Hemphill, B. A. Tompkins, vice-president of the Bankers' Trust Company, New York City, and William Schickle, cashier of the Fallkill National Bank.

Mr. Hemphill has indicated that he and his partner, Gardner F. Wells, with other members of their staff, would be in Poughkeepsie for some time to study local conditions and transportation requirements, before deciding upon any changes in policy. He also indicated that George Wells, a brother of Gardener F. Wells, would be appointed resident manager of the road.

Hemphill & Wells own and operate the Interstate Street Railway, Attleboro, Mass., which provides Attleboro, North Attleboro and Plainfield with railway service and runs buses through Pawtucket to Providence. They have had a great deal of experience with combined trolley and bus service, and it is said that it was largely on the basis of their experience along these lines that they were retained in connection with the Poughkeepsie property.

The change in management just made marked the retirement of George W. Comfort, who has had charge of the road for the White Corporation since the resignation of Charles A. Brooks. Mr. Comfort will be assigned to one of the White properties elsewhere.

Sale of Interurban Advertised for Dec. 1

Property of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, which recently suspended operation, will be sold at public auction at the courthouses in Hamilton County, Ohio, and Dearborn County, Indiana, on Dec. 1. The sale will be conducted under the supervision of William A. Stark, special master commissioner appointed by the Common Pleas Court of Hamilton and Dearborn Counties. In view of the fact that the property to be sold as a whole is situated in two states, prospective purchasers are privileged to bid at both sales.

The property includes all real estate owned by the company in addition to carhouses, depots, shops and rights-of-way, also all tangible assets. In this category are listed rails, buses, wires, poles, machinery, tools, equipment and all franchises. Terms of the sale are cash on the day of the sale, except that bonds of the interurban may be used as part payment in lieu of cash as provided in the orders of the courts.

The railway extends from Anderson's Ferry in Cincinnati to Aurora, Ind., a distance of 57 miles. Part of the line is doubled tracked.

Additional Compensation for Kansas City Receivers

Fred W. Fleming and Francis M. Wilson, who recently relinquished their posts as receivers for the old Kansas City Railways, Kansas City, Mo., when that property was turned over to the Kansas City Public Service Company last month, each received additional salary allowances on Oct. 29 of $3,875. At the same time James E. Goodrich, attorney for the receivers, received $3,145. The special allowances were approved recently by the court for salary accruing between Sept. 1, the date originally set by the court as the end of the receivership, and the actual date of transfer of the properties. They were listed in Mr. Harding's report of expenditures filed in the federal court on Oct. 29.

$1,000,000 of Bonds Offered to Milwaukee Customers

The securities department serving the Milwaukee Electric Railway & Light Company and affiliated Wisconsin utilities has been authorized to sell direct to home investors $1,000,000 of the company's refunding and first mortgage 5 per cent gold bonds, series B, dated June 1, 1921, due June 1, 1961. These bonds are a portion of an issue of $9,800,000 authorized by the Railroad Commission of Wisconsin to refund an equal amount of 6 per cent bonds of the company called for payment on Sept. 1, 1926.

The bonds are offered in $500 and $1,000 sizes, at 98 per cent of par; the $500 bond sells for $490, the $1,000 bond for $980, plus accrued interest. Home investors can pay all cash or 10 per cent down and 10 per cent monthly for nine months. Buyers on the payment plan are allowed 5 per cent interest on their monthly payments, credited on the final payment. If unable to complete payments, they get back what they have paid in, but without interest.

The company reserves the right to call the bonds for payment on any interest date, giving four weeks notice by publication, at 104½ per cent of par, 6½ per cent above the price at which the bonds are now being sold.

The company directs attention to the fact that during its 30 years in business it has paid every obligation, principal and interest, on the due date in full and in cash. It has paid preferred share dividends in full and in cash every three months for the last 26 years. It has paid common share dividends in cash, at a yearly average rate of 8 per cent, every year for the last 24 years.

Another Hearing on Kite Route Affairs

At the hearing between officers of the Denver & Interurban Railway, Denver, Col., William H. Edmunds, receiver; John H. Gabriel, special master, and attorneys for the Guaranty Trust Company, New York, attorneys for the cities through which cars run, it was brought out that the Denver & Interurban Motorbus Company was organized in self-defense. The bus company and the railway are competitive, do not share profits, but are owned by the same interests. Judge J. Foster Symes will go over the evidence presented on Nov. 5, and then set a date for hearing. The Colorado & Southern Railroad, owner of the Kite and the bus company, desires to discard the railway, but the citizens oppose this plan.

Merger Talk Revived in Washington

The perennial question of a merger in Washington, D. C., of the Capital Traction Company and the Washington Railway & Electric Company is now being discussed. While Commissioner J. Franklin Bell, chairman of the Public Utility Commission, announces that preparation of proposed legislation to force the railways to enter into a voluntary merger will be started shortly, William F. Ham, president of the Washington Railway & Electric Company, at a recent informal public hearing, said that any plan for a merger of the Washington traction companies which failed to guarantee the full valuation of physical property and a fair return on the capital investment would be opposed by his company.

Later John Foster Dulles, of counsel for the North American Company, is said to have assured commission officials that his company would undertake immediately negotiations with the Capital Traction and the Washington Railway & Electric Company to bring about a merger of operation, sanguine that some step toward its accomplishment would be taken before Congress reconvenes next month.

Just prior to Mr. Dulles' appearance at the office of Commissioner Bell the commission made public a letter it received from Frank L. Dame, president of the North American Company, showing the corporation's present holdings in the utility corporations of the district. The communication was in reply to information asked by the commission when it started an investigation of the company's interests in the local corporations.

Mr. Dame revealed that the company and its agents now hold 48,500 shares of common and 6,300 shares of preferred stock of the Washington Railway & Electric Company, 3,012 shares of the Capital Traction Company and 21,207 shares of the Washington Rapid Transit Company. Compared with its holdings last January, the present ownership represents an increase of

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3,300 shares of the Washington Railway & Electric Company's preferred stock, an increase of 81 shares of the bus company's stock and a loss of 990 shares of the Capital Traction Company's stock.

Utilities officials point out that the North American Company has full control of the Washington Rapid Transit Company, but it owns only about 36 per cent of the voting shares of the Washington Railway & Electric Company, and therefore cannot alone control its management. Its ownership in the Capital Traction Company is about 40 per cent of the total stock issued.

Authority for Worcester Refunding Not Conferred

Directors of the Springfield Street Railway and the Worcester Consolidated Street Railway, Springfield and Worcester, Mass., have re-elected their officers. Financial matters of importance were taken up at the business meeting. Bonds of the Springfield company, with the single exception of a $330,000 issue, which will be refunded in January, are all taken care of up to 1940. Stockholders of the Worcester Consolidated deferred action on its refinancing plans to take care of a large amount of bonds due soon but authorized the directors at their discretion to discontinue any unprofitable lines and to sell the trackage and equipment of abandoned lines.

Liquidation of Painesville Road Proceeding

Further facts are available about the discontinuance and liquidation of the Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio. The Cleveland Electric Illuminating Company paid the Cleveland, Painesville & Eastern $1,400,000 for its light and power business, which included all wires and poles used for electric distribution. Out of this $1,400,000 the Cleveland, Painesville & Eastern paid off its $500,000 of first mortgage bonds and used the balance—$900,000—to pay off a part of its $1,131,000 consolidated 6 per cent bonds. The rest of these bonds are now being paid off out of money received by the Cleveland, Painesville & Eastern in the distribution of its railway property. To date, 95 per cent of the bonds have been paid off and the balance will be paid in the near future.

The common stock holders will receive nothing in the final adjudication of the company's business, but the preferred stock holders will receive approximately 45 per cent of their holdings. In fact, payments to them may go as high as 50 per cent, but will not reach the 60 per cent figure originally anticipated.

Vice-President Douglas, in disposing of the property of the Cleveland, Painesville & Eastern after the sale of the light and power business, has been selling the rest of the property piecemeal to various interests instead of selling all of the balance to a junk dealer. Practically only the rails and overhead have gone to the junk dealers. Cars and machinery, all still usable, have been sold at good prices.

In addition the company still owns a large amount of valuable realty in Painesville, Nottingham and Willoughby, and controls Willough Beach Park, which it is holding at a price of $500,000.

Purchase of Line by City Proposed

Purchase by the city of Seattle, Wash., from the Pacific Northwest Traction Company of the Greenwood car line on North and West Eighty-fifth Street, along the northern city limits, for $1,001 is proposed in an ordinance recently introduced in the City Council. The consideration includes $1 for the line and $1,000 for the paving between the tracks, which is being done jointly by the city and county on Eighty-fifth Street. The city has been operating a shuttle car over the line for years. The traction company would be permitted to haul freight over the line until Dec. 31, 1934.

Rhode Island Merger Offer Modified

The Rhode Island Public Service Company, Providence, R. I., has made an alternative offer to the stockholders of the United Electric Railways whereby two shares of the Service Company's preferred stock will be exchanged for one share of the railway stock. In addition, those who dispose of their stock under the offer will receive $1 per share in cash if 80 per cent of the stock outstanding is deposited on or before Nov. 15.

The new offer was obtained by the directors of the United Electric Railways and all of the directors who own stock have decided to deposit their shares. A statement says:

> Your board has carefully considered the plan and agreement and the additional arrangements above stated. They contain the best proposition for stockholders of your company which your board has received. Such of your directors as own stock of your company have decided to deposit their shares under the plan and agreement.

The original offer for the traction company stock, made by the service company under its plan for merging the United Electric and the Narragansett Company, provided for the exchange of one share of class A of the Service Company for one share of the U.E.R. stock. The new offer is optional with the depositor. He may receive either two shares of the preferred or one share of the class A, as he elects.

Ohio Interurban Suspends Service

Operation of interurban cars between Dayton and Piqua, Ohio, by the Dayton, Covington & Piqua Traction Company ceased on Nov. 6. Discontinuance of the service leaves a half dozen towns in the central part of Ohio without interurban service. Officials of the interurban said that the line, which had been a losing proposition for the past three years, would be junked. It is expected that the State Public Utilities Commission, acting at the request of residents of several towns affected by the discontinuance of the service, will award a bus certificate to one of several individuals who have expressed their intention of seeking operating rights.

Indiana Commission Seeks More Money for Experts

Recommendations for salary increases in the staff of the Indiana Public Service Commission in order to retain expert engineers and accountants are contained in a budget for the next two years filed by Howell Ellis, secretary of the commission. The engineers aid the commission in arriving at valuations for public utilities when new rates are in question. Mr. Ellis pointed out that with the loss to the department in the last few months of two expert engineers and three accountants, all trained in the work, the commission feels it should have sufficient money and authority to increase the salaries of such experts in order to prevent their leaving the commission for more remunerative positions. He explained that the recent annual report of the commission showed that body actually to be making money for the state by collecting more than enough in fees to pay the expense of the department for the year.

Traffic on the Increase.—For the nine months period ended Sept. 30, 1926, the United Railways & Electric Company, Baltimore, Md., carried 166,838,335, against 166,179,587 for a similar period of 1925. For the first six months these figures were 113,715,254 and 112,761,063 respectively.

Railway Service Suspends. — The street railway system in McKinney, Tex., operated by the Texas Electric Railway, suspended operation on Nov. 1, after nearly twenty years of service. Failure to pay actual maintenance and operating expenses was given as the cause by Jack Beall of Dallas, president of the Texas Electric Railway. This reason was contained in a letter to Thomas W. Perkins and the City Commissioner. It is said that J. H. Young, former street railway conductor, will operate a bus over the same route in that city.

Wants Tax Reduced.—The Western Ohio Railway, Lima, Ohio, in a bill of complaint in the federal court is seeking relief from what it contends to be excessive taxes levied on its property in six Ohio counties. The company charges that its property is valued at $1,300,000, but that it is on the tax duplicate for $1,600,000, against its protests. An interlocutory injunction is asked to prevent the treasurer from collecting the taxes assessed on the property of the company for 1925. One-half of the amount has been paid.

Reports on September Earnings.—Gross earnings of the Indianapolis Street Railway, Indianapolis, Ind., for September were $1,660 less than the gross earnings for September a year ago, the figures being $440,060 and $441,721 respectively. Operating expenses for last September were $20,654 greater than a year ago. This was attributed to the greater number of buses the company has in operation this year. Total operating expense for last month was $334,057. The company is now operating 32 buses, compared with seven in service at this time a year ago.

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Book Reviews

Business Ethics—A Manual of Modern Morals

By James Melvin Lee. The Ronald Press. 312 pages. $3.25.

Ancient and modern methods of business are contrasted in this "Bible of Business," by James Melvin Lee, Litt. D. Creeds of the various industries showing the work-a-day practices from the Laundry Owners National Association to the American Electric Railway Association are set forth in codes supplementary to and amplifying the principles "preached" in the text. But since "the wages of sin is publicity," says Dr. Lee, and publicity, whether required by law or otherwise, promotes honesty in business, laws are helpful which require corporations to publish statements of their financial condition. Especially essential is it for public service corporations. "Fairness can only be expected when the people know the facts." He seems to be in sympathy, too, with Ivy L. Lee (though no relation, both are the sons of Methodist preachers), whom he quotes from an address Mr. Lee delivered at the annual convention of the American Electric Railway Association in October, 1916, in which he said: "No one must attempt to adopt publicity or make use of it for his benefit unless he is prepared to take all the consequences. A company cannot sing of its prosperity to security holders and at the same time cry over its poverty to tax appraisers and its workingmen."

The number of practical illustrations presented in the treatise shows that the author has spent years in collecting his data. And no better tribute could be paid him than the homage of his secretary, who worked with him for two years, used by Christopher Morley in the Bowling Green in the New York *Evening Post* for Nov. 10, 1922. She goes on to say: "James Melvin Lee is author, editor, teacher and friend. At one time he was the editor of *Administration*, the *Atlantic Monthly* of business. He has written 'History of American Journalism,' 'Newspaper Practice,' etc., and is director of the department of journalism of New York University, teacher of business ethics at the same institution, and is well known as benefactor to the student."

Dr. Lee does not set himself up as a reformer, nor does he stick to the academic track in his discussion. Instead, he talks in a chatty vein, and has adopted the policy of O. Henry, who used to go through his book when completed and stick in the raisins; so has he, and with them he has scattered currents which will enliven the thought of the man in industry and help him to follow the trolley through. He does not always see it as others see it, "Swat the Lie." He goes further, and asks the question, "Does he have the moral right to know the truth?" Often he believes temptations are put in the way. A certain railway has removed a cause of friction by fixing the classification of fares for children by a different standard than that used commonly. Children under a certain mark on the street car door are carried on the car free, but those taller than the mark pay full fare. No opportunity, therefore, is presented to patrons of the line to deceive as to the age of their children. But the key that unlocks the main thought of the book is to know all the facts of the case before one attempts to pass judgment. The problem for the reader to solve when he has finished the book is whether the business man is growing better or worse.

Motor Bus Accounting Practice

By Irville Augustus May, C.P.A. The Ronald Press, New York. 200 pages. $6.

Until quite recently bus accounting was like Topsy; it just grew. Some there are who might question the propriety of even attributing this virtue to it, but it does seem reasonable to say that much for it. The industry was new, many of those engaged in it had little or no previous exacting business experience and even those who did lay claim to business knowledge admitted themselves to be stumped when it came to the problem of attempting to systematize the accounts.

Independent operators, the first in the new field, were not slow to recognize the accounting needs, but it was not so easy for them to act. A basis was missing upon which to build. The electric railways operating buses were somewhat better off than were the independents. Through their committee on bus accounting, composed of members of the American Electric Railway Accountants' Association, they evolved a classification of accounts for bus operating companies which Mr. May includes as an appendix to his book.

Mr. May says of his book that it has been compiled to present in convenient form the best features of the accounting systems used by some of the well-known individual automobile and bus organizations and of companies operating in the field with the idea of welding them into a simple and practicable system. In doing this he has had in mind the needs of electric railways operating buses, joint railway and motor bus companies and so-called independents.

The author recognizes the need for simplicity of accounts and has been mindful of this need in arranging his suggestions. Every one will agree with him in his statement that "whatever system is adopted, it should be not only adequate but simple and easy to operate. The individual operator may disagree with Mr. May on some of the points he mentions and may find it expedient to modify some of his suggestions, but there can be no escape from the conclusion that the author has accomplished all he set out to do.

The book is divided into eleven chapters, headed in this order: "Importance of Operating Cost Information," "Installing and Operating an Automobile and Bus Accounting System," "Accounting Records in the Operating Department," "Tires and Other Supplies," "Handling Tires on Contract Basis," "Garage and Shop Costs," "Depreciation and Disposition of Worn-Out Cars," "Statistical Information," "Financial Statements," "Uniform Systems of Accounts for Automobile and Bus Accounting Practices," "Miscellaneous Accounting Forms and Methods." More than 50 forms are included in the volume. The contents of the book are, of course, especially applicable to electric railways reporting to the Interstate Commerce Commission.

Responsible operating officials everywhere may well take to heart the author's warning that poor office methods, unreliable statements and insufficient cost figures are responsible for many business failures. This warning is particularly pertinent in the bus field, where many elements, such as probable life of equipment, depreciation, obsolescence and liability features, are largely unknown quantities.

Mr. May, the author, is of course well known in the railway field as the comptroller of the Connecticut Company, as past-president of the American Electric Railway Accountants' Association and as past-president of the Connecticut State Board of Accountancy. He is the author of a volume on street railway accounting.

The Railroad Freight Service

By Grover G. Huebner and Emory R. Johnson. D. Appleton & Company, New York. 589 pages. $5.

Here is a book of particular interest to interurban officials engaged either in interstate or intrastate operation.

It has been written primarily to be of assistance to officials and others in the railroad service, and to those in charge of the traffic and transportation activities of industries. It describes in detail the railroad freight services, freight traffic rules and practices and the organization of the several departments by which the services are performed. It also contains an account of the organization and activities of the traffic departments connected with industries and with commercial bodies.

The presentation of each subject is detailed and comprehensive, the purpose being to present in one volume a full account of the railroad freight service. To do this it has been necessary to set forth in each chapter a large number of facts. The style is condensed, but the wealth of material to be covered has made the book a rather large volume. One impression that the book will quite certainly make upon those who read it is that the railroad freight service as a whole is a large and complicated business including a wide range of activities.

The book is essentially an account of freight services. It does not discuss the classification of freight and the making of rates. It is the hope of the authors that the book may ultimately have a companion volume dealing, in equal detail, with freight classification, rate making and rate structures.

Both of the authors are well known in the steam railroad field.

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Personal Items

Key System's New President

Career of New Head of Oakland Road Reviewed—Engineer of Wide Experience

Lester Seward Ready will assume his new duties as president of the Key System Transit Company, Oakland, Cal., shortly after the first of the year, succeeding C. O. G. Miller, who becomes chairman of the board.

Mr. Ready, a resident of Berkeley, is 38 years old. He is the son of W. E. Ready, a bean and walnut rancher of Ventura County, California. He was graduated with honors from the University of California in 1912, being gold medalist of his class and having been elected to Phi Beta Kappa.

His first position after he was graduated was in the engineering department of the Pacific Gas & Electric Company. In 1913 he accepted a position as an assistant engineer in the California Railroad Commission. During the past thirteen years he has held successively the positions of assistant engineer, gas and electrical engineer, assistant chief engineer and chief engineer. He has been chief engineer for the last 3½ years.

L. S. Ready

His work has included participation by him in all important gas, electric, telephone, water and street railway valuations and rate and service matters. During his incumbency as chief engineer he has supervised valuation work in connection with pending condemnation proceedings involving the electric properties of the Pacific Gas & Electric Company and the Great Western Power Company in San Francisco.

In 1918, during the war, when there was a threatened shortage of electric power in California, Mr. Ready's services were sought as state power director. At that time, however, he could not be spared from his duties with the Railroad Commission and so the job went to another, who, however, received valuable assistance from Mr. Ready. Recently he rendered special service to the East Bay communities in reporting upon the Mokelumne River controversy. It was contended by certain critics that the engineers of the East Bay utility district erred in their selection of a site for the proposed Lancha Plana dam. They contended that the dam should have been placed farther up the river than the spot designated by the district engineers. At the solicitation of the Oakland Chamber of Commerce, Mr. Ready made a study of the project and reported in favor of the district engineers. A year ago he completed a valuation report of the Los Angeles Railway system.

In announcing the change in the presidency Mr. Miller, the retiring president, explained that the transportation problem of the East Bay cities is so important and is so bound up with the life of the communities that it has been considered advisable to place in charge of the company an East Bay man who would give his entire time to the problem. In its effort to supply the East Bay cities with a service that will meet their demands the Key System is spending millions of dollars in reconstruction and the purchase of new equipment. To this end Mr. Ready will work. Mr. Miller bespoke for him the cordial support of the people who are interested in the growth of their district.

In accepting his new position Mr. Ready pledged himself to an intensive study of the problems at hand and to co-operate with the public.

W. Gerald Holmes Becomes Industrial Agent at Indianapolis

W. Gerald Holmes has resigned as director of the manufactures and new industries bureau of the Indianapolis Chamber of Commerce to become industrial agent for the Interstate Public Service Company, Indianapolis, Ind. In his new position Mr. Holmes fills the vacancy caused by the death some weeks ago of Anderson G. Moore, New Albany, Ind., industrial agent of the company for fifteen years.

The new industrial agent became a member of the Chamber of Commerce staff on March 1, after having been connected with the bureau of business research, school of commerce, Indiana University. While with the university he conducted a number of important studies on natural resources of the state and the railway traffic rate structure. Since having charge of the Chamber of Commerce bureau he has represented the organization in the bringing of a number of new industries to Indianapolis and has made an industrial survey and a study of the industrial history of the city. His most recent work was the compilation of a booklet presenting the economic advantages of the city, with charts and pictures, which the Chamber of Commerce officials will publish and distribute in the program of developing Indianapolis industrially.

J. B. Smith Manager of Insull Properties in New Hampshire

J. Brodie Smith has been appointed vice-president and general manager of the Public Service Company of New Hampshire. He is one of the best known public utility executives in New England. He was born at Richville, N. Y., in 1861 and when only seventeen years of age built a telegraph line between two New York villages. His early manhood was spent in the drug business at Manchester, N. H., but in 1885 he was able to gratify a desire of many years to enter the electrical field, being appointed superintendent of the municipal fire-alarm telegraph system at Manchester. In 1886 he was appointed superintendent of the newly organized Ben Franklin Electric Company of Manchester, and upon its consolidation with the Manchester Electric Light Company Mr. Smith was named superintendent and director of the expanded organization. In 1896 he resigned and spent several months in Europe on business and pleasure, and upon his return was appointed general manager of the company.

J. B. Smith

In 1900 Mr. Smith became general manager of the Manchester Traction, Light & Power Company, and five years later he received also the title of vice-president. This company, with four others, was taken over Nov. 1 by the newly formed Insull property (the Public Service Company of New Hampshire), and the merged utilities will be managed by Mr. Smith under the new title. Mr. Smith is actively identified with many civic and fraternal organizations. He is as highly regarded in the electric railway field as in central-station circles.

Four New Illinois Division Managers Appointed

Looking toward a closer relation between the Illinois Power & Light Company and the public and improved efficiency of operation, B. H. Peck, general manager of the Southern Illinois group, recently announced the appointment of four new division managers in that group formerly known as the Southern Illinois Division. This group

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has been divided into four divisions, designated as A, B, C and D.

Division A, which will be in charge of George Steinwedell with office at Granite City, comprises the former East St. Louis and Granite City districts; division B, which will be in charge of A. T. Early at Belleville, comprises the former Belleville, Collinsville and Edwardsville districts; division C, in charge of A. L. Hooper at Hillsboro, comprises the former Hillsboro, Litchfield, Gillespie and Greenville districts; Division D, in charge of Carl Steinhauser at Mount Vernon, comprises the former Mount Vernon, Centralia, Cairo, Eldorado, DuQuoin and Sparta districts.

English Honors for American Consultant

Walter Jackson, consultant on electric railway fares and service and on buses, has just received from England the gold medal awarded to him for his paper "Electric and Petrol Transport of Passengers in America," adjudged by the Council of the Institute of Transport, London, the most valuable paper of the year presented before the Institute in the Road Transport (Passenger) Department. It was donated by the London General Omnibus Company, of which Lord Ashfield, first president of the institute, is managing director. The medal is somewhat larger than a silver dollar and, of course, is much heavier. It is ornamented with a Pegasus, symbolic of the art of transportation, which was discussed in the paper. The latter was read at both a London and a provincial meeting of the institute. In it electric railway and bus practices of the United States and Great Britain were contrasted with a view of explaining the reasons for differences in method of operation and the opportunities of one country to learn from the other.

A. C. Homan of the Homan Bus Line, recently taken over by the Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis., has been retained by the railway company. He will have charge of the company's bus interests at the Neenah-Menasha end of the line.

C. A. Walker, for twenty years chief electrician of the railway department of the Knoxville Power & Light Company, Knoxville, Tenn., resigned recently to accept a position with the National Pneumatic Company, New York, at its plant in Rahway, N. J. Before his affiliation with the Knoxville property he was connected with the shop forces of the Boston Elevated Railway.

S. C. Schmulbach, formerly sales manager for the Illinois Power & Light Corporation in the East St. Louis, Ill., territory, has been appointed district manager in Cairo, Mounds and Mound City. Mr. Schmulbach became connected with the company in May, 1913, as office clerk. During the past two years he has been in charge of the sales promotion and advertising departments. In his new position as district manager he will have complete charge of the street railway, gas, electric and water systems with principal offices in Cairo.

T. R. Langan Heads Metropolitan Section

Well Known Official of Westinghouse Company First Manufacturer Representative to Hold Post

Once more T. R. Langan steps up to the railway proscenium. This time it is on the occasion of the seventeenth regular meeting of the Metropolitan Section of the American Electric Railway Association, where he is elected president. Mr. Langan is known in the manufacturing as well as the operating end of the railroad business.

Tommy Langan was elected to the office of president in accordance with the avowed intention of the Metropolitan Section to accord the manufacturers full participation in the affairs of the section. He has been vice-president during the past year, and besides acting as a member of the subjects committee has fostered the affairs of the section ever since its organization. Even as a junior in the Westinghouse organization Tommy earned for himself a reputation as a diplomat. Withal he is an industrious worker. As will be made plain later in this account of his activities, he has had just the kind of training in actual transportation service that makes him keenly appreciative of the problems of the operating officials, and so invaluable to the organization with which he is connected for his ability to interpret the point of view of the "men who run the cars."

T. R. Langan

Less than two years ago Mr. Langan was appointed manager of the transportation division of the New York office of the Westinghouse Electric & Manufacturing Company. Prior to that he had been manager of the transportation section in the Buffalo district with headquarters in Syracuse. In his New York promotion he succeeded E. J. Manson, who had been promoted to the position of manager of the heavy traction division of the railway sales department at Pittsburgh.

Mr. Langan entered the employ of the Westinghouse company in 1904 as an armature winder's helper and wireman's helper in the service department. His work from 1904 to 1906 was concentrated on the earlier installation of multiple-unit control equipments on the Brooklyn elevated and New York subways. Then he began a special apprenticeship course at the East Pittsburgh works. A few years later Mr. Langan took up construction work in the service department and later he was made assistant general foreman of maintenance on the electric division of the New York, New Haven & Hartford Railroad, with headquarters at Stamford, Conn. In 1910 he was back again in East Pittsburgh on special service and engineering work in connection with the development of the present line of Westinghouse HL control and railway apparatus. His selling career was a reality before he went to New York in 1924, as he had met with notable success in Baltimore, Philadelphia, Buffalo and Syracuse.

The new president of the Metropolitan Section was educated at Pratt Institute, department of science and technology, Brooklyn. His studies there were correlated with his night courses at Carnegie Institute of Technology, Pittsburgh.

A. V. Guillou, who has been gas and electrical engineer of the California Railroad Commission for more than three years, has been appointed assistant chief engineer of the commission.

A. G. Mott, who has acted as transportation engineer of the California Railroad Commission for the past three years, has been appointed chief engineer of the commission to succeed Lester S. Ready.

Obituary

Virgil R. Powell, vice-president and general manager of the Peoples Railway, Dayton, Ohio, died on Nov. 9 of pneumonia. He was sick only three days. Mr. Powell had been a resident of Dayton for the past 27 years. He entered the employ of the Peoples Railway as a conductor 27 years ago. He was born at Mechanicsburg, Ohio, on Aug. 31, 1879.

Ellis R. Swan, formerly superintendent of the Olneyville Division of the United Electric Railways, Providence, R. I., died recently in South Milford, Mass. Mr. Swan went to work for the United Railways in 1866 and continued in its employ for 44 years, when he was retired on pension, at the age of 70. A glowing tribute was paid to this veteran railway man by the Providence *Journal* on Dec. 24, 1902, in connection with a presentation of a gold watch and chain by his fellow employees.

Anderson G. Moore, for several years industrial agent of the Interstate Public Service Company, Indianapolis, Ind., died on Sept. 28. Mr. Moore began his career as an industrial agent in New Albany, Ind., several years ago. He succeeded in locating many important industries not only in New Albany and Jeffersonville but for other cities served by the Interstate Public Service Company. Shortly after he took up his residence in New Albany, 25 years ago, Mr. Moore became associated with the old Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company, which was absorbed by the Interstate.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

World Trade Discussed by Owen D. Young

Urges Americans to Attend International Congress at Stockholm Next June

Owen D. Young, chairman of the American committee of the International Chamber of Commerce, is urging affiliated organizations in this country to send a large and representative delegation to the general meeting of the chamber to be held at Stockholm, Sweden, next June. A report making definite recommendations for the elimination of trade barriers will be the main topic for consideration at this world-wide gathering of business men.

Mr. Young says that "the business men of the world must understand one another. They must learn to co-operate with one another. They must learn to have confidence in one another. Somewhere there must be a meeting place common to business men everywhere, whatever language they speak, under whatever laws they operate—a place where they can meet and discuss their problems.

The Stockholm meeting "will bring together business men of the 40 countries represented in its membership." Moreover, it will address itself to important economic problems of world-wide interest, in the correct solution of which no one has a greater concern than the business men of the United States.

In view of the recent discussion of the trade barrier problem, it is anticipated that this subject will attract a great deal of interest at Stockholm. This whole question will come before the Stockholm meeting in the form of a report drafted by a central trade barriers committee of the international chamber. This report will offer definite conclusions and recommendations for the removal or modification of trade barriers which hinder the free flow of commerce among the nations.

The American committee on this subject points to a number of trade barriers to which in its opinion attention should be given. Among these are double taxation, lack of international protection of patents, trademarks and designs, lack of centralized credit information, lack of uniformity in commercial letters of credit, inadequacy of the international parcel post, antiquated customs classifications and cumbersome and complicated customs formalities. Julius H. Barnes, chairman of the American committee, said that "it is certain the American delegation will allow there no move to bring about any action looking to a lowering of America's tariff such as would destroy the protection which American workers now enjoy." He explained that the United States is in a position different from Europe with respect to tariffs in that we have here a great buying territory which is able to purchase the output of our great factories without the bar of tariff walls.

First Cincinnati Car Dividend—Officers Announced

A dividend of 35 cents a share on the no-par common shares of the Cincinnati Car Company, Cincinnati, Ohio, was announced following the initial meeting on Nov. 5 of the directors since the reorganization of the company, which acquired all of the assets of the Ohio Traction Company. The dividend will be paid on Jan. 1 to stockholders of record Dec. 20. A resolution also was passed to list the stock on the Cincinnati Stock Exchange. W. Kesley Schoepf, former president of the Ohio Traction Company, was elected president. Other officers chosen were: H. L. Sanders, vice-president and treasurer; A. L. Kassmeyer, vice-president in charge of sales, and E. C. Bernhold, secretary and assistant treasurer. Directors elected are as follows: Mr. Schoepf, Louis J. Hauck, H. M. Levy, Charles J. Livingood, H. A. Worcester, Casper H. Rowe, Joseph B. Verkamp, H. B. Vorhees, H. L. Sanders, Edward C. Wettengel, T. H. Schoepf, Gustav A. Weil, Thomas Elliott, W. F. Wiley and Frederick H. Hertenstein.

Storage-Battery Locomotive Has Gas-Electric Auxiliary

Weighing 110 tons and capable of hauling a 1,500-ton train, equivalent to 70 empty or 30 loaded freight cars, at a speed of from 8 to 10 m.p.h., the largest storage-battery locomotive in the world is now in service in Chicago. It will be used for some time in the freight yards of the Chicago & Northwestern Railway to demonstrate its possibilities in solving some of the problems of railroad terminal electrification in that city. It made the 450-mile trip from the Erie, Pa., works of the General Electric Company under its own power, with a stop at Cleveland for exhibition at the American Electric Railway Association convention. The locomotive incorporates both the storage-battery and gas-electric drive, and has a number of novel features which make it particularly adaptable to switching service. An Exide Ironclad battery of 120 cells is used.

The control is so arranged that power can be taken entirely from the storage battery, or the gas-electric drive can be used. If more power is needed than is being supplied by the gas-electric unit, the storage battery supplies energy in parallel with the engine-driven set; if the gas-electric unit is supplying more power than is required by the motor the excess automatically charges the storage battery. In switching service the battery can thus be used to supply power, with the gas-electric unit used during slack periods to keep the battery charged. The storage battery can also be recharged by outside power.

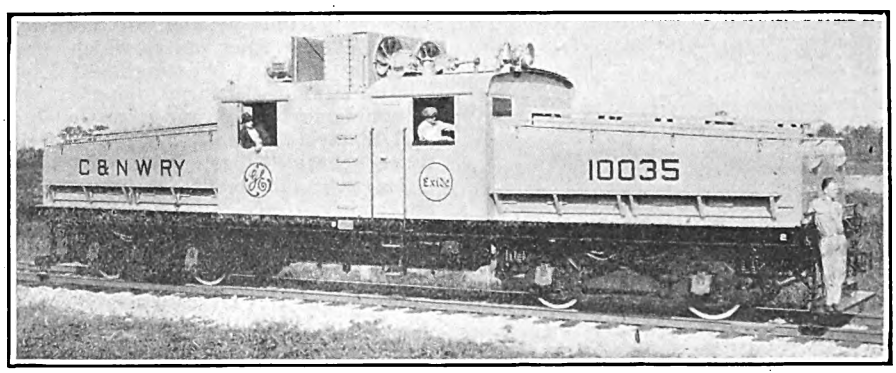
The problem of electrifying the railroads in Chicago has been studied by most of the prominent electrical and railroad engineers of the country during the past decade. Several of these engineers expressed their belief that locomotives of the storage battery type may be used to advantage for switching service in various sections of Chicago.

It is planned to subject this rather hybrid unit to a series of exhaustive tests and thus to develop experimentally its most effective field of service.

The following table gives the principal weights, dimensions and other data for this locomotive:

Weights	
Locomotive, complete	237,000 lb.
Mechanical equipment	100,700 lb.
Battery	78,960 lb.
Motor	29,800 lb.
Engine and generator	7,850 lb.
Radiator and fan	3,500 lb.
Control	9,150 lb.
Brakes	5,640 lb.
Heater	1,400 lb.

Dimensions	
Length over all	52 ft. 0 in.
Wheelbase	39 ft. 0 in.
Rigid wheelbase	8 ft. 0 in.
Height	14 ft. 8 in.
Width	10 ft. 0 in.
Tractive effort, one-hour capacity	17,200 lb.
Speed at one hour rating	9½ m.p.h.
Tractive effort, 30 per cent coefficient of adhesion	66,000 lb.
Maximum speed	30 m.p.h.
Time motors will carry maximum tractive effort	9 minutes



This Storage-Battery Locomotive Was Exhibited at the Cleveland Convention on Its Way to Chicago

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New York "Post" Is Unconvinced

It Doesn't Believe Electric Railway Manufacturers Use Liquor Extensively to Stimulate Sales at Conventions

From various sources editorial comment has been elicited in response to Gen. Lincoln C. Andrews' recent open letter appealing for manufacturer co-operation in stemming the alleged use of liquor at conventions to stimulate sales. The text of General Andrews' communication was published in the issue of ELECTRIC RAILWAY JOURNAL for Nov. 6, page 869. Particular exception to the remarks which the prohibition director made with respect to the electric railway industry is taken by the New York *Post*, on the editorial page of which for Nov. 3 appears the following:

It will be interesting to learn what the manufacturers of the country think of General Andrews' discovery that their agents spend large sums of money for liquors with which to entertain their prospective customers. There has been a widespread impression that competition had become so keen that the man who was formerly known as "the cocktail member of the firm" had been eliminated. To prove his case General Andrews says that when he was in the street railway business the agents of street railway supply houses dispensed unlimited quantities of liquor in furthering the interests of their concerns. That must have been some time ago. Dealers in street railway supplies in recent years have had to change their ways. Buses and automobiles have curtailed the revenues of street railways and forced the traction managers to limit their purchases to their actual necessities and to buy closely. As a rule, the business is now done by bid and contract, which prevents the supply houses from adding liquor charges to the cost of their goods. The statement that the representatives of manufacturing concerns at their annual conventions are prone to entertain each other with liquor will hardly be disputed. But that is true of all sorts of conventions and is more of a social than a business matter. At such assemblages, as elsewhere, those who want to drink can usually find some one to drink with them.

Recent Orders for Supervisory Control Equipment

For installation in a new switching station at Hempstead Crossing, Long Island, the Long Island Railroad has ordered its third set of Westinghouse audible-type supervisory control equipment. The equipment will be the first audible-type supervisory control equipment to have the substation equipment panel mounted. It will form one section of the switchboard, and is to be used for the control of circuit breakers feeding the third-rail system. The substation will be situated at the intersection of two of the many lines of this company covering the lower part of the island. This substation is being installed to take the place of a smaller company's lines, which will insure fewer and less extensive interruptions to the power supply for the third rail.

In an order received from the Connecticut Light & Power Company a large number of standard Westinghouse supervisory control protective units are called for to be connected to the supervisory control wires. This will protect the supervisory relays from excessive voltage induced by surges on the transmission line which parallels the supervisory line.

The Penn Public Service Company of Johnstown, Pa., intends to control its Reeder Street substation by means of Westinghouse synchronous visual supervisory control equipment. The equipment will be arranged to control fourteen circuit-breakers at the present time, but provisions will be made for controlling four additional breakers at some future date.

Metal, Coal and Material Prices

Metals—New York	Nov. 9, 1926
Copper, electrolytic, cents per lb	13.60
Copper wire, cents per lb	16.00
Lead, cents per lb	8.00
Zinc, cents per lb	7.55
Tin, Straits, cents per lb	70.75
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$10.00
Somerset mine run, Boston, net tons	4.00
Pittsburgh mine run, Pittsburgh, net tons	3.50
Franklin, Ill., screenings, Chicago, net tons	1.875
Central, Ill., screenings, Chicago, net tons	1.725
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.00
Weatherproof wire base, N.Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	2.17
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.5)
White lead in oil (100-lb. keg), N. Y., cents per lb	15.25
Turpentine (bbl. lots), N. Y., per gal	$0.90

Details of Pennsylvania's Order of Electrical Equipment

In addition to the electrical equipment for 93 cars which was recently ordered by the Pennsylvania Railroad from the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., as specified in the issue of ELECTRIC RAILWAY JOURNAL for Oct. 9, 1926, apparatus for 30 cars has been ordered from the General Electric Company, Schenectady, N. Y., and apparatus for five cars from the American Brown Boveri Electric Corporation, New York, N. Y. This makes a total of 128 electric passenger cars which are being secured for operation over the Southern Division main line between Philadelphia and Wilmington, Del., and the Octoraro branch between Philadelphia and West Chester, Pa. Extensive progress is being made on the work of electrifying these lines and the new equipment for them is expected to be delivered by November, 1927.

It was also reported in ELECTRIC RAILWAY JOURNAL on Oct. 9 that the Pennsylvania Railroad had contracted for the electrical equipment to be used in the construction of four new locomotives to be operated in passenger service between Pennsylvania Station, New York City, and Manhattan Transfer, N. J. These four units, which were ordered from the Westinghouse Electric & Manufacturing Company, will be supplemented by four from the General Electric Company, all to be of the same general type. Delivery of this locomotive equipment is expected by September, 1927.

The electrification work between Philadelphia and Wilmington and Philadelphia and West Chester constitutes one of the most important projects of its kind undertaken in recent years. It involves approximately 52 miles of line and 150 miles of track. Its consummation will give the Pennsylvania Railroad a total of 90 miles of line and 264 miles of track electrified for suburban service directly in and out of Philadelphia. In addition, the Camden-Atlantic City electric line provides Philadelphia with an extensive suburban service via the Delaware River ferries.

The electrification projects to Wilmington and West Chester are an integral part of the Pennsylvania Railroad's plan for its new main Philadelphia passenger station on the west bank of the Schuylkill River and the extension of electric suburban service into a centrally located underground terminal near the site of the present Broad Street Station in Philadelphia.

Rolling Stock

Northern Ohio Power & Light Company, Akron, Ohio, has purchased five of the new model six-cylinder, 29-passenger parlor car buses from the International Motor Company, New York, N. Y. This is the first company in this district to order the newest model Mack bus. The units will operate on the Akron-Cleveland-Canton route, a distance of 68 miles. The bodies on these five buses were built by the Lang Body Company. Special leather upholstery and seats have been installed and the further item of special shatter-proof glass has been used throughout.

New Orleans Public Service, Inc., New Orleans, La., recently received two six-cylinder gas-electric chassis from the Fageol Company of Kent, Ohio.

Track and Line

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has completed the construction of the Center Street extension from 51st Street to 60th Street.

Seattle, Wash.—The Municipal Railway Department will receive bids until Nov. 26 for 4½ miles of 50 to 70-lb. rail, also for 12,000 cross-ties, hewn or sawed.

Madison Railways, Madison, Wis., will improve its track zones on Winnebago Street from the Yahara River to the Northwestern road tracks and at two points on its Atwood Avenue line from Winnebago Street to Division Street and from Ohio to Fair Avenue.

New Advertising Literature

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued leaflet No. 20133-A, describing the type SK steel-clad distribution transformers. Detailed information is given on the outstanding features of the application and construction of this type of transformers, bringing out the new type of bushing that is being used in the construction.

Ohmer Fare Register Company, Dayton, Ohio, has issued a circular which describes the Ohmer odometer, a mileage counter which is particularly designed for use on buses and trucks.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, November 20, 1926 *Number* 21

Cause of Death—Malnutrition

PROPER maintenance of equipment is one of the best selling forces an electric railway may employ. In the past ten years the transportation industry has witnessed the abandonment of many properties. Of these it is probable that a large number would still be in operation if proper attention had been given to their physical upkeep.

Take as evidence one representative property in New England. This small company last spring discontinued its operations when scarcely a vestige of public patronage remained. Evidence of erratic maintenance was on every hand, and it seemed that this one item alone was sufficient to explain the steady decline in the company's fortunes.

The initial negligence lay in the condition of the track. More than one-fifth of the total mileage was laid in permanent pavement with 9-in. girder rail and steel ties set in concrete. The remaining roadbed was exposed 70-lb. rail on private right-of-way. The girder rail was eight years old, the tee rail was twenty. No money had been expended in maintaining the pavement and rail. Joints that could have been kept smooth were pounded down and the pavement had broken away beneath, allowing water to do its usual damage. Several hotel proprietors complained because guests were wakened early by the pounding of car wheels over these neglected joints. Finally the local hotel association appealed to the state utility board and the cost of relaying with new girder rail was the strongest point in the argument presented by the company attorneys when abandonment was sought.

Grading on the private right-of-way was apparently a lost art. Alignment of particularly bad sections of track and the occasional replacement of a rotting tie had been the extent of the company's efforts in this direction. The track paralleled a state highway for 18 miles and the sunken rails, in some places more than a foot below the grade of the boulevard, made winter service anything but reliable—an urgent invitation to competition by bus and private automobile.

The overhead line contributed to the ensemble of despair. Every windstorm, every cold snap, every extremely hot day evidenced the weakness of the structure. Interrupted service due to line failures made a dissatisfied public and invited the attention of every jokesmith in the various communities served.

No exception to the rule was found in the shops. There was no provision for armature baking, no field testing equipment was in sight, nothing modern—only tools and machines dating back to the '90s were in evidence. The cars were old-fashioned, heavy units, the motors obsolete, the controllers and other mechanical equipment poorly kept up and the condition of the woodwork was ample evidence that paint or varnish had been unknown for many years.

Struggling along with inadequate forces and with little or no money, the local management had been unable to make both ends meet—its hands had literally been tied, so far as any effort toward modernization was concerned. This case is but another proof that the longer one remains in a bed of quicksand the deeper and faster one would sink. Were this little property to have been saved, strenuous efforts should have been instituted many years ago. It is harder to win back patronage than to hold it.

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Attractive Working Conditions Result in Better Maintenance

INCREASED attention is being given to providing greater convenience and comfort for shop forces of electric railways. Many shops now have sections set aside as lunch rooms and recreation quarters. Individual steel lockers, drinking fountains, and in some cases shower baths have been installed. In new shop construction better heating and lighting, provisions for effective cleaning and many added comforts are being incorporated. All these raise the standard of the workmen, prevent waste of good material and accumulation of refuse, save time in making repairs by enabling workmen to see clearly the equipment they are working on and to feel comfortable while they perform their duties.

Poor working conditions are responsible for much bad maintenance. In a recent visit to a railway property it was noticed that the cars were poorly maintained. On reaching the shop, this was found to be little more than a roof with some holes in the ground for pits. The pit walls were of rotted boards and the bottoms were dirt with only loose boards laid over them. In rainy weather the pits were wet and muddy; in cold weather the temperature of the shops was almost the same as that out of doors. An atmosphere of darkness and dampness pervaded the place. It was little wonder that the work was poorly done.

Electric railway shop men are human. Where physical discomfort is a daily experience a poor grade of work is sure to result. While sometimes mechanical repairs can be carried on successfully out of doors, it is much cheaper if this work can be done inside and better results will always be obtained. Time lost when men have to leave their work for short periods due to their physical discomfort amounts to a considerable total during a year. The time thus lost is added to by slowing down of work caused by poor lighting, use of old and inefficient machine tools, slow methods of

This is the issue in November that is devoted essentially to maintenance and construction subjects

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handling parts, and waiting for cars to be placed in position due to a poorly-planned track layout.

The grade of men which a railway is able to secure for work in its shops is also influenced largely by working conditions.

Any plan that will provide better working conditions in electric railway shops is to be commended. It will certainly result in better-maintained equipment, which is now so essential in order to increase car riding. High-grade mechanics will not stay in a place where the surroundings are unsatisfactory.

Importance of Maintenance Is Not Measured by Interference to Service

DURING the past few years the spirit in which the average electric railway management approaches the public has undergone a noteworthy change. Many irritating practices once thought to be inevitable concomitants of operation have been eliminated. Good will has rightly been judged more valuable than certain of the economies practiced in the name of efficiency.

An earnest attempt has been made in most cases to inculcate in all employees this spirit of thoughtfulness of the public. Generally speaking, the men of the transportation departments have grasped the idea well. Maintenance men, on the other hand, sometimes appear to overlook the need for close attention on their part to avoid anything that annoys passengers unnecessarily.

Seldom does the maintenance man come in direct contact with this public. Hence his importance is not generally realized within the industry itself. When he does meet the public directly, during repairs to track under traffic, or when fixing minor defects of a car on the road, he has a natural desire to show how important he really is. The track man may do this by holding one or more passenger cars while a material car is unloaded, or while a piece of rail is cut out with an acetylene torch. The mechanical man may do it by fussing overmuch with lights, buzzers, or a fare register while a carload of passengers is kept waiting.

Probably the maintenance men who sometimes allow their work to interfere with passenger traffic honestly believe that they are doing it for the good of the service —saving the company money, or assuring the adequacy of repairs. By explaining to these men the importance of giving constant attention to the convenience and comfort of the passenger, the management can give them the merchandising viewpoint which lately has made many friends for the electric railways.

Waste Elimination Work Still Presents Great Possibilities

PROBABLY the most outstanding industrial accomplishment since the war has been the reorganization of the American railways, according to Secretary Herbert Hoover of the Department of Commerce in his annual report. While this compliment is directed mainly to the steam railroads, the electric lines have likewise contributed their share to the general improvement. Not only have they bettered their service in the great majority of cases, but the great savings in operating costs have made possible rates that are much lower than would otherwise have been necessary.

Prominent among the savings enumerated by Mr. Hoover is the elimination of waste. He places this in the lead as the essential problem for solution if the standards of American living are to advance. "One of the major attacks upon industrial and commercial waste lies in standardization and simplification," he said. "By standardization we secure a positive approach through the establishment of definite notation in dimensions, quality and performance of materials and machines which must be accompanied by a development of tests to be applied in the determination of the fulfillment of these standards. By simplification we secure a negative approach through elimination of the necessary varieties, dimensions or grades of material and products."

In both standardization and simplification the electric railway industry has taken a prominent part. It is necessary, however, that the work be continued, since elimination of one form of waste frequently leads to the uncovering of another that had been effectively masked. Mr. Hoover's proposal is no visionary or bureaucratic appeal, but one that is intensely practical and already has brought most valuable results. In furthering the work every railway can do its share. The success of the campaign will redound to the credit of all who get behind it.

Many Factors Affect Convention Location

LOCATION of the annual convention of the American Electric Railway Association for 1927 is being considered earlier than usual this year, in order that the time and place may be settled so as to permit the industry to proceed with plans to exceed again the records for attendance and exhibits established this last year at Cleveland and to outdo the enthusiasm shown there.

There is no question but that the location of a convention has considerable to do with its success. Closely associated with this factor is the co-operation offered by the local people who are interested in getting a convention in any given city. Natural attractions, hotel facilities, exhibit facilities and accessibility are all important factors in locating a convention. Cost to members, to the exhibitors and to the association are also important elements to be considered.

Last year, the matter of providing proper facilities for staging a representative electric railway car exhibit received careful consideration in selecting the place for the convention. The effect of such an exhibit on the industry itself and on the general public was considered to be of paramount importance. The result at Cleveland testified eloquently to the wisdom of that selection. The co-operation given to the association by the late Mr. Stanley, by J. H. Alexander and by the entire Cleveland Railway organization exceeded the limits of reasonable expectancy. The expense incurred by the local company in making the Cleveland convention the outstanding success that it was reflected the sincerity with which the Cleveland people carried out the promises made to last year's committee. This co-operation, combined with the ideal facilities provided for car exhibits, resulted in bringing about the largest exhibit of electric railway cars ever held in the history of the industry.

Hotel accommodations at Cleveland were far behind those available at Atlantic City. Although Cleveland has the advantage of a more central location, its natural attractions do not equal those of the seaside resort. Weather conditions were also unfortunate, particularly during the early part of the week.

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Both Atlantic City and Cleveland are again actively seeking the next convention. The former seems to have the advantage from the standpoint of attractiveness and housing, the latter from that of exhibit facilities and central location. Although there will be available by next fall at least three new centrally located hotel buildings in Cleveland, Atlantic City would probably continue to have a decided advantage on this score.

All of these factors must be weighed carefully by the committee on location of the convention, and by the executive committee. The effect made on the industry and the public by a properly staged exhibit of progress in electric railway cars must receive primary consideration by these committees in the interest of maintaining and accelerating the definite forward movement which has set in during the past year. Many of the factors which must be carefully weighed by a location committee may not be apparent to one who gives the place of the convention only casual consideration, or who forms an opinion based on personal preference. This year's committee is starting its work early in the interest of the industry. The committee is a large one, and represents fairly the views of both operators and manufacturers from various sections of the country. The industry may await its decision with the assurance that the many diverse factors involved have received careful consideration, and that its selection will be dictated by the primary motive of promoting the interest of the entire industry.

Utility Commissioners Take Constructive View of Railway Situation

STATEMENTS made in the report of the committee on service of public utilities before the annual meeting of the National Association of Railroad and Utilities Commissioners in Asheville, N. C., Nov. 9-12, published elsewhere in this issue, warrant the careful consideration of every electric railway executive.

"The biggest service problem before the industry at the present time," says the report, "is that of modernizing its equipment. Cars which are more comfortable, more speedy and less noisy than ever before are being built, and with light weight and one-man operation they are frequently more economical to operate than the older types. The commissions can and should co-operate with the street car companies in this movement, because it is generally agreed that *today good service is more important in street car regulation than cheap fares.*"

The movement for the improvement of electric railway cars and the elimination of obsolete equipment, which is costly to operate, which drives away riders and which gives the industry the appearance of being down at the heels, is just getting under way. It has barely started. But the possibilities of this new thinking are clearly and emphatically brought out by this statement on the part of those charged with the regulation of railway fares.

Some railway executives have questioned the advisability of fare increases. In many instances an increase in fare has brought little if any increase in revenue. The drop in riding that followed higher fares on some properties raised a grave question as to the advisability of such increases. For a time it seemed that the only solution was to hold down fares and then to squeeze a narrow operating margin out of the situation by affecting still further reductions in operating costs.

Now all this appears to be another illustration of the lack of merchandising acumen in the electric railway industry. Had we been better merchants we would have realized that an increase in price is bound to cut down the volume of business unless there is at the same time a decided improvement in the character and attractiveness of the product.

It has been repeatedly pointed out in the JOURNAL and has been demonstrated by actual experience on those properties which have given the subject serious attention that improved cars have not only a direct effect on volume of riding and on operating costs but that they also help to create that favorable public opinion regarding railways which is absolutely essential to success. Public officials are helpless in the face of an unfavorable public opinion, regardless of how thorough an understanding they may have of the railway situation or how much they may be in sympathy with its difficulties.

Those railway men who still question the advisability of adopting heroic measures, if necessary, to substitute modern cars for obsolete equipment, and who still cling with an inexplicable attachment to heavy, cumbersome cars—even to the extent of spending several thousands of dollars apiece on them for remodeling—will do well to consider carefully the significance of this report by the utility commissioners. When representatives of the public are ready to say frankly that good service is more important than cheap fares, one is led to wonder whether they have not progressed further in their thinking on electric railways than have some of those who have the direct responsibility for making a favorable financial showing.

Coffin Award Contest Will Bring Out Best of Railway Accomplishments

DURING its recent meeting at association headquarters the Coffin Award Committee decided to issue at an early date invitations and announcements of the conditions of the 1927 award. Experience with the contest during past years has more than demonstrated its value to the industry, and particularly to the various participants, regardless of whether or not they win the award. For that reason the action of the committee in making possible early preparation of briefs is a wise one.

Each year the committee has experienced increasing difficulty in making a decision. This is largely attributable to the varying size and character of the briefs presented by the participants. In its report last year the committee made it clear that the award was made on the basis of the value of the accomplishments to the industry as a whole. This is unquestionably a constructive viewpoint. But the committee has repeatedly pointed out the difficulty of making a single selection under present conditions. The purpose of the award would probably be even better carried out than at present by its extension to permit fuller recognition of outstanding accomplishments by more than one company. Regardless of the extent to which this objective may be carried out during the current year, however, the conditions of participation are such that the benefit derived by a given company, even though the award is not won, is more than enough to justify the preparation of briefs by every railway which has made substantial progress during the year.

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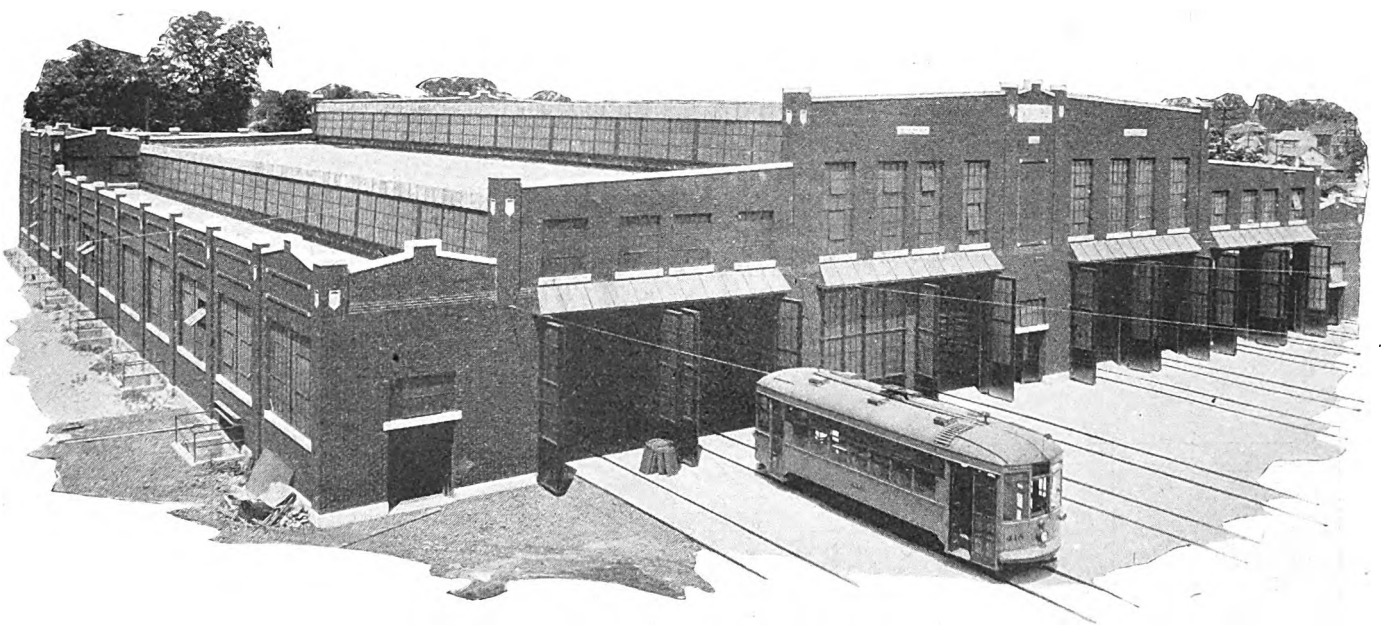
Attractive Overhauling Shop Completed in Fort Wayne

Large Building of Red Brick Added to Group Comprising Spy Run Shops of Indiana Service Corporation—Novel Pit Construction Used—Overhead Crane and I-Beam Traveling Hoist System Provide for Efficient Handling of Equipment — Machine Tools Provided with Individual Motor Drive



By Use of Three Roof Levels, Abundant Light Is Provided in the New Shops of the Indiana Service Corporation

LABOR-SAVING conveniences for handling car equipment during overhaul and an arrangement of departments that will fit into a carefully laid-out system for routing work are features of the new general overhauling shop of the Indiana Service Corporation at Fort Wayne, Ind. This is the eighth building of a group that constitutes the Spy Run Shops. Others include an inspection carhouse, building for general overhauling of buses, another for bus washing and storage, a fare box house, store house and oil house. The various buildings are surrounded and separated by attractive grounds so that the visitor is at once impressed with the orderly appearance that prevails in all departments. Well-kept lawns, crushed-stone walks, track with crushed-stone ballast and attractive buildings of red brick, all contribute to the pleasing appearance that is produced. The entire group of buildings and yard is surrounded by a Cyclone wire fence 6 ft. high.

High-grade fireproof construction of the steel skeleton type has been used for the new overhauling shop. The exterior walls are of high quality red brick laid up in red mortar with raked joints. Limestone trim, together with attractive pilasters, forms the ornamentation. The stone trim includes a water table, sills, coping, nameplate and pilaster. All windows have factory-type ventilated sash and the doors are all tubular steel hung on channel iron frames. The doors and the window frames are painted dark green of such a shade as to harmonize well with the brick work and the limestone trim. Large swinging doors are provided at track openings. These are of the double section swinging jacknife type and swing outwardly, thus conserving space inside. They are hand operated and glazed to within 4 ft. of the bottom with semi-obscure glass.

All foundations for both the outside and interior walls to the ground floor level are of plain concrete. Floors

Machine Tool Equipment in Overhauling Shop of Indiana Service Corporation

MACHINE SHOP

24-in. planer.
2-in. Acme bolt machine.
2½-in. Morris radial drill.
20-in. Barnes drill.
6-in. Peerless hacksaw.
12-in. x 2-in. Ransom emery grinder.
Automatic electric babbitting pot.
22-in. shaper.
No. 2 Kearney & Trecker milling machine.

WHEEL SHOP

48-in. Niles car wheel lathe.
400-ton Niles hydraulic wheel press.
42-in. Niles boring and turning mill.
42-in. engine lathe.
12-in. x 2-in. Ransom emery grinder.

BLACKSMITH SHOP

Two down-draft forges.
No. 2 Long & Allstatter punch and shear.
Air-operated bulldozer.
500-lb. trip hammer.

ELECTRICAL REPAIR SHOP

20-in. engine lathe. Banding lathe.
Westinghouse electric soldering furnace.
Baking oven. Dipping tank.
Armature racks.

WOOD MILL

24-in. surfacer. 12-in. jointer.
Double-spindle shaper.
36-in. bandsaw. Turning lathes.
Hollow chisel mortiser.
Wallace circular bench saw.

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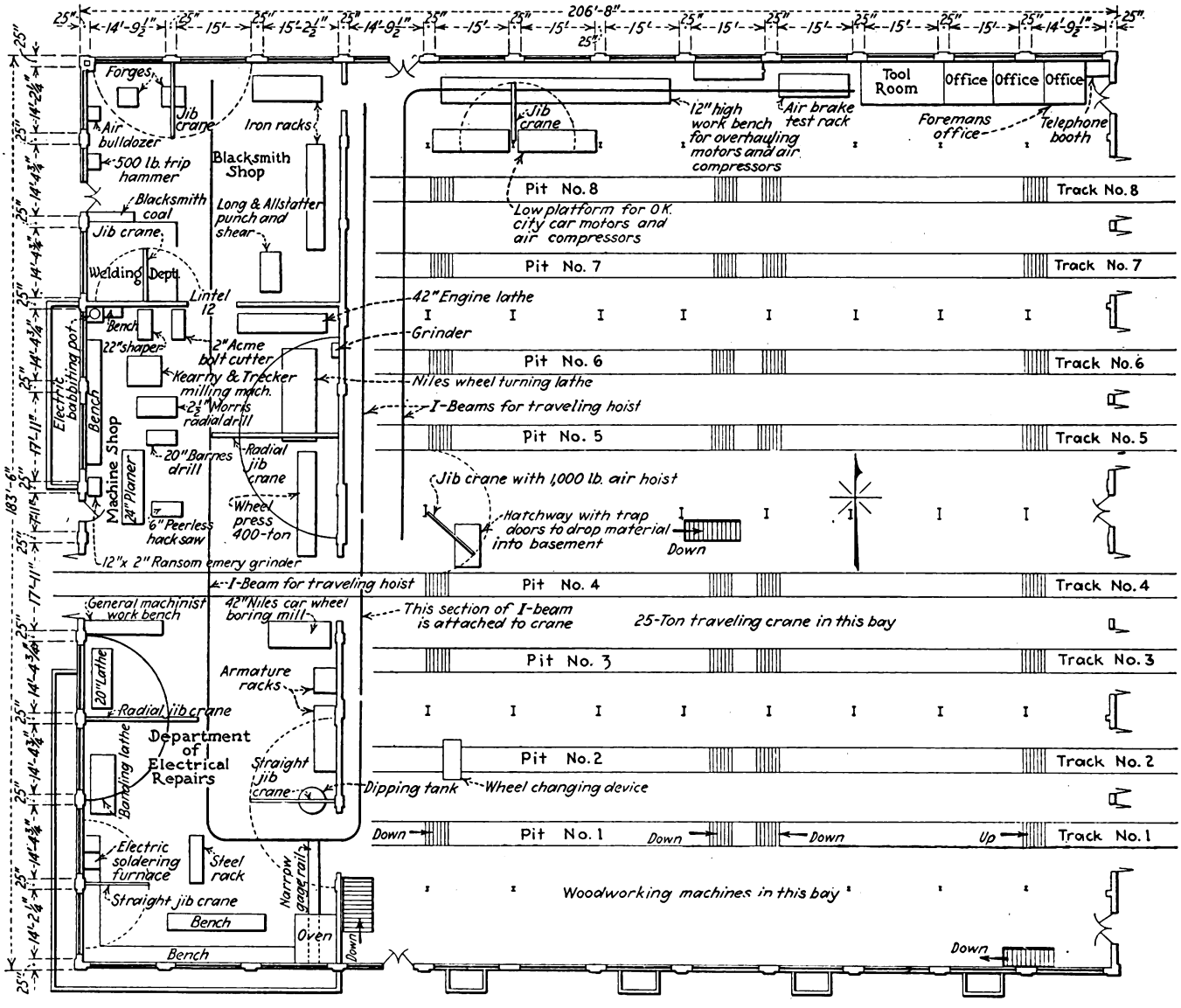
of the machine shop and the two outside bays running the length of the shop are of creosoted wood block flooring. The floor of the blacksmith shop is of crushed cinders with a topping of screened crushed limestone. All other floors are constructed of reinforced concrete with tion is 4 ft. 6 in. below the bottom of the pit. The pit floors thus appear like elevated platforms in the basement. They are of reinforced concrete and are supported at 8 ft. 6 in. intervals by upright 6-in. H sections which extend from the basement floor to the shop floor.



Floor Plan of the New Overhauling Shop of the Indiana Service Corporation

a one-to-one monolithic mortar top treated with metallic hardener.

The roof construction is of a precast concrete flat tile supported by steel purlins. It is treated with a five-ply pitch felt and gravel waterproofing. All flashing is 16-oz. copper. The front portion of the shop is designed with six bays, so that there are three roof levels. The two central bays are highest. The roof for the next bay on either side of the center drops down about 6 ft. and the roofs for the two outside bays drop down a further distance of 6 ft. This construction was adopted particularly in order to give effective illumination inside the shop without the necessity of employing saw-toothed roof construction.

The building is 185 ft. wide and 207 ft. long. The four central bays have two tracks each spaced on 15-ft. centers. This makes a total of eight tracks entering the building. All have pits. The pit construction for the four tracks in the south half of the shop is of unusual type, in that the basement floor under this section is 4 ft. 6 in. below the bottom of the pit. The pit floors thus appear like elevated platforms in the basement. They are of reinforced concrete and are supported at 8 ft. 6 in. intervals by upright 6-in. H sections which extend from the basement floor to the shop floor. The pits are thus entirely open both above and below their floor levels. They are 4 ft. 6 in. deep. Stairways are provided at each end of the pits and also in the center. These latter stairways lead down to the lower level so as to serve the dual purpose of reaching the basement and for intercommunication between pits. The construction of the four pits in the north half of the shop is quite similar except that there is no basement extending underneath the pit flooring. At present the lower level is used for storing materials, but as it is provided with ceiling lights and also with daylight from the open pit construction and light wells along the exterior walls, it is contemplated using certain portions for bench repair work.

Illumination of the pits themselves comes from the ceiling lights of the basement. The basement is illuminated by 23-watt lamps and 300-watt lamps are used for artificial light throughout the main shop, machine shop, armature room, etc.

This unusual type of construction was adopted partly

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because there already was an excavation at this site before the building was constructed. At one time this was the forebay of an old-time water plant. With the use of modern improvements in power, the water-power plant was discontinued and a dried-up pit remained where the forebay stood. As the filling in of this pit would be rather expensive, it was decided to make use of it as a basement and to elevate the floors of the car pits. This type of construction is proving of particular advantage in connection with lighting, heating, and ventilation, and the additional expense that was necessary for steel reinforcement and concrete was very slight.

The Machine Shop Has Many Jib Cranes and an Overhead I-Beam Hoist System for Handling Material

Machine Tool Sections Located at Rear

A space 53 ft. 4 in. wide at the rear of the shop is divided from the front portion by a brick wall. This section is used for the department of electrical repairs. the machine shop, the wheel shop, blacksmith and welding shop. In the front portion the two outside bays provide space for miscellaneous bench repair work. The bay having pit tracks Nos. 1 and 2 is used for repairs to city cars. Track No. 2 is equipped with a wheel-changing device for changing wheels in single-truck cars. The equipment was furnished by the Columbia Machine Works and is driven by a 5-hp. motor. The bay with pit tracks Nos. 3 and 4 is used for heavy interurban repairs and for truck repairs to both city and interurban cars. The two bays with pit tracks Nos. 5, 6, 7 and 8 are used for heavy inspection and for light repairs. At the present time the bay along the south wall is equipped with woodworking machines and serves as a carpenter mill. It is planned, however, to construct an additional building to the north of the present overhauling shop some time in the future. This new building will be used as a carpenter and paint shop. The basement directly underneath the woodworking department is used for lumber storage. The present woodworking machines installed in the south bay are listed in an accompanying table.

The bay along the north side of the shop is used for motor overhauling, for testing of air-brake parts and equipment, and also includes a tool room and offices for the shop foremen. There are three partitioned rooms arranged so that two are occupied by the foremen, with the additional office for clerical help and records. The tool room is inclosed so that it can be locked. These offices command a view of the entire front portion of the shop. The offices of the superintendent of motive power, Arthur Reddersen, are located on the second floor of the adjacent storeroom building. This leaves the superintendent free from shop interference so that he can give his whole attention to administrative duties.

The materials handling equipment includes an overhead traveling crane, overhead I-beam traveling hoists,

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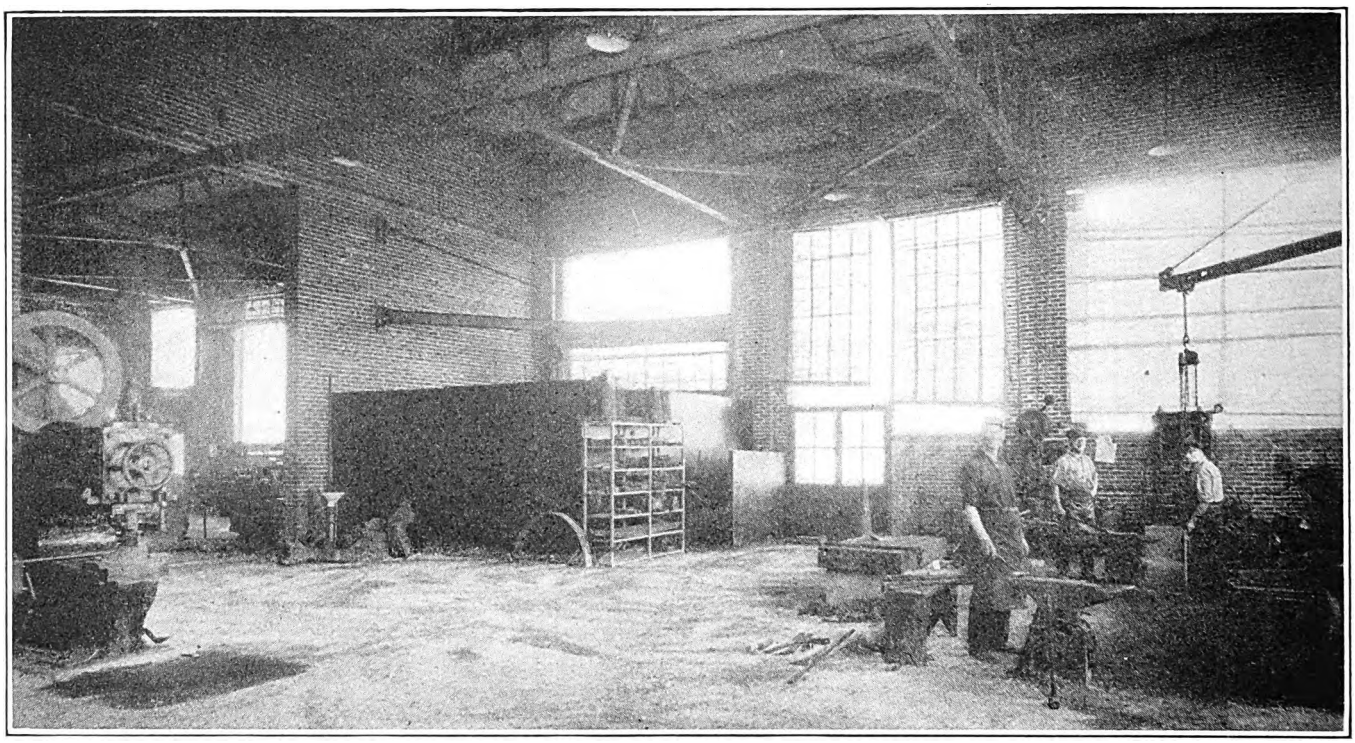
radial cranes, and jib cranes. The bay of the shop that contains pits Nos. 3 and 4 has a 25-ton traveling crane operated from the floor. The bay that contains pits Nos. 5 and 6 is of the same construction and can be equipped with an overhead crane whenever car repair work makes this necessary.

There are two overhead I-beam traveling hoist systems. One has an I-beam at the rear of the overhauling section, starting from pit track No. 4 and continuing along the rear to the bay at the north side of the shop and then through the length of this bay. The other I-beam traveling hoist starts from the north wall at the rear of the overhauling section, runs across the shop and through the opening into the department of electrical repairs. The I-beam then turns so as to run through the central portion of the department of electrical repairs, the car wheel turning and boring section, the machine shop and the blacksmith shop. The overhead traveling crane is also equipped with an I-beam so that it can be lined up with the various overhead traveling systems. This enables the I-beam which runs across the rear of the overhauling section to be placed out a considerable distance from the wall, otherwise the travel of the overhead crane would be limited so that it could not go entirely to the rear wall.

A jib crane with a 1,000-lb. air hoist is mounted on one of the upright I-beams in the central section of the shop at the rear. This swings over a hatchway and is used for raising and dropping material into the basement. The motor overhauling section in the north bay is also equipped with a jib crane for handling motors. In the department of electrical repairs and to serve the wheel turning and boring sections there ar two radial jib cranes and the machine shop is also provided with several jib cranes. The construction of the radial cranes provides a circular I-beam with a carriage to support the end of the boom so that these can be of sufficient length to reach to the center of the shop and thus serve a greater area than would otherwise be possible. In addition to these three radial jib cranes the department of electrical repairs has a straight jib crane and there are two additional straight jib cranes in the blacksmith shop, one of these being located so as to serve the welding room. An accompanying table gives the various machine tools provided for the different departments.

Overhauling Work Well Systematized

When motors or trucks are to be overhauled, the car is brought into the shop on track No. 4, which runs entirely through. The overhead traveling crane lifts the car body while the trucks are run out from underneath. The body is then set on horses during the overhauling. Truck overhauling work is done at the end of tracks 3 and 4. Where motors are to be overhauled they are lifted out of the trucks by the crane and are then picked up by the I-beam traveling trolley and taken to the motor overhauling station in the first bay along the north wall. Work of overhauling small motors and compressors is done on a bench with the top portion 12 in. above the floor. Handling of heavy parts is taken care of by the jib crane which serves this section, and after the motors are overhauled they are deposited by this crane on other low platforms which are used for O. K. motors.



The Blacksmith Shop Is Well Equipped with Tools to Handle the Forging Work for the Railway

Where armatures require repairing or rewinding they are taken by the overhead traveling hoist to the department of electrical repairs. Here they are placed on armature stands, where dismantling and rewinding are done. Two lathes in this department are used for turning commutators, slotting, truing up armature shafts, and other work on electrical equipment. A banding lathe takes care of armature banding work.

Oven Provided with Both Steam and Electric Heat

All armatures and field coils are dipped and baked. This work is done in the corner nearest the overhauling shop. A jib crane serves the dipping tank, oven and armature racks which are installed along the wall. The

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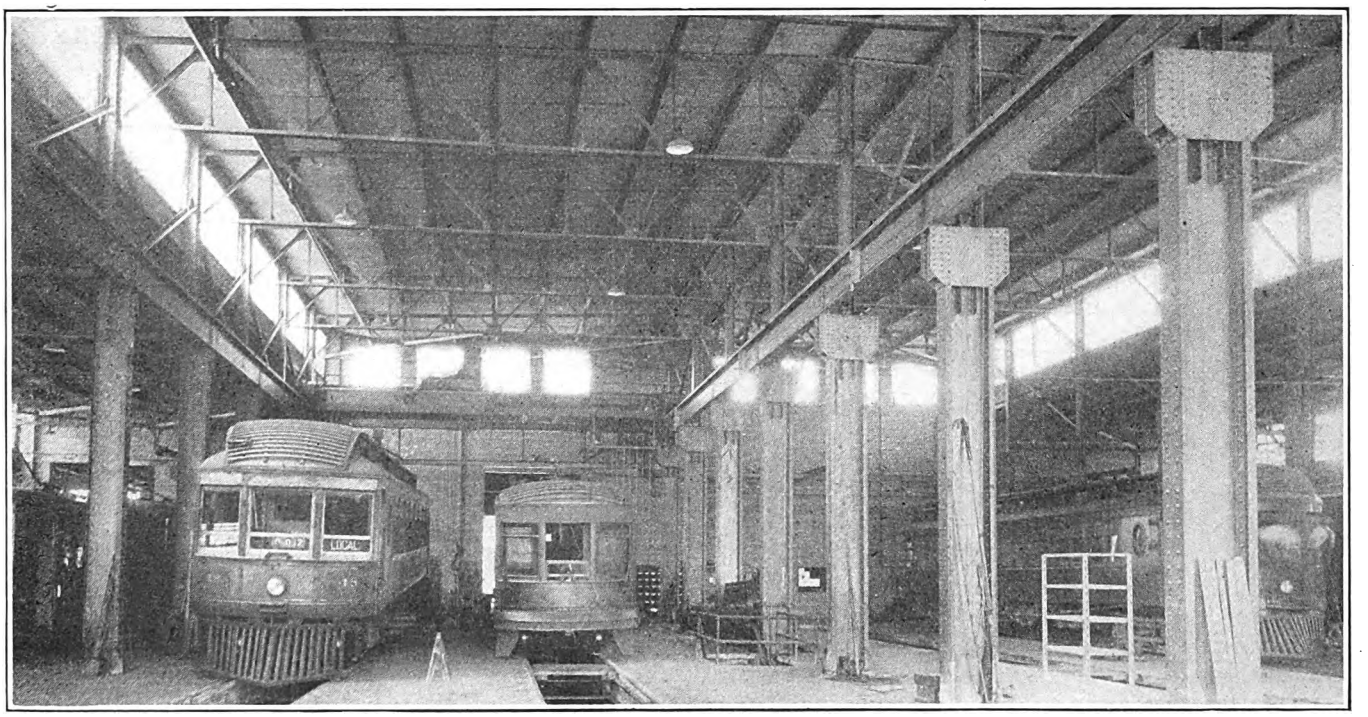
baking oven is located in the southeast corner of the electrical department. Both steam and electric heating are used in the oven. Steam is used to bring the temperature up to the proper baking point, after which the temperature is held there automatically by the electric heaters under thermostatic control. As live steam is available from the adjacent power house a considerable saving in electrical energy is obtained by this method. The oven is also equipped with a Bristol recording thermometer and a Westinghouse insulation tester. This latter equipment is essentially a voltmeter in series with the armatures being baked. One side of the voltmeter is connected to the trolley circuit and the other terminal with the commutator of the armature, while the shaft is grounded to the truck on which it rests. When the voltage reading drops to 10 the armature has been baked sufficiently. Provision is made so that the tester may be connected to six different armatures and separate tests can be made by merely operating a switch without opening the door of the oven.

At the present time the armature dipping tank is placed near the oven and is stationary, but it is planned to mount it on a truck so as to make it portable. A narrow-gage track runs from the doorway into the oven, and a truck with a capacity for eight of the largest types of armatures on end is used for rolling into the oven.

This electrical repair department also takes care of maintenance work on controllers, resistors, circuit breakers, unit switch groups, relays, brush holders, etc., and for doing this the shop is well equipped with modern work benches, which are mounted on steel legs and equipped with steel drawers. Steel skeleton shelves are also distributed throughout the department for racking various materials.

All wheel work is done by machines which are grouped about the through track No. 4. The machine tool equipment includes a wheel lathe, press, boring mill and axle lathe. Car wheel storage is underneath this section in the basement and wheels are rolled through a door from the outside directly into this section. New wheels are lifted through the hatchway in the overhauling shop by the jib crane and are rolled to the boring mill and wheel press. Wheels removed from cars are rolled to the wheel press, or to the wheel turning lathe, and after the work is completed they are returned to the trucks or else are lowered through the hatchway. Any surplus wheels and axles are returned to the basement storage. If required for immediate use they are returned to tracks 3 and 4 for mounting in trucks. The radial jib crane of the machine shop serves the wheel lathe and press and also the engine lathe in the corner which is used for axle work. The car wheel boring mill has its own hoist as a permanent fixture of the machine.

Machine tools in the machine shop are grouped along the opposite wall from the wheel section. The arrangement of machinery is shown in the accompanying floor plan and the table gives a detailed list of the machine tool equipment. Work necessary for babbitting bearings is done in one corner of the machine shop and an electric babbitt pot is provided for this work.



The Central Bay, Used for Overhauling Heavy Equipment, Is Provided with a 25-Ton Traveling Crane

The blacksmith shop is well equipped with tools to handle the necessary forging work of the electric railway system. One corner of the blacksmith department is partitioned off as a welding room. This is equipped with a Westinghouse motor-generator set for electric welding. Acetylene gas is also used for some welding operations, but is used principally for cutting purposes. About 90 per cent of the welding is done electrically. The electric welding machine is portable and also is provided with long leads so that welding work can be done in the overhauling section of the shop if necessary. Heavy work is handled by the I-beam hoist and jib crane. All windows along the west side of the shop are equipped with Venetian type window shades with blinds.

There is a large open space back of the overhauling shop which can be used for outside storage, but as the basement portion is quite large, it is considered that this will be ample to take care of the needs for some time. Access to the basement is by a rear door which

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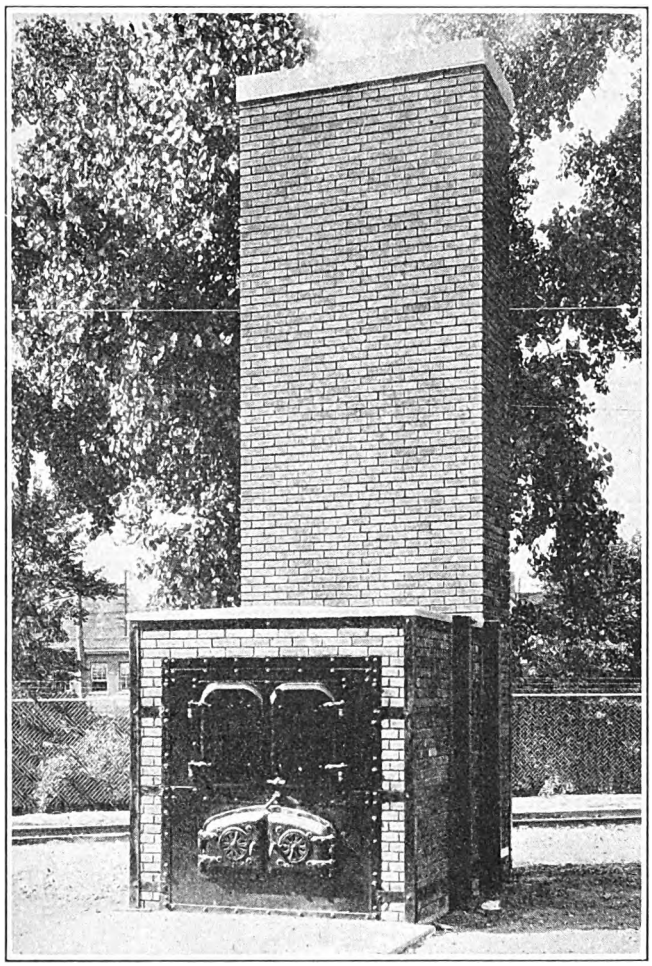


The Incinerator Assists Materially in Keeping All Departments Free from Refuse. It Is 7 Ft. 2 In. x 10 Ft. 6 In. x 7 Ft. High and Has a 22-Ft. Stack

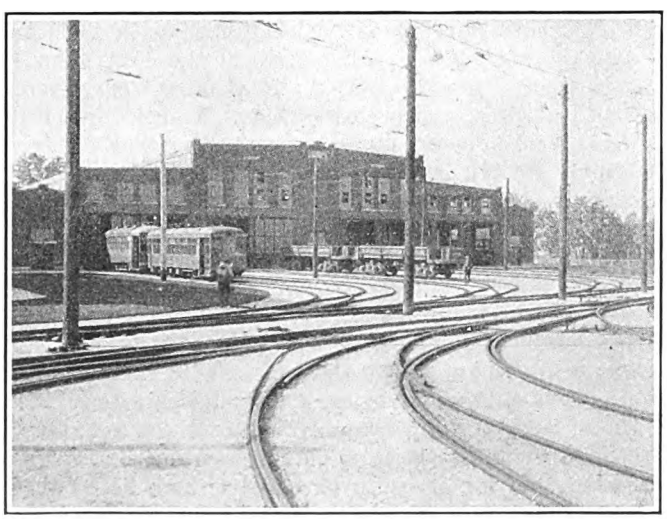
opens directly into an areaway and, in addition, as already described, material is also handled through the hatchway in the shop by means of the jib crane. In the space back of the shop is an incinerator plant where all refuse material is burned and where insulation is removed from copper parts for sale as scrap, as are also salvaged iron parts. One corner of the basement is fitted as a wash room with shower baths, locker room, lunch and rest room for shop forces. All plumbing fixtures are porcelain, except the wash fountains, which are pearl marmorite. These wash fountains are of circular concrete type and are provided with foot rings for control of the water so that it is turned on only while being used for washing purposes.

The building is heated by direct radiation. The machine and blacksmith shops have unit heaters in addition with a low pressure vacuum system. Steam suitably reduced for heating is furnished from a power house near by. All electric lighting fixtures, placed in a manner to produce the best lighting effects, are in accordance with the latest practices and codes. A complete fireproof transformer distribution vault in the basement provides all power and lighting requirements.

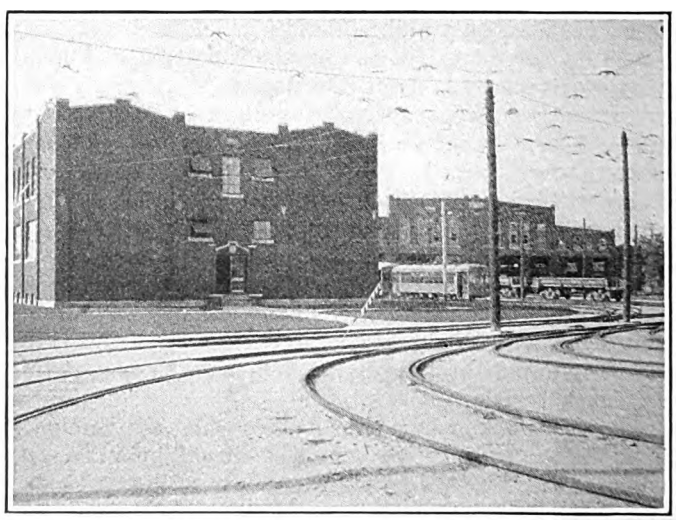
The shop air system is supplied by a National Brake & Electric Company's 225-ft. compressor located in the basement underneath the machine shop. The shop air pressure is 110 lb. From the compressor a main line runs to the central part of the shop and then a cross line runs through the high part of the basement to the walls. This line has taps at each pit and provision is made for three outlets along the sides of the pits. The air line runs along the north wall of the shop to the air-brake test rack, and piping is arranged from the test rack so that various parts of air-brake equipment can be tested not only on the rack, but also on the cars themselves. This piping runs from the test rack across the passageway to the various pits. Outlets are provided so that air hose can be attached to reach to any piece of apparatus on the car itself and such parts as governors, feed valves, triple valves, etc., are thus tested in place. The test rack is also provided with storage reservoirs and compressors are given a running test against pressure after they are overhauled.

Signal Bells Ring Again in Los Angeles

SIGNAL bells are to be put back on the cars of the Los Angeles Railway, Los Angeles, Cal. The work of replacing them on cars, which are now equipped with metal-strip signals, will be done as rapidly as possible. The bells were removed many years ago because they were found to be a source of irritation to the motormen. A thin strip of metal was used to replace the bell. However, with the progress of time, the traffic noises increased so greatly that it is now difficult for a great many of the motormen to determine whether the conductor has given the signal to proceed.



The Network of Tracks with Crushed Stone Ballast Sets Off the Overhauling Shop in the Rear



The New Storehouse with Offices of Superintendent of Motive Power Are Adjacent to Overhauling Shop

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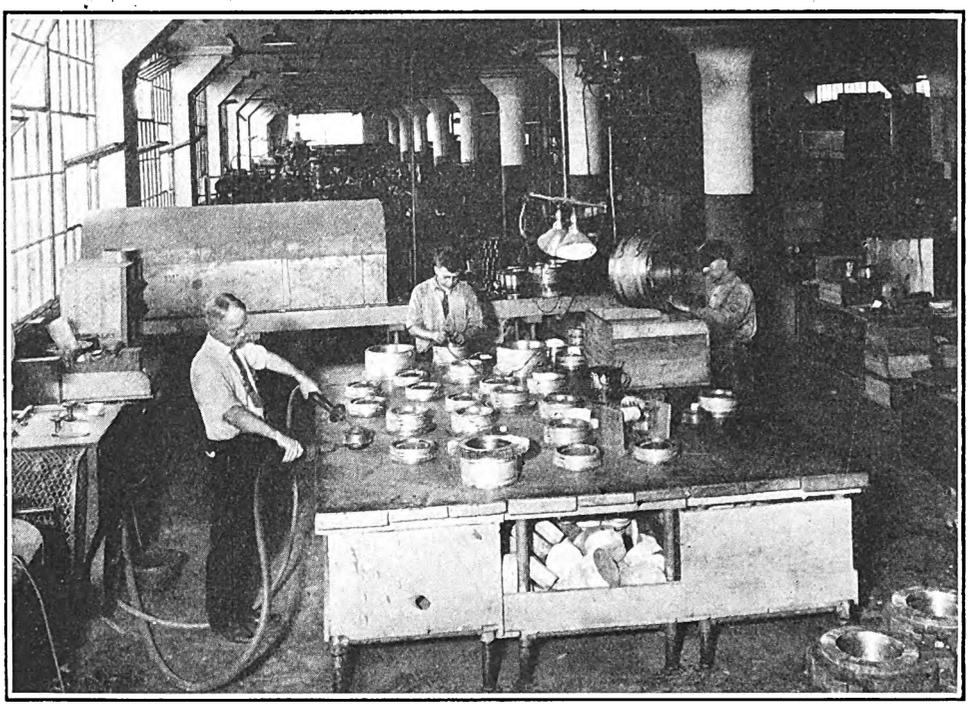
Accurate Machining of the Vs of Assembled Commutators Is Essential*

By Jesse M. Zimmerman
Renewal Parts Engineering Westinghouse Electric & Manufacturing Company

By Machining the Vs of Assembled Commutator Segments to a Smaller Gage Diameter, High Bars Experienced with Arch-Bound Commutators Are Eliminated—Careful Gaging and Testing Insure Accurate Workmanship

IN THE early days commutators were of the arch-bound type. It was necessary to tighten the commutator and "re-turn" the surface at the slightest indication of high bars. High bars were due to the whole structure loosening during the so-called process of seasoning, when the excess bond in the mica strips and V rings squeezed out. This led to the development of three things: (1) A mica plate for mica strips with a properly seasoned bond; (2) V rings which have a minimum amount of bond, along with proper flexibility of the mica; and (3) the "V-bound" or "opened-up" commutator.



Final Test of Assembling Segments and Commutators. This Includes the 500-Volt Bar-to-Bar Test for Assembled Segments and Commutators and a 4,000-Volt Ground Test for Complete Commutator

It will be well to explain the meaning of "gage diameter" of a commutator. It is the distance from the point where the extended sides of the 30-deg. and 3-deg. angles of the copper V or steel V intersect to the same point diametrically opposite. It can be measured accurately only with a male bridge gage.

After extensive tests, it was found that by machining the gage diameter of the Vs of assembled segments a definite predetermined amount, which is dependent upon the size of the commutator, different than the gage diameter of the steel V ring, it was possible to eliminate the difficulty encountered with high bars on the arch-bound commutators. When the commutator is assembled, the pressure of the mica V ring will be first exerted on the 3-deg. angle of the copper V. When the banding wire is cut the bars will all push outward, thus relieving the arch-bound pressure between the copper bars and mica strips sufficiently so that each bar will be held firm by the V ring. "Opened-up" places will appear after the banding wire is cut when the assembly is cold. This is how the name "opened-up" commutator was obtained.

After the assembled commutator has been heated and a pressure applied to the steel V ring, the pressure will also be applied to the 30-deg. angle of the copper V, drawing the bars in. When the assembly is cold, an equal pressure will be applied on the 30-deg. as well as the 3-deg. angle, thus holding each individual bar firmly so that it cannot raise or lower, should the bond squeeze out or the mica strips shrink.

Bars with Vs and Neck Punched to an Unfinished Size

Tapered bars for building commutators come either rectangular or with the Vs and neck punched to an unfinished size. The procedure for preparing these bars for machining is slightly different after alternate strips of mica and copper bars are built on a building plate, and will be dealt with separately as far as the work differs. The milled slots in the building plate permit the mica strips to extend beyond the copper bars, so as to produce the rear mica extension.

After the mica strips and copper bars are built on a building plate they are assembled on a dummy bushing. The assembled segments are then placed in an oven and heated to 150 deg. C. A split ring, which has a tapered face on the outside, is placed around the assembled seg-

*This is the third article in this series on commutators. Others were "Choosing Materials for Railway Motor Commutators," published Aug. 21, and "Important Considerations in Replacing Commutator Bars," published Oct. 23.

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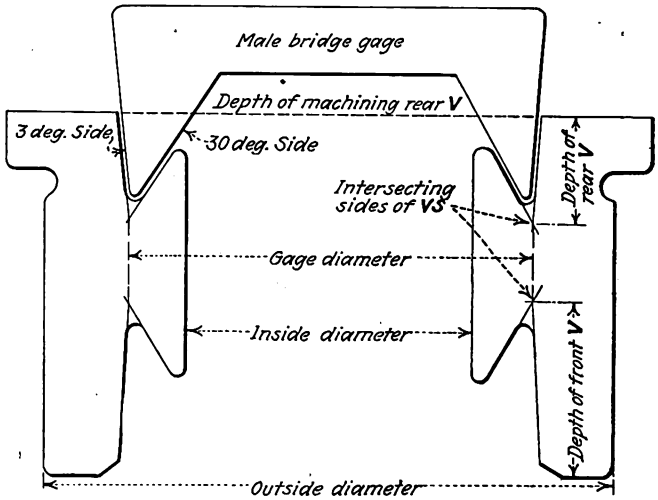
ments while they are hot. A strip of fishpaper is placed between the ring and the assembled segments. A solid ring, which has a reversed tapered face on the inside, is placed over the split ring and pressed on at a pressure of 20 to 30 tons. This produces an arch-bound assembly. The dummy bushing is removed and the commutator is allowed to cool before the Vs are machined.

After the rectangular copper bar and mica strips are built up, a three-piece clamp ring is placed around them and the bolts are drawn tight. A strip of fishpaper is placed between the ring and the assembled segments. It is important that the assembled segments form as true a circle as possible. After the clamping ring is tightened around the assembled segments, they are placed in an oven and heated to 150 deg. C. The bolts on the clamping ring are then pulled tight, forming an arch-bound assembly.

It is difficult, if not almost impossible, to measure the Vs accurately by a scale, calipers, etc. A special tool is made for this purpose, which is called the "male bridge gage." It is used to measure the diameter of the intersecting sides of the copper Vs and to check the accuracy of the angles of the Vs. It has two projec-

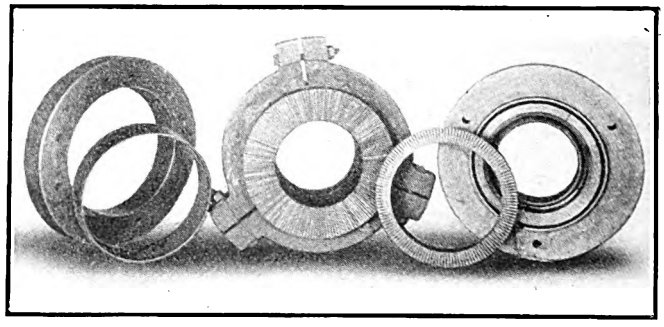


A Graphical Illustration of the Male Bridge Gage

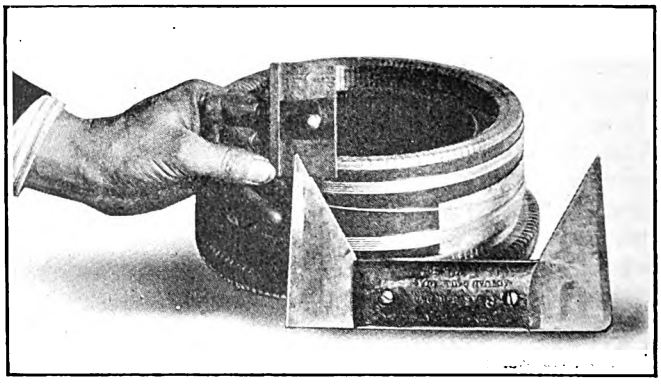
tions which are the exact size of the Vs in the assembled segments. The extended sides of each of the 30-deg. and 3-deg. angles of the projections intersect at two imaginary points that are the same distance apart as the gage diameter to which the copper Vs are machined. Since the Vs of the assembled segments are machined to a gage diameter, which is different than the gage diameter of the machined steel Vs by a definite predetermined figure, the male bridge gage is made different by the same predetermined amount.

The depth to which the Vs are to be machined is marked on the projecting Vs by a special tool. This tool is made so that it will fit over the end of the projecting V. It has a clamp which holds the steel scale. The extended 30-deg. and 3-deg. sides of the V of this tool have an intersecting point, which corresponds to the intersecting point of the sides of the copper V. Assume that the V is to be machined 2 in. deep. Then the 2-in. point of the steel scale is matched with the intersecting point of the V on the tool. The tool fits over the projecting V of each end of the male bridge gage. The end of the steel scale is the depth to which the V is to be machined. This point is marked on the side of each projecting V of the male bridge gage. When

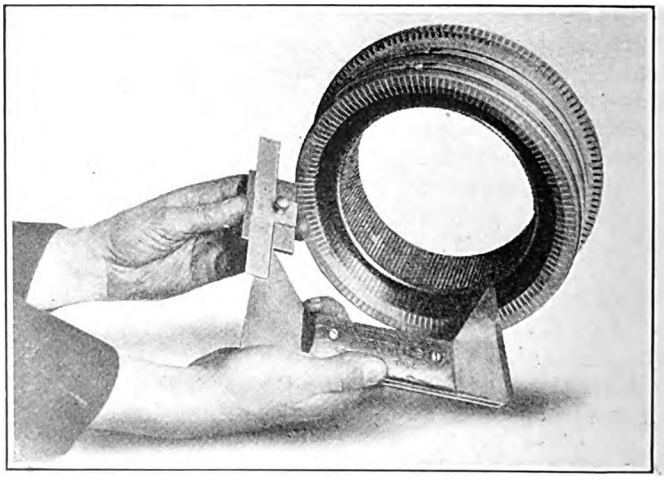
Cleaning Burrs from between Bars in the Machined V



Two Methods of Clamping Assembled Segments, the Solid Clamp Ring and the Three-Piece Clamp Ring. The Building Plate Shows Milled Slots Allowing Rear Mica Extension



Special Tool Used to Mark the Depth of the Vs on This Male Gage



Measuring Depth to Which Vs Are to Be Machined

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Checking the Machined V in the Set of Assembled Segments During the Machining Operation. A Special Male Bridge Gage Is Used for This Purpose

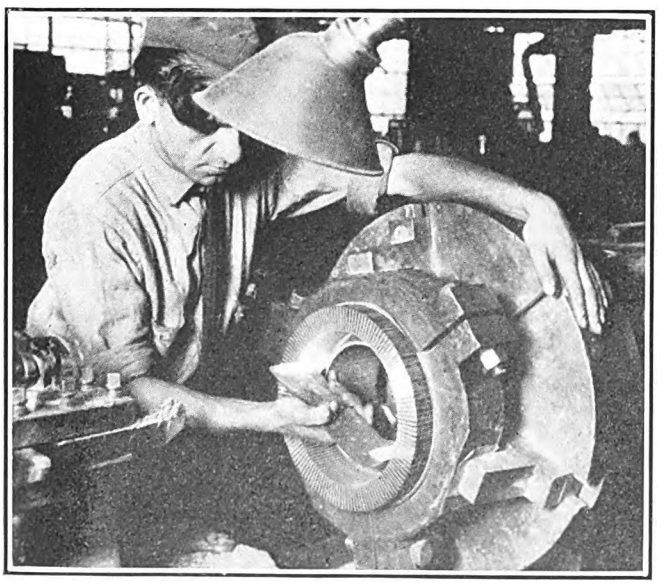
the two marks are in alignment with the end of the bar, it shows the correct machined depth of the Vs.

In the manufacture of a set of assembled segments, there are certain refinements that are essential if the life and service are expected to equal that of the original commutator. The lack of these refinements often causes premature commutator failures. Since every commutator failure invariably means damaged armature coils and various other motor troubles that will cause delays in service, one must take into consideration the cost of the delays caused by premature commutator failures when determining whether a set of assembled commutator segments without these scientific refinements should be used.

Some of the refinements necessary in the manufacture of assembled commutator segments are as follows:

A rear mica extension of $\frac{1}{16}$ in. should be allowed on all railway commutators. It serves as a barrier between the bars, thus eliminating the possibility of short circuits caused by solder while soldering the armature leads. It also increases the creepage distance between bars.

A mica extension of $\frac{3}{32}$ in. is desirable in the bore



Gaging Inside Commutator Segments During Machining Operation

of the assembled commutator segments. This mica extension, along with a drawn radius at the bottom chord of the bar, provides ample creepage distance between bars. Sometimes the distance between the commutator spider and the bore of the assembled segments is so small that it is necessary to machine the bore in order to provide sufficient clearance to assemble the mica V ring and mica bushing. When the bore is machined the burr, which is dragged to one side of the bar by the boring tool, should be removed by a special engraving tool being drawn over the mica strip. This tool gives the bar a small radius as well as removing all copper "drag overs," thus increasing the creepage distance between bars.

The commutator bars should not be out of axial alignment more than the width of a mica strip. It is essential that the bars be parallel with the carbon so that the brush will short circuit the same bars at the front of the commutator as at the rear.

The distance from any bar to the corresponding bar under the next pole should not vary more than plus or minus $\frac{1}{32}$ in. This variation is controlled by keeping the variation of the copper bars and mica strips within the specified variation of plus or minus 0.001 in. If this variation is larger or smaller, sparking will be prevalent at these spots. This is equivalent to increasing or decreasing the width of the commutating zone while the brush setting remains constant. Consequently when a wider or narrower commutating zone passes under the brushes, they must short circuit bars connected to coils whose potential is not zero. Therefore, sparking will be prevalent at these points.

Assembled segments should be heated in an automatic temperature controlled oven at a temperature of from 125 deg. to 150 deg. C., before the Vs are machined.

The process of heating the assembled commutator segments before the Vs are machined is neither to drive out the moisture nor to get rid of the excess bond, as the mica plate should not contain live bond which will squeeze out. They are heated above the maximum temperature to which they will be subjected in service so that the bond in the mica, which is hard when it is cold, will soften and conform or adjust itself to the irregularities of the bars. This allows the clamping ring to draw the individual bars into a tight arch-bound assembly under maximum temperature conditions to which it will be subjected in service. It is this adjusting quality of mica which makes the breathing action of a commutator possible when it passes through the alternate heating and cooling periods in operation. The use of mica plate, which does not have the bond seasoned, should be avoided for use as commutator strips, as the bond will squeeze out.

Heating softens the surface shellac, thus cementing the copper bars and mica strips into a solid body. This facilitates assembling when the banding wire is cut. This cementing action of the surface shellac on the mica strips also keeps the oil and moisture absorption at a minimum.

The Vs of the assembled segments must be machined with a machine tool held in a positive slide set for each angle. This insures that the 30-deg. and 3-deg. angles will always be symmetrical with the gage line, thus insuring absolute interchangeability and a tight-fitting job when the commutator is assembled. If the angles are not symmetrical, the 30-deg. angle may be 29 deg., thus making the 3-deg. angle 4 deg. It can be seen

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that, with this condition, a space will be left between the 3-deg. angle of the copper and the mica V ring. When this happens, it is necessary to remove the V ring and build it up so as to make the commutator tight at this point, thus keeping the oil out.

The gage diameter of the assembled segments must be machined so as to relieve the arch-bound pressure between the bars sufficiently to permit a "V-bound" or "opened-up" commutator. This has been discussed in the preceding part of the article.

The machined Vs must be gaged with a permanent male bridge gage, while they are held by the steel clamping ring. The use of this gage has been discussed.

The 3-deg. angle of the assembled segments must be machined so that it will form a tight joint between the copper bars and the mica V ring, thus keeping the oil and moisture from penetrating the commutator.

All burrs and copper drag-overs from the machining operation in the Vs must be removed by running an engraving tool over the mica strip between the bars in the Vs. The machined Vs should be painted with a coat of thin shellac. This protects the Vs from dirt, oil and moisture while in storage.

The milled slots for the conductors should have the bottom corner at the rear of the slot rounded. If a sharp edge is allowed to remain at this point it may cause a nick in the armature coil lead, thereby increasing the possibility of broken leads.

The milled slots should be coated with pure resin flux to eliminate corrosion and to facilitate the soldering of the leads when winding the armature.

Where the assembled segments are to be used with a two-piece mica V ring, a duct must be machined in the bottom of the Vs for the clearance of the mica V ring. A 500-volt bar-to-bar test should be made to show up any possible short circuits. If any are found, they should be cleared before shipping.

Duisburg Installs Articulated Car

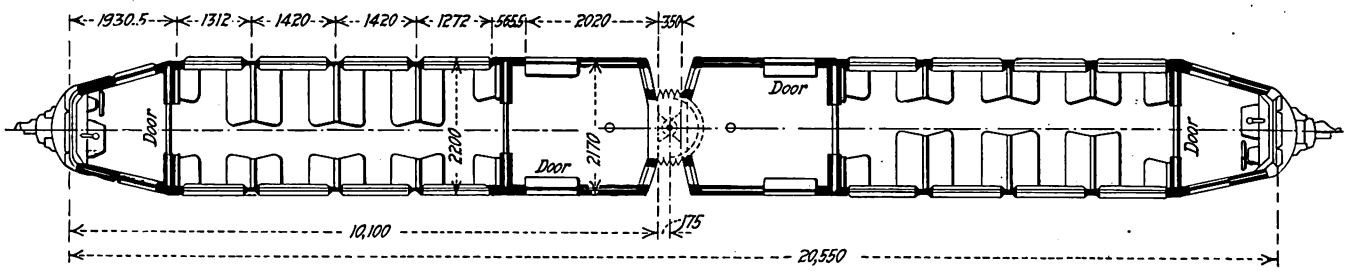
GERMAN street railways, like those in the United States, are experimenting with articulated cars, and the latest installation in that country is a two-body, three-truck car recently put in service by the Duisburg Street Railway. *Verkehrstechnik* declares the car is giving satisfaction, and the ability of passengers to transfer from one car body to the other has proved a great convenience over the former practice of running a motor car and trailer with no such facilities. The main dimensions of the car follow:

Length over all (exclusive of bumpers)	20,550 mm., or 67 ft. 5½ in.
Truck base (between the centers of adjoining pairs of trucks)	7.033 mm., or 23 ft. 1 in.
Wheel base of trucks	1,700 mm., or 5 ft. 6 in.
Outside width	2,200 mm., or 7 ft. 3 in.

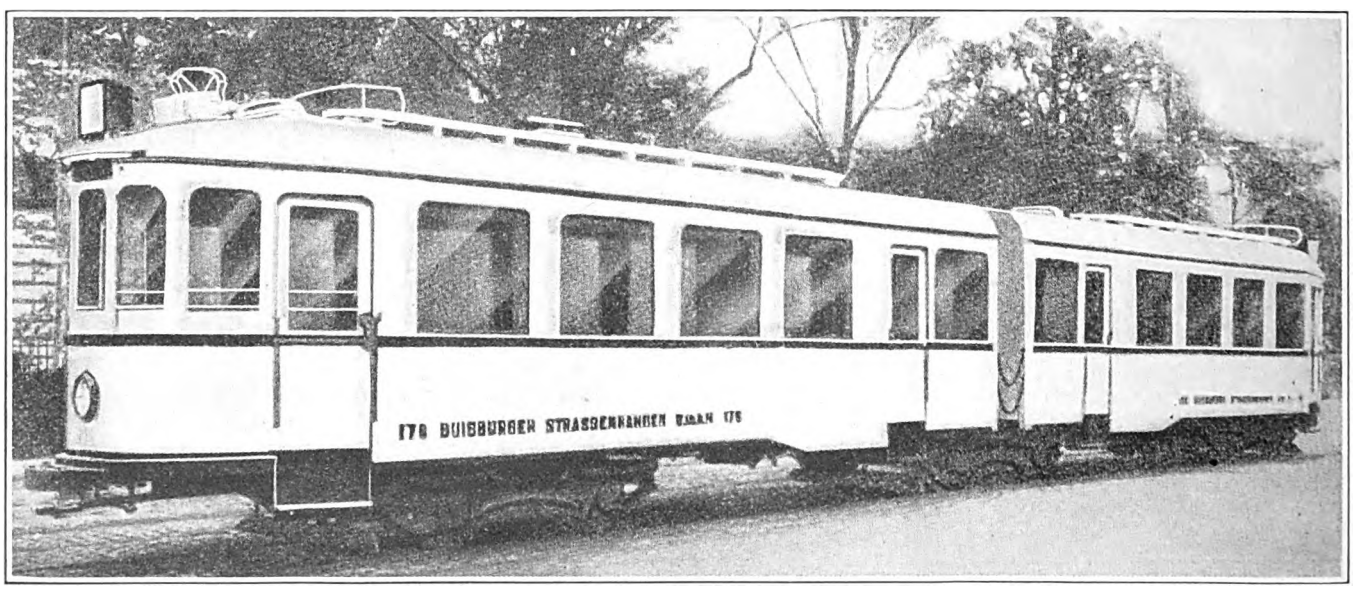
On account of the narrowness of the car body, it is possible to install seats for only three persons across the car width, as shown in the plan. This practice, which is necessary in many German street cars on account of the narrowness of streets, cuts down the carrying capacity, which in this car is as follows:

Standing load on end platforms	12 passengers
Standing load on inside platforms	40 passengers
Standing load in aisles	4 passengers
Seated load	44 passengers
Total	100 passengers

The middle truck is built under the Jacobs patents, mentioned in connection with articulated cars in Berlin on page 259 of the issue of this paper for Feb. 14, 1925. The entire car has two motors, one on each of the end trucks. The vestibule is of the bellows type.



Plan of Duisburg Articulated Car with Dimensions in Millimeters



This Articulated Car Has Capacity for 100 Passengers

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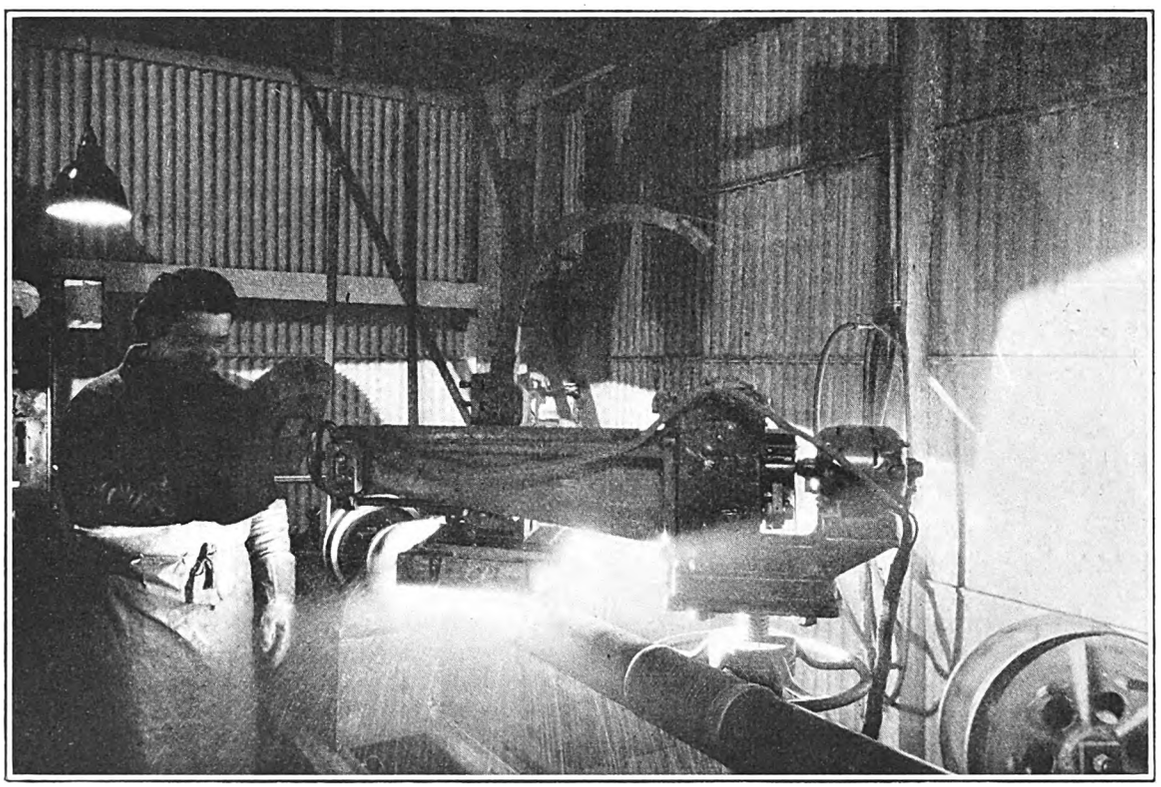

Building Up Worn Journals of Car Axles by Automatic Arc Welding in the Shops of the Worcester Consolidated Street Railway

Building Up Worn Surfaces by Welding*

This Is the Largest Field for the Welding Process in the Railway Shop—Worn Faces of Yokes, Brake Rigging, Brake Heads, Journal Boxes and All Truck Parts Can Be Built Up to Good Advantage—Motor Frames and Housings Offer Large Field for Economical Repairs

By W. L. Harwood

Engineer of Power and Equipment Springfield Street Railway and Worcester Consolidated Street Railway, Springfield, Mass.

SHOP welding was begun on the Worcester and Springfield electric railway properties, with which I am connected, in 1915, eleven years ago. At that time two Indianapolis resistance type welders were purchased. Besides using them for trackwork they were employed to repair broken motor cases, gear cases, and the like.

Since then we have purchased much more elaborate shop welding equipment. In 1916 two Lincoln bonding machines were bought for track bonding. They were used on both properties for electric shop welding. In 1917 we purchased two acetylene outfits, and in 1919 we installed the first motor-generator sets strictly for shop welding. In 1920 we purchased our first automatic welders, so we have had a very complete welding plant on both the Worcester and Springfield properties for more than six years.

In Springfield the plant consists of a conveniently located welding room with a 300-amp., constant-potential welding motor-generator set, a 175-amp., constant-potential set and automatic welding equipment with a specially equipped lathe for automatic welding.

In Worcester the arrangement is somewhat different, the welding being done in a series of seven rooms that have corrugated iron partitions, the doors being protected by canvas curtains. Two of these rooms are for automatic welding and five are for manual welding. These booths are equipped with two 300-amp., constant-potential motor-generator sets, a 200-amp., constant-potential motor-generator set, a 175-amp., constant-current set, a type "W" dynamotor, which, although purchased originally for track welding, is at the present time being used by the shop, and two automatic welding equipments used in connection with lathes arranged for this class of work.

The welding force consists of two welders in Springfield and provision for five operators in Worcester. At the present time we have four operators. The welding rooms on both properties are served by a system of overhead trolleys with hoists to facilitate the handling of work as much as possible. The walls of the booths are painted with an ultra-violet protective paint.

*This article is based on material given in a paper before the New England Street Railway Club, Boston, Mass., Oct. 28, 1926.

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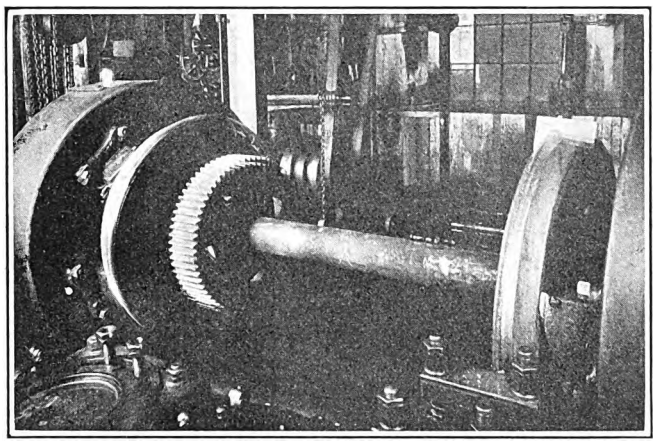
There are many fields for electric welding, probably the largest being the manufacture of new equipment, but we do not believe that manufacturing is a field of the electric railway repair shop. During the war, also, when supplies were hard to get, the welding equipment was called upon to make repairs to parts when new parts could not be obtained and where otherwise it would have meant holding cars out of service. We have found that the largest field for electric welding in



Finished Pair of Wheels after Having Worn Flanges Built Up by Automatic Arc Welding

electric railway repair shops, at least in our shops, is to build up worn surfaces on all kinds of motor and truck parts.

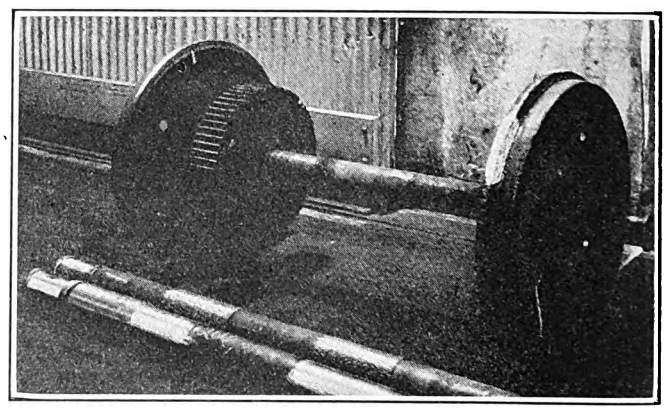
It is difficult to give a good idea of just what parts we reclaim. A list of the articles we weld would look very much like a parts catalog for truck and motor equipment. As the equipment goes through for overhauling, however, all parts with worn surfaces, bolt holes, etc., are filled up and redrilled. Worn surfaces such as on yokes, brake rigging, brake heads, journal boxes, etc., are built up and machined where necessary.

We have rebuilt some 611 motors, both of the older split-frame type and the later box-frame type. In the case of the split-frame motors, such as GE-67, GE-80 and GE-87, the axle and armature bearing housing surfaces are built up where they are worn. All bolt holes in the case are welded and the worn surfaces where the motor is split are built up by welding. When the case leaves the welding room it is practically a rough casting, the only machined surfaces being the pole-piece pads and the holes where the pole pieces are bolted on. These latter surfaces, of course, do not wear. The surfaces where the two halves of the frame are bolted together are then planed. We have this work done in an outside shop, as we found one which was glad to get this work at a reasonable price. The bolt holes are then drilled, using a drilling jig which bolts to the field pad surface. This jig insures correct location of holes in the case and also insures interchangeability.

The next operation is to rebore the axle and armature bearing housings. This work is done in a No. 31 Lucas horizontal boring and milling machine. We have a simple jig for setting up the motor in the machine, consisting of a drum of the proper diameter to fit inside of the pole-pad surfaces. It is simply necessary to set the casing on this drum and bolt it in place, using the bolt holes provided for fastening on the pole pieces. Westinghouse 101-B motors are treated in a similar manner, except that in the case of the No. 101-B we rebuilt the motor to make it into a No. 101-B-2. In redrilling the bolt holes we relocate them and drill them for 1¼-in. bolts in place of the 1-in. bolts used on the No. 101-B. We install a newer type of armature bearing housing and also change the brush-holders to the stud type.

In the case of box-frame motors, the wear is in the axle and armature bearing housings. These are built up in some cases without removing the field coils. The armature bearing housings are machined in a wheel boring mill and the axle bearing housings in the horizontal boring mill. Worn pinion fits on armature shafts are built up by electric welding, the old keyway being filled up, a new taper turned and a new keyway cut. This is the process used with carbon steel shafts. We understand, however, that this practice is not recommended for the heat-treated alloy steel shafts we are now using.

Six years ago we installed our first automatic welding equipment, and found that it was possible to do a class of welding not practicable with the hand process. For example, we had experimented more or less successfully with building up axles by hand welding. I remember especially the first axle we built up by this method in Springfield. It was a 6-in. axle and the job looked good, but when we put it in a lathe we found that it was very badly sprung. As we did not have a sufficiently powerful axle straightener at that time we had to call on the track department, which was able to do it with a rail straightener. The job was a success but expensive. We overcame the springing of the axle with hand welding, but the automatic process we find to be much cheaper and there is no comparison between hand and automatic welding as regards uniformity and quality of the work which can be produced. At the present time we are welding our axles entirely by the automatic process and are using a rod covered with a flux, outside of which is a sheath. We find that this rod gives a much cleaner weld, especially on axles



Car Wheels with Rebuilt Flanges and Axles with Bearing Surfaces Built Up

where there are axle-bearing and journal-bearing fits. By welding up our axles we are able to keep the axle and journal bearings well up to size, increasing the life of the journal and axle bearings. This likewise increases the life of gears and pinions, and, of course, reduces the expense for new axles.

Our first welding of steel wheels was with the automatic machine and was successful. We build up the flanges on all worn steel wheels before turning. In this way it is seldom necessary for us to touch the tread surface. This adds to the life of the wheel.

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First, we get all the wear there is in the tread rather than turning it off to get stock enough to get a proper flange contour, and, second, it preserves the hard-rolled tread surface, which we believe wears longer than the newly turned surface. Our figures show that welding adds from 60,000 to 100,000 miles to the life of our steel wheels. As regards economy of this shop welding as compared with the purchase of new parts, we make it a general rule that no parts shall be reclaimed where the cost of reclaiming exceeds one-half the cost of a new part. It rarely costs us that much and often a few cents will reclaim an expensive part. However, all costs in an electric railway shop have to be carefully watched, and it is quite possible as a shop gets started in welding to become over-enthusiastic and weld parts which had better be replaced by new. A few average costs for this work are: for labor and material to weld one steel wheel, based on the average of a considerable number of wheels, $3.25, and labor and material to weld and re-machine one GE-67 motor based on the average of a number of motors, $28.62.

For a number of months we kept a record and made out weekly reports of all work done in the welding department, the cost of the work, cost of new parts, and saving. The saving ranged from 50 to 97 per cent, or, in other words, the welding cost from 3 to 50 per cent of the cost of new parts. A rough average would indicate a 75 per cent saving and that our cost of welding averages about 25 per cent of the cost of new parts. The actual dollars and cents saving varies, of course, with the class of work which is going through the shops. On running over the reports, I find one week in Worcester where this ran as high as $1,400. In any event, the saving is very noticeable in our equipment accounts and in the reduction of scrap accumulation.

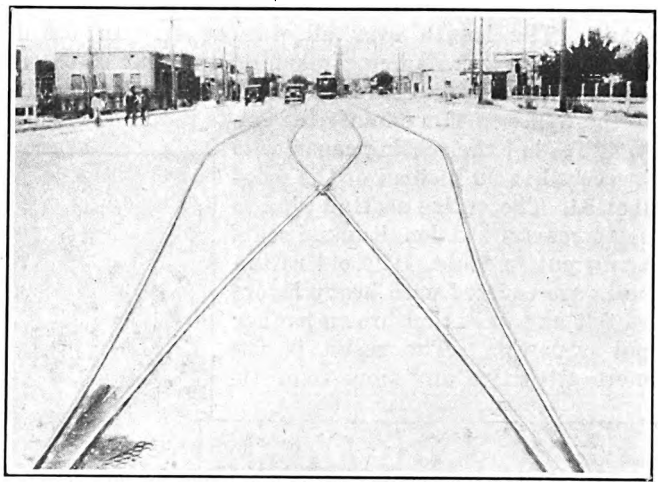
We are making a considerable saving by welding flanges of steel wheels and have been successful in this from the start. We have had but few failures and believe this is the experience of other roads which have tried the welding up of flanges.

In working up information, I endeavored to get complete records of new wheels which have been welded and finally worn out. I found it to be practically impossible as there were no welded wheels which had been worn out, although we found a great many welded wheels in service. The worn-out wheels had never been welded and had made from 105,000 to 155,000 miles, the average being around 125,000 miles. Wheels which have been welded make an initial mileage of from 60,000 to 100,000 and after welding we obtain about 60,000 to 70,000 additional car-miles before the wheels are welded again. We have some wheels which have been welded several times. The wheels which we have welded are principally 34-in. wheels, but we have done some 22-in. and 26-in. wheels.

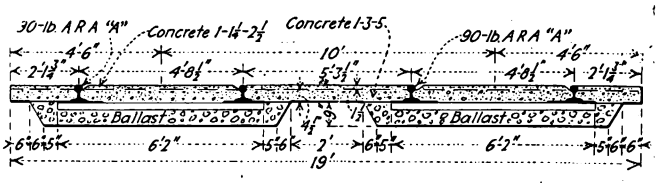
The question has come up a great many times as to the effect of welding of car axles on the strength of the steel. Our records indicate that there is no more breakage with welded axles than with axles which have not been welded. We thought at one time it might be advisable to heat treat old axles, especially after they are welded. This, I believe, is being done by other properties. We have some such axles under test at the present time and have photomicrographs which show the character of the weld and axle before and after heat treatment. So far, however, our experience has not shown that heat treatment is necessary.

Light Steel Tie Construction Used at El Paso

STANDARD section heavy T-rail, steel ties laid on a bed of stone ballast with a 6-in., two-course concrete pavement, is a type of track construction developed by the El Paso Electric Company. According to the brief presented by the company in competition for the Charles A. Coffin prize this year the original cost of this construction is approximately $1 per foot less than any



Track with Concrete Paving on a Stone Ballast Foundation on Alameda Avenue, El Paso



Standard Track Construction of the El Paso Electric Company Includes T-Rail Laid on Steel Ties on a Ballast Foundation. Paving Is a Two-Course, 6-in. Concrete

other equally satisfactory type. Moreover, it is easy on rolling stock, because of its resilience, and replacements and repairs, when these become necessary, are comparatively easy.

After an experience of six years the railway is convinced that concrete pavement is better for the track area than brick or asphalt, besides being cheaper. In this construction the concrete is used solely for paving and not in any way as a support for the track, although, incidentally, it serves to prevent water from getting into the foundation.

Two big jobs were completed during the past year where concrete pavement was used on ballasted track with wood ties. The use of a good grade of oak or pine ties untreated has further reduced the original construction cost and is fully justified on light traffic lines, the management believes. Rail sections were adapted to meet local conditions, both 90-lb. rail and 75-lb. rail being used with success.

In ballasting and tamping track the roadbed is thoroughly wet down and the ballast tamped pneumatically. Cars are allowed to operate over the track all the time to shake it down. During the concreting operations the constant passing of cars is thought to help to work down or tamp the concrete, and as laborers are on the job immediately ahead of the location where concrete is being poured they can watch for and make solid any loose ties.

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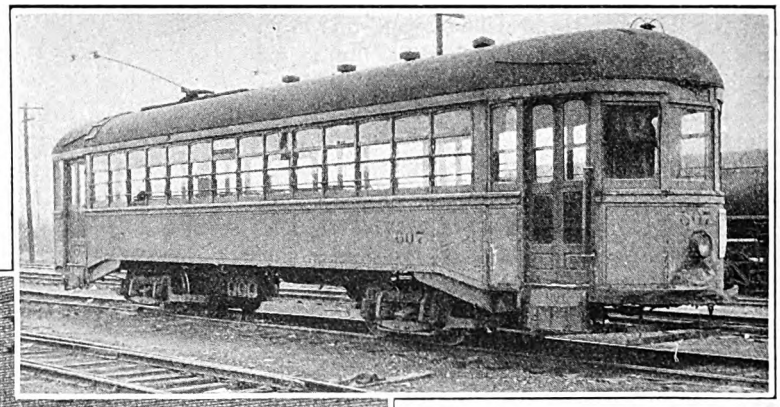
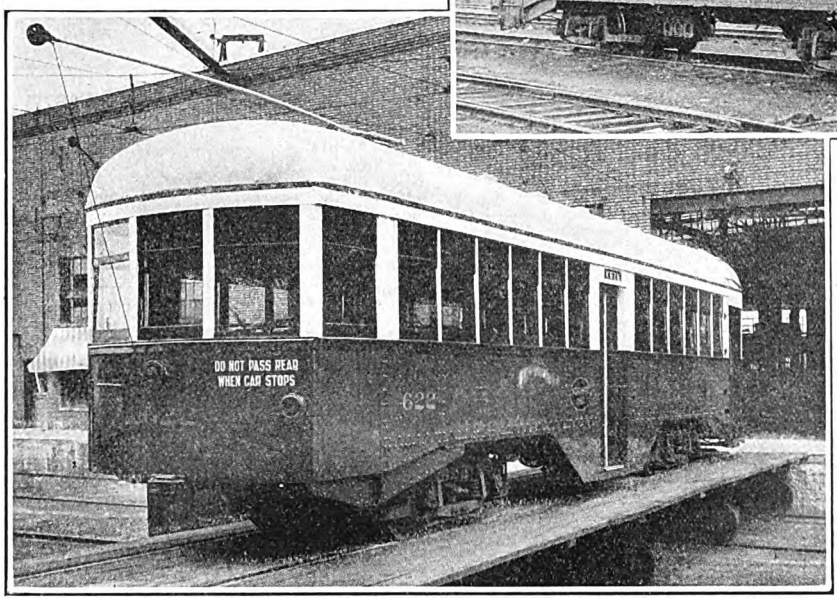
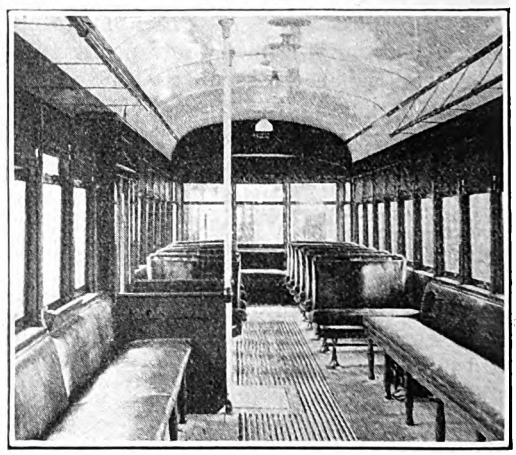
Northern Ohio Modernizes Cars

Both Interurban Equipment and Cars Used in Akron Have Been Rebuilt to Give Up-to-Date and Comfortable Service

FORTY-SIX cars of the so-called "600" type, constructed by the Kuhlman Car Company twelve years ago, are being rebuilt by the Northern Ohio Power & Light Company into cars for one-man operation. They are being patterned after the Peter Witt type of car. The cars were originally constructed for heavy peak loads. The length over all was 46 ft. In the reconstruction 2 ft. is being taken off the rear of the car and circular seats to care for seven passengers installed in the well. In this manner the car is reduced in length to 44 ft., but the seating capacity is increased to 58 instead of the original 54. The entire seating plan is being rearranged, longitudinal seats being put in front. The old rattan seats are covered with heavy layers of felt and imitation brown leather put over this. The result is far more attractive and more comfortable seats than the old ones. These seats, with the lower part of the car in mahogany and the upper in white, make for a car that is pleasing to the public and one that has brought words of praise from passengers.







Above, Old Akron Car Before Remodeling. At Left Exterior and at Right Interior of Remodeled Car

A center door, operated by a treadle, has been installed and the steel sheathing extended down to give the car the appearance of being low. It has been necessary to put in three steps. The steps are 9½ in., but the use of three has brought the first one nearer the ground than the steps of a Peter Witt car. Entrance to the car is at the front and exit is from the center doors.

All safety features are being installed for one-man operation and the cars will be used in Akron city service. Incidentally, all city lines in Akron, with the exception of two, are one-man operated.

One of the improved features from the standpoint of the public is the electric sign in front of the car, just behind the motorman, reading "Exit at Center." The sign lights when the brakes are applied. Another sign, on the rear of the cars for motorists, reads: "Do not pass Rear When Car Stops." The car also carries a stop sign that lights up when the brakes are applied.

The new company colors, red body, green stripe with cream top, are used instead of the former yellow.

It has not been necessary to change the motors. They are of the Westinghouse 307-V type. The car has speed, is of composite steel, easy riding, and is of the best type of construction. The reconstruction costs are comparatively low.

The cars used on the Canton-Akron-Cleveland interurban line are known as the 1500-type. Bought several years ago, they are of steel construction and are still in good physical condition. Some two years ago the company adopted the seat cover plan to add to cleanliness and this brought public approval. The covers were changed daily. Now the company has gone a step farther. The leather seats have been taken out and plush seats installed in the main compartment. New individual leather seats have been placed in the smoker. The Hale-Kilburn type seat is used.

In the changing process four seats are being lost. The interurban car formerly seated 54; it now seats but 50. This adds to the comfort of passengers and gives plenty of room for hand luggage, etc.

The old windows were removed and fourteen new windows 56 in. wide installed, using non-splinter plate glass. This gives passengers a clear view through the window. O. M. Edwards brass sash is also used.

The floors are covered with live rubber, the product of the Goodyear company. Toilet facilities have been added to and improved. As no excess fare is charged, the Ohmer register is retained.

The exterior of the car is the company's standard red. The interior woodwork is of gray to match the gray of plush seats, while the ceilings are in white. All work has been done in the company's shops in Kenmore.

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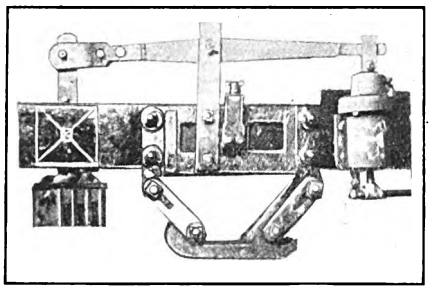
Maintenance Notes

Air-Operated Third Rail Sleet Scraper

SLEET scraper equipment for the third rail has been developed in the shop of the Lackawanna & Wyoming Valley Railroad, Scranton, Pa., and is now being installed on cars for winter service. It is air operated. The equipment consists of a 3½-in. x 4-in. air cylinder, scraper and connecting lever. The cylinder is bolted



Air-Operated Third Rail Sleet Scraper, Showing Scraper, Connecting Lever and Air Cylinder

to the shoe beam at the right and the scraper at the left of the third rail shoe, both being connected with a lever fulcrumed to the shoe beam. The scraper consists of a ½-in. x 2-in. steel shaft, steel scraper head and a set of scraper blades consisting of four ⅜-in. x 3½-in. x 6-in. steel plates set at an angle of 60 deg., spaced ½ in. apart and bolted securely to the head. A hole is provided in the shoe beam to permit of the free vertical movement of the scraper shaft. Pipe connections from the air cylinder to the motorman's cabs, with suitable operating valves, permit of operation when desired. When not in use a pin is inserted through the scraper shaft and rests upon the top of the shoe beam, preventing accidental operation.

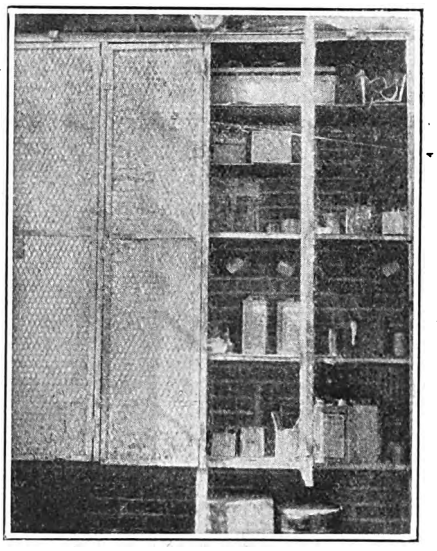
It is stated the scraper blades will give service of about 200 miles and prove a very effective method of removing ice and sleet from the third rail contact surface.

Preventing Vibration of Armature Coils

CONSIDERABLE trouble was experienced with open circuits in armature leads where they bend down to the commutator on type GE-70 armatures in service on cars of the Grand Rapids Railway, Grand Rapids, Mich. With the original method of winding these armatures, the leads were bent down into the end bell, which not only required a sharp bend in the lead, but also was often likely to leave these unsupported if the bends were straightened slightly. An accompanying illustration shows an armature with the old type of winding and also a coil at the top with the sharp bends in the armature leads. In order to overcome these troubles the sharp bends were done away with by bringing the leads down straight from the coil end to the point where they were soldered in the neck of the commutator. This straightening of the leads left a space underneath, which was filled in with asbestos rope. The leads and rope were painted with an insulating varnish so that when completed a firm support was provided. This has effectively prevented the trouble of open circuits.

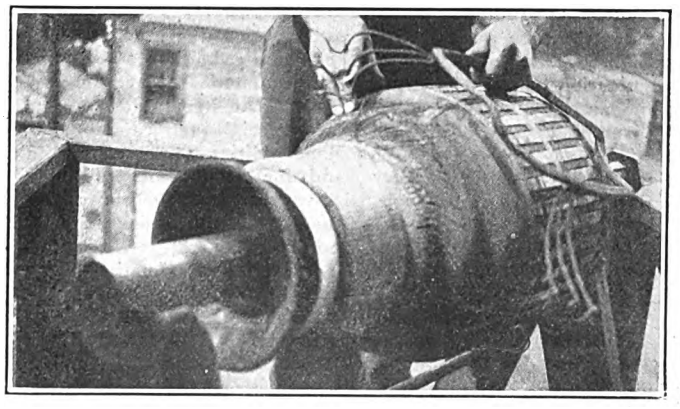
Lockers Used for Storage of Paints

CARELESS storage of paints, oils and varnishes necessarily increases the fire hazard. To prevent this, James Brown, master mechanic of the Wilkes-Barre & Hazleton Railway, Hazleton, Pa., has devised a very simple but effective cabinet. This consists of four ordinary wire

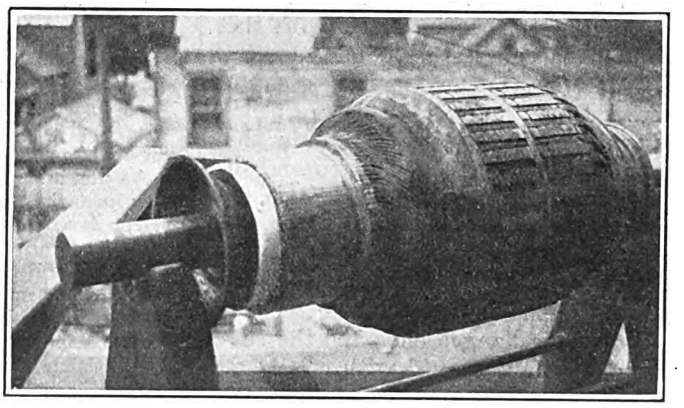


Clothes Lockers Converted into Paint Storage Cabinet

mesh clothes lockers. The wire backs were removed, the ends and doors covered with sheet steel and suitable metal shelves were installed. These lockers were mounted against



With the Original Winding the Armature Leads Were Bent Down Into the End Bell, Thus Requiring Sharp Bends in the Leads, Which Broke and Caused Trouble



With the New Method of Winding the Leads Are Brought Down Straight to the Commutator and Are Supported Underneath by a Winding of Asbestos Rope

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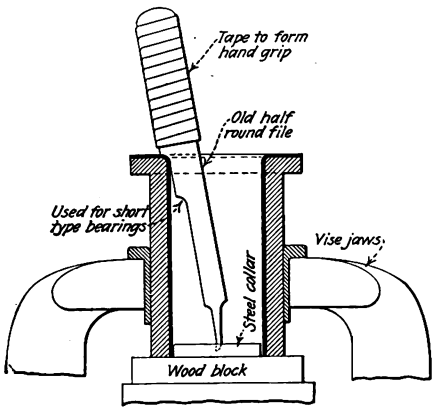
a brick wall and fastened securely.

All paints, oils, brushes and varnishes are placed in this cabinet at the close of the day. This gives the shop a very neat appearance and at the same time decreases the possibility of fire.

Reported "OK" bearings suggests "O"iled "K"arefully.
Reported "BO" bearings suggests "B"adly "O"iled.

Bearing Flanges Rounded Quickly

ARMATURE bearings are babbitted to size in the Harvard shops of the Cleveland Railway. The flanged ends are also brought back to standard thickness by applying a layer of babbitt. After being poured the bearings are passed to a finisher, who trims off the ragged edges and rounds the flanged ends of the bearing. The tool used for this operation consists of an old half-round file carefully ground so as to provide a cutting edge and accurate radius for the rounded portion. The top portion is wound with tape to form an easy grip for the hand. The bearing is placed in a vise with the unflanged end resting upon a special block. The top of this block has a steel collar that fits inside the bearing. This block has a hole in the center, into which the sharp end of the cutting file is placed. Then by rotating this around the inside of the bearing the flanged end is given the desired radius. This provides a quick method for rounding the inside of the flanged ends and the cutting tool is arranged with offsets at different heights, so that different length bearings can be rounded with the same tool.



A Half-Round File Accurately Ground with Cutting Edges Is Used for Rounding the Flanged Ends of Armature Bearings in the Harvard Shops of the Cleveland Railway

Dick Prescott Simplifies Maintenance

But Trouble Continues to Brew

PETE WELCHER, chief inspector in the Consolidated Railway & Light Company's shop, carefully nursed his grudge against Dick Prescott, newly appointed assistant superintendent. He lost no opportunity, in speaking with various workmen, to disparage Dick's ability by carefully guarded remarks suggesting contempt for the young executive. At the same time, his henchmen—"Slowfoot" Lewis, "Lefty" Kooms and "Shorty" Green—did their part in spreading the seed of discontent among the various workmen in the shop.

Totally unaware of this propaganda and the faint mutterings of trouble which it succeeded in arousing, Dick busied himself with the task of cutting out lost motion in the shop through proper planning of maintenance procedure. He spent considerable time in the storeroom and inspected carefully the requisitions received from various departments. He discussed these with the storekeeper and discovered many opportunities for eliminating confusion by reducing the number of different types and sizes of given parts ordered for replacement.

As this program continued, orders for new material were limited to certain selected standards and all other types and sizes formerly used were put on the obsolete list. As cars came through the shop for overhauling it became the practice to equip one or more of each series complete with new standard parts. The obsolete material removed was held for use in making individual repairs and replacements until the stock became exhausted, whereupon another overhaul car was stripped and equipped with standard parts.

Dick found that this gave an opportunity for materially improving the procedure followed in ordering spare parts from manufacturers. It had been customary to place many small orders for comparatively minor repair items as the need arose, with little effort at consolidation of such orders into reasonable commercial quantities. The wide variety of parts required, some of which were for use on very old equipment, still further aggravated this condition. As a result, many of these orders were unattractive to supply houses and manufacturers, although the costs of such parts were high and deliveries very uncertain. The policy of reducing variety in spare parts helped to relieve this situation. George Stewart, the storekeeper, who at first was skeptical of the new plan, soon became openly enthusiastic. As time went on he found that the reduction in the number of types automatically made it possible to consolidate items and to order parts in commercial quantities.

With opportunities thus opening on every hand for improvements in the shop, Dick was too intent and busy with the job to be aware of the activities of his enemies. But matters were coming rapidly to a serious situation. One day, as Dick passed the door to the little office of his friend Steve White, carpenter foreman, the latter hailed him and beckoned him inside. As Dick entered the little office, Steve carefully shut the door.

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Overhauling Methods of the Pacific Electric Railway

BY F. E. GEIBEL
Assistant Superintendent of Equipment
Pacific Electric Railway, Los Angeles, Cal.

GENERAL overhauling and heavy repairs to electrical equipment operated by the Pacific Electric Railway are done at the general shops and running repairs and inspection at the division shops. The general shops are located at Torrance and were described in ELECTRIC RAILWAY JOURNAL for July 21, 1917, and Aug. 17, 1920. As an indication of the large volume of work done at these shops by the mechanical forces, this year's program includes the complete overhauling of 350 cars and 72 motor coaches. In addition to this, much work is done in making repairs necessary to restore to service equipment damaged by accidents.

Cars for general overhauling are brought into the shops on tracks adjacent to the scrub room. On these tracks the car is inspected and the necessary repairs are determined upon. The car is stripped of cushions and other trimmings of the body and is then moved to the scrub room, where it is cleaned thoroughly by a steam process. After this cleaning, the paint surface, if in good condition, is ready for repainting. It may be necessary, however, to remove the old varnish with ammonia or burn off the old paint before refinishing. Paint is removed from steel cars by sandblasting and a special room is provided for this work. After this work is done the car is moved to a track in the air room, where the trolley base and air compressor are removed and replaced with newly overhauled ones.

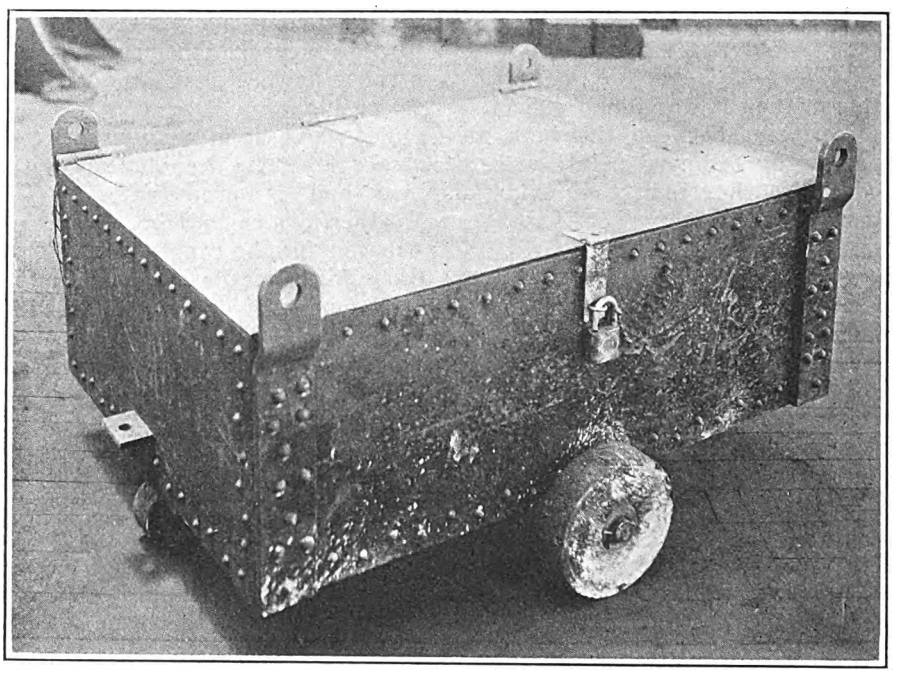
In the erecting shop the car is jacked up and placed on stands. The trucks are sent to the truck shop and air and electrical equipment needing repairs are removed and sent to the control and air rooms for this work. While the various equipment is being overhauled carpenters and cabinet makers make necessary repairs to the body, underframe, sash, doors, etc. After the equipment is repaired and replaced and pipemen and wiremen have cleaned, checked and adjusted both air and control equipment the car is again ready to be placed on trucks.

Sandblasting is used extensively in connection with truck overhauling, as this removes dirt and rust so that a close inspection can be made for defective parts. Wearing parts are renewed or built up by welding. Wheels are removed, renewed, turned or ground, as may be necessary. Armatures are removed from the motors and are cleaned and dipped in insulating varnish, after which they are baked. Equipment for this process has been installed but recently. Dipping and baking fill in the pores of the insulation and cement the coils solidly in the core slots. This prevents vibration and consequent wear of the insulation, which is one of the principal causes for grounds in armatures. After the fields have been renewed or repaired the entire motor case is painted inside with insulating paint and the motor is then assembled on the truck. In the interval, brush-holders and connections have been repaired or renewed. After a very thorough running test of the motors the trucks are sent back to the erecting shop.

With the car body again placed on its trucks the car is sent to the paint shop, where repairs or repainting are done. The process used by this railway is the color and varnish system, which so far has proved more satisfactory than either the enamel or lacquer systems. Removable parts, such as seats, gates, equipment boxes, trucks, etc., have the paint applied with a spray gun, but the brush system is used for painting the car body itself. After painting, air men and electricians complete any small adjustments and test out all equipment. The car is then trimmed, which consists of replacing all seats, curtains, sash, locks, signs, etc.

Locked Receptacle for Package Goods

TRANSPORTING loose parts and small package goods from the main storeroom to electric railway shops often constitutes quite a problem. This refers particularly to such material as screws, fuses, small commutators, small reels of copper wire, shunt wire, silk tape, brass brush-holder parts, etc. In order to provide a sturdy receptacle for such materials which can be handled easily and also to provide for locking so that the contents cannot be tampered with until the destination is reached the Brooklyn-Manhattan Transit Corporation uses what is called a "Tote" truck. Ordinarily these trucks are used in pairs, the one in the storeroom being loaded up while the one at the shop is exchanged for the loaded one each trip. These trucks are made of sheet iron and are 3 ft. x 4 ft. x 2 ft. high. The cover is hinged at one side, while at the other a clamp provided with a padlock keeps the receptacle closed. The padlock is provided with two keys, one of which is held by the storeroom and the other by the consignee. For rolling about the shop and storeroom two sturdy wheels are provided in the center on each side and a smaller wheel in the center at each end. Bails are provided for handling and pulling the truck. There are four on top, one at each corner, to make loading of the truck onto the supply car by means of a hoist or crane an easy performance.



Receptacle on Wheels Provides a Handy Method of Transporting Small Package Goods

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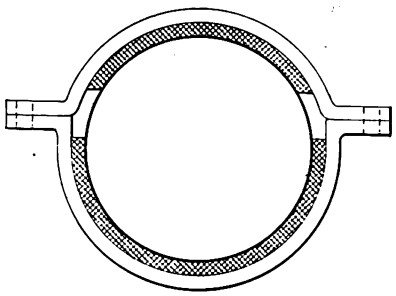
Preventing Oxidation of Air Tanks Under Hangers

INSTALLING a strip of canvas soaked in oil and white lead between the air tank and the tank hanger is preventing the oxidation of air tanks under hangers on the cars operated by the New York Railways.

Previous to the introduction of this method it was found difficult to force paint between the tank and hanger by ordinary painting methods, with the result that oxidation took place.



The Shaded Part Is Canvas Strip Soaked in Oil and Lead and Placed Between Air Tank and Hanger.

Systematic inspection and careful tests
Will keep you out of a "hellofa" mess.

Another Use for the Sand Blast

THE Indiana Service Corporation, Fort Wayne, Ind., had some wicker chairs which were used in buses. These chairs had been painted, and in overhauling them it was desirable to clean the old paint off. It was very hard to get under the reeds where they cross each other and the usual process of cleaning was quite tedious. Arthur Redderson, superintendent of motive power, conceived the idea of trying a sand blast for removing the paint. The air pressure was choked down to 45 lb. and particular care was used not to keep the blast on one place for too long a time as there might be danger of cutting the reeds. The method worked out well and much time and trouble were saved. This company has also used the sand blast for removing paint from canvas roofs where the painting has become badly alligatored. Mr. Redderson believes that the sand blast will work well for removing paint from cane seats with proper care.

New Equipment Available

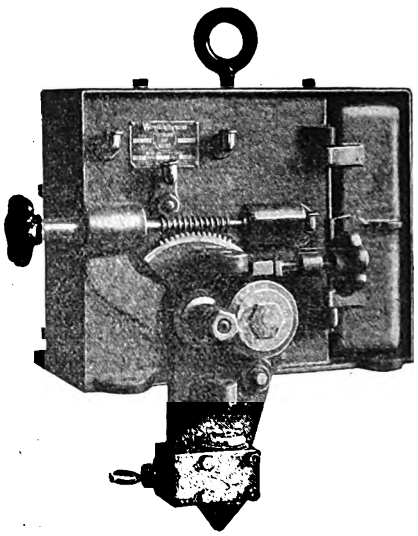
Motor-Driven Portable Air Compressor

SUFFICIENT air capacity to operate a hammer rock drill, a heavy-duty concrete breaker or two or three spades for digging clay is possessed by the Sullivan portable air compressor. The machine is driven by a direct-connected electric motor and has a capacity of 103 ft. of air per minute. The design embodies two vertical cylinders, single acting. These are splash lubricated with positive control of the amount of oil reaching the cylinders. Both the compressor and motor run at a uniform speed of 750 r.p.m., the even turning movement being insured by a heavy flywheel inside the compressor casing.

The whole rig is mounted on a cast-steel frame of a deep and heavy section and is protected from the weather by a canopy top. Water circulation for the compressor cylinder cooling is by means of a small centrifugal pump driven by a little pulley on the crankshaft. The machine may be mounted on steel wheels, or, if desired, on a Ford truck. It may also be mounted on a trail type truck with spring suspension and rubber-tired wheels, or on a timber skid. A similar unit of double the capacity has also been placed upon the market by the Sullivan Machinery Company. One of the units described was on exhibit at the American Electric Railway Association convention in Cleveland, being connected up so as to show actual operation on a track job.

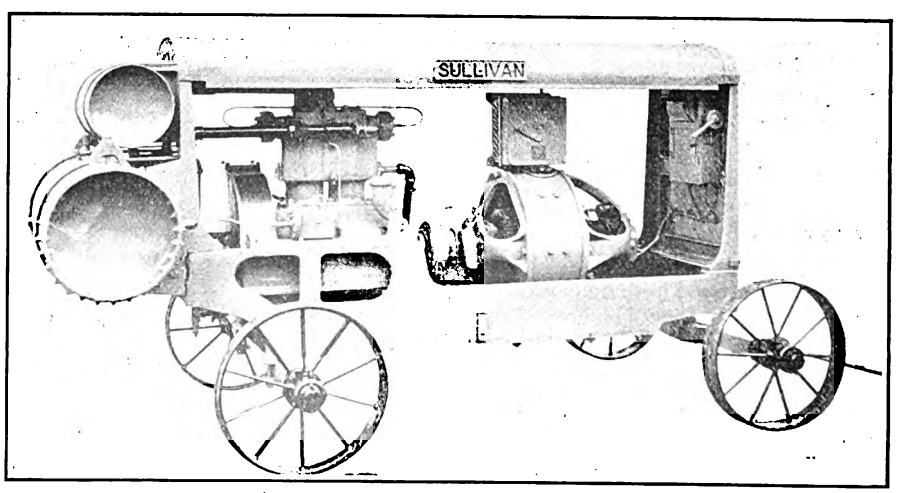
Automatic Feed Machine for Arc Welding

A MACHINE for automatically feeding a continuous welding wire to the work at any speed up to 3 ft. per minute, which is necessary to maintain a constant arc length and a constant arc voltage, has just been brought out by the Westinghouse Electric & Manufacturing Company. This machine strikes the arc automatically and if necessary will exert a pull of approximately 200 lb. in order to prevent fusion of the electrode wire to the work.



Arc for Welding Automatically

This device relieves the operator of the tiresome and exacting hand labor of maintaining the arc and feeding the welding wire, and, due to the electrical conditions of the arc remaining practically constant, it is



Compressed Air for Various Track Repairs Is Furnished Most Conveniently by a Motor-Driven Unit of This Character

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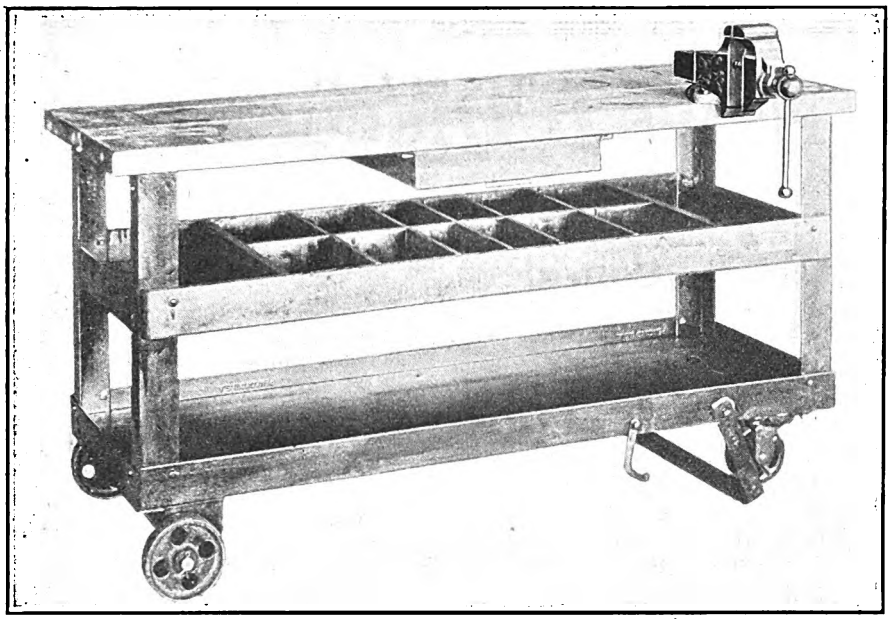


Time and Energy of Workmen Are Saved by Use of a Portable Workbench

possible to secure a better weld and to deposit metal very much faster than can be done by hand welding. The arc length can be adjusted so that the arc can be maintained at an average value of from 15 to 20 volts and will remain almost constant at any given voltage. The ¼-hp. feed motor and the electromagnets do not obtain power from the arc circuit and are therefore selected large enough to feed any size wire up to ⅜ in.

This automatic arc welding equipment can be used to best advantage on work requiring the welding of long, continuous seams and also for some repair applications, such as building up worn surfaces. It is also applied in building up worn flanges for electric railway car wheels.

It has many advantages, including better fusion due to the use of a higher current, ease of operation, permitting an inexperienced operator to handle it; uniformity of deposit, making better quality work, and the reduction in costs due to the ability to use wire in continuous lengths and eliminating the necessity of straightening and cutting. Other features of this equipment are dirt-proof housing and ease of accessibility to parts.

Movable Workbench Saves Steps

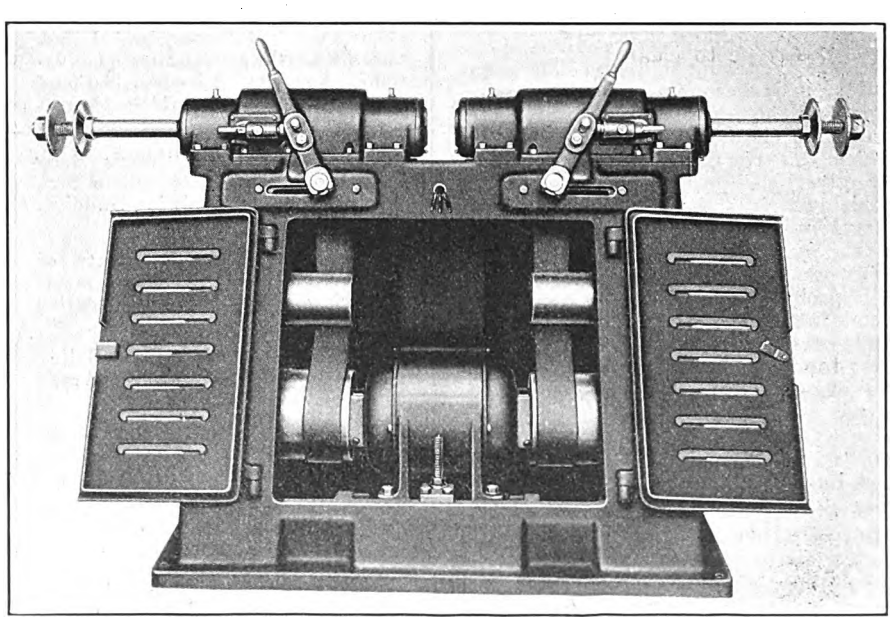
IN ELECTRIC railway repair shops stationary workbenches are most commonly built along the walls. Materials to be repaired must be removed from the cars or other equipment and carried to the bench. Many times the distance between cars and benches is considerable and much time is lost by workmen. To provide a portable bench which can be moved to a convenient location and thus save many steps and energy of workmen the Manley Manufacturing Company, York, Pa., has brought out one of somewhat novel type.

The entire workbench is of very substantial construction with a hardwood top, steel drawer, shelf partitions, roller bearing casters and provision for locking the wheels so that they will not roll about while the bench is in use. The bottom shelf of the bench provides a tray for large parts, and the intermediate shelf, with partitions, is conveniently arranged for the smaller parts. These portable workbenches are furnished in two sizes, one with a top 44 in. x 16 in. and the other with a top 64 in. x 20 in. These can be furnished without the shelf partitions if desired.

Portable Selective Speed Buffing Machine

BY MEANS of belt shifters in rear of both spindles it is possible to stop either spindle independently of the other, on a new portable selective speed buffer just placed on the market by the Hisey-Wolf Machine Company of Cincinnati, Ohio. Working in unison with the shifter an adjustable brake engages when the belt is shifted on the loose pulley, thereby holding the spindle stationary until the belt is again shifted. The belt tension can be easily regulated by means of the lever at either end of the machine. As the machine is mounted on a hinged platform equipped with screw adjustment, it is possible to get still further regulation than that obtained by means of belt tension levers.

Twelve over-size ball bearings are used in the machine and full provision is made for adequate lubrication. As in other Hisey products, a full safety automatic starter with push button control is standard equipment. Two large doors in the rear permit full view and access to the entire machine. Various spindle speeds can be furnished to meet special operating conditions. If desired the spindles can be provided with a different speed on either end. This machine is made in three sizes with 7½, 10 and 15-hp. motors.



Doors in Rear Are Open, Giving Access to Machine

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Association News & Discussions

Utility Commissioners' Reports Consider Local Transportation Subjects

SEVERAL of the addresses and reports before the National Association of Railroad and Utilities Commissioners at its annual meeting in Asheville, N. C., Nov. 9-12, 1926, contain recommendations affecting the electric railway industry. A general report of the meeting was published in last week's issue of the JOURNAL. Below are given abstracts from those addresses and committee reports which contain suggestions or information of direct value to local transportation men.

In his annual address President A. G. Patterson referred to the situation of the various classes of public utilities with which state regulatory officials are concerned. Respecting motor vehicle transportation he spoke as follows:

"The growth and development of motor vehicle traffic, both passenger and freight, goes rapidly forward while regulation, at least from a national standpoint, is still inchoate and undefined. Many of the states, realizing their responsibility and mindful that "a stitch in time saves nine," have provided regulation for intrastate motor vehicle operations. Through the cooperative methods of this association, a considerable degree of uniformity in such regulation has been observed. The Interstate Commerce Commission has recently conducted hearings in a number of states for the purpose of assembling data and information upon which it will make a report and recommendations to Congress regarding regulation of this important and growing transportation business.

"Out of all the investigations and experience regarding motor vehicle regulation, it is becoming more and more apparent that existing local authorities should be employed as the agencies by which this regulation should be made effective. The peculiar nature of motor vehicle carriers, the fact that they must travel over highways provided largely by the states and counties and not over their own roadways, the fact that there will probably never be the same economic reasons for the ownership of such carriers or the operation thereof, to be consolidated or vested in one person, firm or corporation, operating across many states, and the manifest necessity for closer supervision than rail carriers require in order to protect the lives of the public and of passengers of such vehicles—these characteristics indicate not only that the states can best perform the task of regulating this traffic, but that effective regulation in this field is well-nigh impossible of performance by a single national body.

"The splendid work which has been accomplished by the committee of this association in preparing and presenting to Congress a bill providing practical regulation for interstate motor vehicle traffic furnishes further evidence of the great value of this organization to the public, and the bill so provided should, and we trust will, receive favorable action of the Congress. Until Congress does act, the states, of course, must confine their regulation wholly to intrastate operations.

"That state is an exception wherein the public welfare does not already demand that regulation be provided for intrastate traffic of this sort.

"State utility and railroad commissions and their staffs, as a rule, constitute the best equipped group of men in the state to formulate the basis and plan of regulation to be adopted by the Legislature. Such commissions can, and we think should, perform the service of submitting plans of such regulation to the legislative bodies. In devising such legislation the rights and interests of existing carriers by rail, or by boat, should of course not be ignored. But we think the position is sound that if, with improved systems of highways, the motor bus and the motor truck can furnish to the people a more convenient, efficient and economical method of transportation, the people should not be denied the benefits thereof because the granting of franchises and certificates to such motor vehicle carriers to carry on business will necessarily result in some loss to the rail carriers or boat lines. If such motor vehicle transportation can be carried on for the people at a lower cost than rail transportation and the difference in cost is sufficient to warrant consideration, then we think that alone might justify the granting of a certificate to a motor vehicle carrier, even if the rail carrier traversing the territory was already in a position to carry all the persons and goods offered to it, but for the rendition of such service demanded a substantially higher reward. If we say that motor vehicle transportation should be denied because the rail carrier in the territory can carry all the persons and goods offered and hence should not be injured by such competition, when such motor transportation will be more convenient, more satisfactory and more economical, by the same token we should forbid the sale of electric lights because to permit it will injure the manufacturers of candles and oil lamps.

"The people are entitled to the benefits that will accrue from improved highways and the development of the motor vehicle just the same as they are entitled to the benefits accruing out of the advancement of science in any other field. If the railroads are confronted with a new problem in the form of this motor vehicle competition, then it is their task to solve the problem so far as it affects them, not to ask the people to solve it by prohibiting or strangling the motor vehicle business, if that is found to be an improvement upon previously existing transportation agencies, but solve it by improving their own methods of transportation so as to minimize as far as possible the advantages existing in favor of motor vehicle transportation.

"The man is foolish who holds the view that regulation should ever be exercised in such a way as to deprive the people of any better, more convenient or more economical method of carrying on their affairs."

PEOPLE ARE ENTITLED TO BENEFIT OF NEW METHODS

The committee on express and other contract carriers by rail also touched on automotive transportation in connection with the effect of such competition on the existing carriers. It held to the following views regarding the situation:

"Coming to the question of changes involved in the progress of events and with especial reference to the competi-

COMING MEETINGS OF *Electric Railway and Allied Associations*

Dec. 2-3—Highway Research Board—Division Engineering and Industrial Research, annual meeting. National Academy Sciences—National Research Council Building, Washington, D. C.

Dec. 3—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

Dec. 6-9—American Society of Mechanical Engineers, annual meeting, New York City, Engineering Societies Building.

Jan. 10-14—American Road Builders' Association, convention and road show, Coliseum, Chicago, Ill.

Jan. 25—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.

Jan. 26-28—Association of Equipment Men—Southern Properties—Memphis, Tenn.

Feb. 3-4—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.

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tion entailed in motor vehicle transportation, it is the view of the committee that while, as expressed in previous reports, motor vehicle competition with carriage of persons and property by rail should be carefully controlled and limited with due regard to the rights of existing carriers which have invested large capital and developed business in good faith to the great benefit of the various communities through which their lines run, yet it is nevertheless true as a general proposition that the people of any particular community are entitled, under reasonable conditions and with due regard to the rights of all others, to the benefit of new modes of transportation and to a full utilization of the vast outlays that they have made, through the medium of taxes, in improved roads as a means for such new and different modes of transportation.

"The theory upon which this conclusion is based is twofold. One is, that it is the right of the people, with due regard to the proper safeguards for the rights of others, to enjoy new facilities, new inventions, and be the beneficiaries of the progress of the times. As the rail carriers enjoy the right of eminent domain by virtue of the right of the people to have private property appropriated to public service, so the people have the right to enjoy to the fullest extent consistent with the rights of others their investments in the construction and improvement of roads which correspond, as to motor vehicle carriage, to the rights-of-way appropriated and occupied by rail carriers.

"The other theory is, that the existing rail carrier must be subject to the economic necessity of meeting the competition of newer and more desirable modes of transportation and take its chance of having to succumb thereto."

Motor Vehicle Transportation Is Becoming Stabilized

A review of the problems brought up by the development of motor vehicles is covered in the report of the committee on motor vehicle transportation, which is printed in full below:

"The rapid progress in the building of good roads, engineering skill in the perfection of motor vehicles, the ever-present tendency of the American people to make immediate use of new modes of rapid transit, have combined to force to the forefront and to clothe with all-absorbing interest the question of motor vehicle common carrier service. The effect of this service is far reaching and touches nearly every phase of our business, social and economic life. It affects the relationship between the wholesale and retail merchant; the relation between the rural towns and commercial centers, the transportation and financial questions of traction, express and railway companies. So acute have been the problems due to this new transportation and the efforts to allocate it to its proper place in the transportation world that the best thought of the country has been employed in an attempt at a wise and sane solution.

"Commissions and regulatory bodies in practically every state in the Union have been swamped with the many perplexing and seemingly contradictory situations which have arisen. Inexperienced operators without seasoned judgment, promoters seizing an opportunity to exploit the business, selfish interests impelled by their own private financial motives, prejudice, jealousy, political exigencies and hysteria on the subject, have, at certain times, in certain places, almost imperiled the future of this new industry, destined as it is to play an important part in the future of this country. Time, however, and experience have been and doubtless will continue to be potential factors in solving the perplexing questions. In many places the problem of motor vehicle transportation is gradually adjusting itself and finding its place in the transportation needs of the communities in which it operates.

"Regulatory bodies are experiencing less difficulty in handling the questions which arise. This is due in part to the fact that operators are becoming familiar with transportation problems, and due in a large measure to the 'fly by night' operator, finding his business unremunerative, having quit the field. Another contributing factor toward solution of local operation is due to the change in attitude of the other forms of transportation toward motor vehicle operation and in the change of attitude of motor vehicle operation toward the former. At first the officials of electric and steam roads felt that this new transportation would so deplete their revenues as to threaten the value of their invested capital and that they owed a duty to those who had invested in their securities to make unremitting warfare against the new business. On the other hand, bus and truck operators were led to believe by propaganda put out by promoters and certain manufacturers that their business was in the near future destined to supplant the older forms of transportation and they should make every effort to enter into active competition with them at once. Fortunately for the transportation needs of the country these notions are quickly being dispelled and in their place a fine spirit of co-operation is being fostered. Co-operation will do more to simplify what was a complex situation than any other one factor.

"As the solution of local motor vehicle transportation approaches, the extension of the business into distant territory brings for settlement interstate problems. Again, the many conflicting and different interests suggest as many plans for solution as there are interests. Of course the only legislative body which can enact laws or provide regulation for interstate traffic is the federal Congress, as this right is denied the states by the Constitution of the United States.

"Whether Congress should enter the field of motor vehicle regulation, and if so the nature and extent of such regulation, is now one of the absorbing questions. At our convention last year at Washington we adopted a form of federal regulation and indorsed a tentative bill prepared by our general solicitor, Mr. Benton, and a committee that had been appointed for that purpose. The bill was introduced in the Senate as Senate Bill No. 1734, referred to the Senate committee on interstate commerce, and that committee

Resolution presented by

Mr. Gettle of Wisconsin before the

National Association of Railroad and Utilities Commissioners

Asheville, N. C., Nov. 9-12, 1926

***Whereas,* at the Annual Meeting of this Association held at Detroit in 1922, this Association adopted the following Resolution:**

Now Therefore, Resolved, that it is the sense of the National Association of Railroad and Utilities Commissioners that the principle of the indeterminate permit is economic, sound and should be adopted in the legislation of the various states relating to public utilities, and

Resolved Further, that this Association do and it does hereby urge the legislatures of the various states which have not yet adopted the principle of the indeterminate permit to enact legislation recognizing and putting such principles into effect.

***Therefore Be It Resolved,* that this Association renew its recommendation for the establishment of provisions authorizing the "indeterminate permit," and that we recommend that provision be made therefor in the proposed uniform law now under consideration by the National Conference of Commissioners on Uniform State laws; and be it further**

***Resolved,* that a copy of this resolution be transmitted to said conference.**

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held hearings on said bill covering a period of several days. Much concern was manifested by many different interests and numerous views expressed and several amendments offered. In fact, before the hearings were concluded some one had made objection and offered amendments to at least every important part of the bill, and some truck organizations objected strenuously to any legislation at all on the subject. The bill has never been reported out of the committee.

Investigation by Interstate Commerce Commission

"Much interest has attached to the recent order of the Interstate Commerce Commission initiating a country-wide investigation of interstate motor vehicle transportation. Those who have followed the hearings in the various cities throughout the United States are aware that it is quite clearly developed that all are not of one accord on the question of federal regulation, but the prevailing sentiment disclosed by a preponderance of the evidence was for such regulation; it was also disclosed that the new transportation had made inroads on the revenues of steam roads in various parts of the country, and that steam and electric carriers in order to recoup their losses have taken over motor lines so as to control much of this transportation, and are operating them in conjunction with and as a part of their entire system, adjusting rates and fares and providing transfers and joint hauls to make the business attractive, convenient and lucrative, and are handling it with a fair degree of success. The hearings also developed that the most profitable lines are those giving service not reached by other established modes of transportation. In other words the records of the hearings seem to indicate that motor transportation will find its place; not in competition with steam and electric, but to supply a service not reached by either, and in co-operation with both.

"Experience has shown that motor transportation is not cheaper than steam and electric as first supposed, but on the contrary, more expensive; however, its lack of delay, flexibility and convenience of the service overcomes its expensive operation and serves to create and retain a demand for this kind of service.

"The history of the business up to the present time shows conclusively the need of public business regulation and also clearly demonstrates that for the business itself and the people who use it local regulation has been a success. Great care, sagacious thought, and sound judgment should be experienced in federal regulation lest this important industry be seriously crippled or handicapped. Such regulation, we maintain, must be made on the basis that motor vehicle transportation is primarily a local question, and only incidentally an interstate one. Its hauls are necessarily short hauls, and even a large per cent of its interstate operation is made up of transporting persons or property from the near border in one state just over the line in the adjoining state; in this respect its operations are not comparable with railroads and express companies which transport through several states or across the continent—so that the local aspect of the industry should not be forgotten in any regulation.

"Those living in a particular community are better acquainted with their transportation needs than those residing at a great distance. And another important consideration which must be kept constantly in mind is, that the states furnish the highways, the necessary instrumentalities which make the industry possible; each state, therefore, has something to say as to the nature of transportation on its highways; the width and weight of the vehicles used; the rate of speed they should travel; road regulations in the interest of safety; these and many more, are all local questions peculiarly within the jurisdiction of the states, and legislation on the subject to be not only just, but valid, must reckon with them.

"A splendid discussion of motor freight problems is found in the testimony of Thomas Snyder, secretary-treasurer of the Indiana Transfer and Warehouse Association, before the Interstate Commerce Commission at a hearing in Chicago; the suggestions are so pertinent and so well stated that we have made them an exhibit to this report so as to bring the same before the association.

"From a study of the motor vehicle industry, its local nature and character of its business, we do not believe it wise or prudent to place its regulation under the Interstate Commerce Commission. We, therefore, recommend that the passage of Senate Bill No. 1734, with such amendments as may be found necessary, be urged by this association."

CASUALTIES IN HIGHWAY GRADE-CROSSING ACCIDENTS IN UNITED STATES AND AUTOMOBILES REGISTERED

Year ended	Persons Killed	Persons Injured	Automobiles Registered (000)
Dec. 31, 1916...	1,652	3,859	.....
1917...	1,969	4,764	4,983
1918...	1,852	4,683	6,147
1919...	1,784	4,616	7,565
1920...	1,791	5,077	9,232
1921...	1,705	4,868	10,466
1922...	1,890	5,383	12,238
1923...	2,268	6,314	15,092
1924...	2,149	6,525	17,592
1925...	2,206	6,555	19,954

A most constructive view regarding the relative importance of service and rate of fare for local transportation companies is expressed in the report of the committee on service of public utility companies. That part of the report dealing with this subject is printed below:

"The standards of service of street car companies are fairly well stabilized as is shown by the few new rules or changes in rules that have appeared in the past few years. The biggest service problem before the industry at the present time is that of modernizing its equipment. Cars which are more comfortable, more speedy and less noisy than ever before are being built, and with light weight and one-man operation they are frequently more economical to operate than the older types. The commissions can and should co-operate with the street car companies in this movement, because it is generally agreed that today good service is more important in street car regulation than cheap fares.

"Great improvement has been made in the last few years in the type of bus operating in this country, and this improvement continues to progress with rapidity. As the bus approaches in appearance the private limousine, the public demands an even greater reduction in noise and unpleasant odors due to gasoline and oil. Improvement in these lines together with increased attractiveness both within and without bring their own reward in increased revenues. Competition is still keen enough so that it is necessary only for the commission to encourage, without, except in rare cases, demanding continued progress.

"One decided advance recently made in service of local transportation is the de luxe or parlor car bus line running parallel with and controlled by the street car line. The characteristics of such operation are luxuriant buses, a high rate of fare, usually 25 cents, high speed and efficient and courteous service. Such a line has been established within the past year between Chevy Chase, a suburb of Washington, but within the District of Columbia, and the downtown section including the Union Station and the Capitol. Not only has this line made money, but also, according to the president of the Capital Traction Company, which operates it, it has been one of the best good will builders the company has found and apparently has actually helped increase the number of passengers on the car line. The local utilities commission gave permission to the car company to run this line parallel to its own tracks at a 25-cent fare, notwithstanding the fact that the then independent bus company petitioned for permission to operate a bus line at 10 cents. The commission was led to this decision partly because of the question of competition, but largely because it was felt that the type of service desired demanded a high rate of fare. As strange as it may seem, the citizens of Chevy Chase through their Citizens' Association threw the weight of their support to the higher fare."

Recommendations of the National Conference on Street and Highway Safety for the protection of dangerous grade crossings are indorsed by the committee on safety of railroad operation. Experience with a law of this type in the state of Minnesota is cited by the committee. That portion of the report on this subject follows:

"The Minnesota grade crossing law has now been in operation for about one year. This law authorizes the Railroad and Warehouse Commission to designate particularly dangerous crossings as 'stop' crossings, and requires all drivers to come to a full stop at such crossings under penalty.

"The commission has exercised great care in the selection of the crossings to be so designated, and only about 10 per cent of the crossings in the state are so marked.

"The enforcement of the law is in the hands of the local authorities, and results vary depending upon their activities. The placing of the signs and the publicity given them has accomplished great good, as the drivers who do not actually come to a dead stop, no

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doubt do look and proceed over the crossing more carefully. This is shown by the reduction in the number of accidents, although the number of cars in use has greatly increased.

"The adoption by all states of a uniform law empowering the commissions to designate dangerous grade crossings at which drivers of automobiles and other vehicles must stop, as recommended by the National Conference on Street and Highway Safety, is highly desirable and should have the active support of this association.

"In Minnesota the State Highway Commission, in connection with its road-building program, is very active in the rerouting of the trunk highways in a manner so as to eliminate all grade crossings that it is possible to do away with. In such work it is meeting with much co-operation from the railroads, and where crossings are necessary the railroad and the commission are eliminating the grade crossing by the construction of overhead or underground crossings and sharing in the expense of such improvement. When the State Highway Commission took over the trunk highway system in Minnesota in November, 1920, there were approximately 932 grade crossings to be contended with in connection with the 7,000-mile trunk highway project. The highway department, by the end of the year 1926, expects to have eliminated 357 of this number. Of the 357 eliminated, 44 will have been by overhead structures, 80 by underpasses and 233 by relocation of the highways. Further crossings will be eliminated by one or the other of the above methods as the trunk highway projects are further extended. The policy of the State Highway Commission is one to be commended, and the good work has no doubt already saved the lives of many of our own citizens and citizens of other states.

"In connection with the operation of the new Minnesota grade crossing stop law, the city of Minneapolis and various other municipalities have passed ordinances requiring all motor vehicles to come to a full stop at all railroad grade crossings within their municipal limits, which have been designated stop crossings by the Minnesota commission under the provisions of the new law. The municipalities have the necessary traffic officers to enforce the law, and their ordinances will no doubt be quite rigidly enforced. The effect of such enforcement will be far reaching in commanding respect for and obeyance of the stop crossing law."

Regulation and Snow Fighting Discussed at Wisconsin Bus Meeting

STATE regulation of bus lines and the part bus companies should play in snow removal activities were the two most vital questions discussed by members of the Wisconsin Motor Coach Association at its first annual convention, held in Madison, Nov. 9 and 10. The organization includes several electric railways operating buses.

The association sponsored a bill for regulation of bus lines at the last session of the Legislature. It was passed by both houses, but was vetoed by Governor Blaine. The association plans to present a new bill at the next session.

C. N. Mauer, state traffic engineer with the Highway Commission, addressed the convention on traffic regulation from the highway official's viewpoint.

The two-day convention was arranged by M. H. Frank, Wisconsin Power & Light Company, Fond du Lac, president; John M. Cadby, newly appointed secretary of the association, and E. R. Fitzgerald, Royal Rapid Transit Company, treasurer.

The list of speakers included Mayor A. G. Schmedeman, Madison; L. C. Knapp, Wisconsin Power & Light Company, Manitowoc; President Frank; Edgar F. Zelle, president Minnnesota Motor Bus Association, St. Paul; Chester Moore, vice-president and secretary Illinois Motor Transportation Association; B. W. Arnold, Chicago, North Shore & Milwaukee Railroad; Dudley Montgomery, Madison Railways; Francis A. Cannon, Madison, secretary Wisconsin Good Roads Association; C. M. Larson, Madison, secretary Wisconsin Railroad Commission; Prof. W. C. Hewitt, Oshkosh Normal School; J. F. O'Neill, Madison, Wisconsin Motor Bus Lines; H. J. Underwood, Vacuum Oil Company; Mr. Fitzgerald; A. E. Clock, Chicago, North Shore & Milwaukee Railroad; Mr. Maurer; H. G. Monger, Milwaukee, Wisconsin Motor Bus Lines, and Edwin E. Witte, Madison, chief of the legislative reference library.

Officers of the association, who hold over until February, include Mr. Frank, president; Mr. Monger, first vice-president; Mr. Knapp, second vice-president, and Mr. Fitzgerald, treasurer. Directors include the above officers and B. W. Arnold, A. M. Schrum, Gray Transportation Company, Menominee, Mich., and A. E. Beaurline, Twin City & Southern Bus Company, St. Paul.

President Frank, in his opening address, advocated greater use of newspaper advertising space, of coupon mileage books good for transportation on any bus line connected with the association, group insurance for member companies, adoption of standard classification of accounts in order to make studies and comparisons of costs, and uniform methods for selection of drivers.

C. M. Larson, chief engineer of the Wisconsin Railroad Commission, said that if buses are to play a permanent part in the nation's transportation business, they must maintain service schedules during the entire year. He warned bus operators that if service is discontinued for several days or weeks at a time because of the expense of snow removal, bus operation is sure to lose some of its popularity.

A traffic regulation policy was outlined by J. T. Donaghey, chief engineer Wisconsin Highway Commission. This program included uniformity throughout the nation in both highway traffic laws and city ordinances governing traffic, education of motor vehicle operators in traffic laws and regulations, and acceleration of traffic on heavily traveled highways rather than retardation of it. This could be accomplished, he declared, by educating the slow, reckless driver as well as the fast, reckless driver. Mr. Donaghey prophesied that the time would come when there would be no maximum speed limit and the only cause for arrest will be reckless driving.

An outline of the maintenance methods of the Wisconsin Motor Bus Lines was presented by H. L. Debbink, superintendent of gasoline vehicles for the Milwaukee Electric Railway & Light Company.

Internationaler Strassenbahn und Kleinbahn Verein to Meet

ON THE invitation of the Copenhagen Street Railway System, the 1927 convention of the Internationaler Strassenbahn und Kleinbahn Verein will be held in Copenhagen, Denmark, on June 20 to 23. Business sessions will be held during the mornings of those days. The afternoons will be devoted to visits to various points of interest in and about the city.

A tentative list of some of the topics to be discussed follows: Improvements in Copenhagen rolling stock, particularly in the direction of methods of brake control and car painting; reduction in the maintenance-of-way expenses of the Copenhagen system through the application of the sorbitic process to rails; radio disturbances; the motor bus and the street railway; practical methods of increasing average schedule speed; simplified methods of exchange of freight between trunk lines and electric railways; general statistics.

American Association News

Coffin Award Committee Meets

PRELIMINARY plans for the Charles A. Coffin Prize competition in 1927 were made by the Coffin award committee at a meeting held at association headquarters in New York on Nov. 17. Letters to electric railway companies inviting participation and announcing the conditions of the 1927 competition are to be prepared and distributed at an early date. The committee felt that the Coffin award has been a large factor in stimulating enthusiasm and progress in the industry and that the advantages to be obtained by participation make it important that the preparation of briefs be started early in the year. For that reason it was considered desirable to announce the conditions for this year's competition as early as possible, and steps were taken to carry out this objective.

The committee also recommended publication of a 1926 issue of "Electric Railway Practices," this being a digest in book form of the developments by the various contestants, similar to that published in previous years. Those present at the meeting were President W. H. Sawyer, W. W. Trench, secretary Charles A. Coffin Foundation, and James H. McGraw.

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The News of the Industry

$15,000,000 Railroad Extension

Preliminary Plans Completed for the Proposed New Line to Cover the Industrial Belt of Piedmont

Interest in the territory that will be affected centers in the talk of the extension of the Piedmont & Northern Railway from Charlotte to Durham, a distance of 150 miles, and from Gastonia to Spartanburg, S. C., a distance of 50 miles, making a total new trackage of more than 200 miles. The construction of the proposed new lines will involve an expenditure of about $15,000,000, but officials of the railway have declined to discuss the question of estimated costs.

Officers and directors of the railway have committed themselves by formal resolution to the early construction of the line to make a continuous route from Greenwood, S. C., to Durham, in accordance with the intention of the late James B. Duke and associates, at the time they organized the railway fifteen years ago. The extension of the North Carolina portion of the railroad will, in effect, give Charlotte and other towns touched a new trunk line railroad and bring the Atlantic Coast Line and the Pennsylvania Railroad into Charlotte by reason of the physical connections tapping these systems.

The intention of Mr. Duke and his associates at the time they organized the company is recalled in the first paragraph of the preamble to the resolutions adopted by the directors. It is stated that the company originally "intended that its main line of railway should extend through the Piedmont sections of the Carolinas from Greenwood, S. C., to Durham, N. C., with such additional lines as might be necessary or desirable for the development of the resources of this section."

MEETING SCHEDULED FOR DEC. 8

The resolutions state that the "preliminary plans" looking to the resumption of construction "have now been completed to the point where further construction work may be commenced." The resolutions adopted by the board of directors contain a call for a meeting of the stockholders to be held in Greensboro, S. C., on Dec. 8 to consider and pass upon the proposal of the board that the work of extension of the lines, as described by the board, be resumed. It is assumed that securing the assent of the stockholders to the program is a mere formality and that the program will be promptly approved by them and that shortly thereafter contracts for portions of the actual construction may be awarded.

The resolutions adopted do not mention a city or town to be touched between Charlotte and Durham and no further information on this point could be obtained from officials of the company. It is being recalled, however, that a campaign was waged by public-spirited citizens last year in Winston-Salem and other towns between there and Charlotte with a view to securing promises of business support for the extension, which at that time was generally described as to be from Charlotte to Winston-Salem. Nothing is known outside of Piedmont & Northern official circles as to just what route the proposed extension will take between Charlotte and Durham, but it is thought likely that it may touch one or two if not all of the "triangle" cities—Greensboro, Winston-Salem and High Point.

The proposed new line will traverse the great industrial belt of Piedmont along the line of what has been called "the workbench of the South." Like the portions of the Piedmont & Northern already constructed, the new lines will be electric, operated by power produced by the Southern Power Company, the major Duke enterprise of the section.

At Durham the Piedmont & Northern, when completed, will connect with the Norfolk & Western and with another Duke railroad, the Durham & Southern, which extends from Durham to Dunn, on the main line of the Atlantic Coast Line.

Fare Advance Sought in Los Angeles

The Los Angeles Railway, Los Angeles, Cal., has filed with the California Railroad Commission an application asking the commission to investigate its operations and its rates and to establish a new rate structure based on a 7-cent single fare with four tickets or tokens for 25 cents, including free transfer privileges. The company states that it is no longer able to operate on the present 5-cent fare and that for the last two years its railway service has been carried on at a loss. No dividend has been paid since 1913.

Illinois Inquiry Under Way

Bankers Favor State Control and the Terminable Permit at Legislative Committee Hearing—H. R. Riley Severe in His Criticism of Lisman Proposal—Receivership Talk Revived

STATE supervision of traction properties, as against local regulation, and the adoption of terminable permits are recommended by the nine Chicago bankers and industrialists who have so far appeared before the joint committee of the Illinois Senate and House appointed at the last session of the General Assembly to consider these problems. The committee opened hearings in Chicago on Nov. 8.

John J. Mitchell, chairman of the board of the Illinois Merchants Trust Company and the first witness to be called, stated that the twenty-year franchise by which Illinois companies are now limited by law is entirely too short a grant to permit effective financing. He said that people who have studied the question thoroughly consider an indeterminate franchise the most economical, satisfactory and up-to-date method of dealing with the subject. He was convinced that "there is a decided advantage in having utilities controlled and supervised by a state board. I believe such a board is better fitted, more disinterested and less tainted with politics."

George M. Reynolds, chairman of the Continental & Commercial National Bank, believed an indeterminate permit with proper safeguards would be helpful in raising the large sums necessary. He said that to avoid local politics members of a commission to control Chicago's local transportation agencies should be appointed by the Governor rather than being elected or appointed by the mayor.

With regard to the expiration of Chicago Surface Lines franchises and the maturing of some $150,000,000 of bonds on Feb. 1, Mr. Reynolds held that receivership was all but inevitable. He favored immediate construction of downtown subways, but pointed out certain disadvantages in the special assessment method of payment.

THIRD WITNESS OUTLINES IMPORTANT POINTS IN FRANCHISE QUESTION

Three things must be considered in the local franchise question, according to George T. Woodruff, president of the National Bank of the Republic, and the third witness. The first item he mentioned was statewide regulation of utilities; second, the renewal of the danger of local prejudice interfering with fair rate making and, third, that these two would result in larger units of operation safe for small investors.

Ralph Van Vechten, president of the State Bank of Chicago, said that rates, service and financing are the only questions to be considered. He predicted that any effort to refinance the Chicago Surface Lines on the present basis would be very difficult. Receiverships had been tremendously expensive and naturally the bondholders were gun shy.

Other bankers and business men went

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on record for terminable permits and state control.

H. B. Riley, president of the Chicago Title & Trust Company, trustee for holders of the underlying securities of the Chicago Surface Lines, said he did not look for a receivership of the Chicago City Railway, but there seemed to be no hope of the Chicago Railways escaping this fate. He declared that the twenty-year ordinance of 1907 was excellently conceived in many respects, but the sponsors unfortunately could not look into the future and see that financial conditions would change. With the purchasing value of the dollar at only 65 cents, a 7-cent fare was not quite enough to take up the slack.

Much interest was taken in Mr. Riley's outspoken remarks about the recent proposal of the Lisman interests to take over the Surface Lines properties. He said in part:

> I don't believe that Lisman can put it over. He has the reputation in New York of being without a peer in railroad reorganization. But we have a different situation here. Our railway is not in such straits. It is a going concern, in continuous operation, paying its way. All it is asking is permission to go ahead under fair conditions.
>
> Mr. Lisman's proposition is to put in $50,000,000 cash for the purchase of a $165,000,000 property, when the contract with the city under the 1907 ordinance provides if the city buys the property it must pay cash for it. I don't think Mr. Lisman could get $165,000,000 cash, but, of course, if you were going to turn over these properties to him for $50,000,000 cash and the rest paper, he could walk down Wall Street and put it over in 24 hours. In my opinion the city will have to give the companies a license to continue operation when their franchises expire, either a franchise or just a permit. The city must do that or people couldn't get to their work.
>
> Chicago must stop getting people to put up money for its transportation service and then taking their property away from them.

Fear was expressed at a meeting of the local transportation committee of the City Council on Nov. 11 that the terminal permit investigation committee would be unduly prejudiced in its report to the Legislature by the sentiments of local bankers, who, almost to a man, are in favor of state control of public utilities.

Alderman Joseph McDonough, chairman of the committee, declared that some of the bankers who testified have sought to convey the impression to the legislators that there is a divided sentiment in Chicago for and against "home rule."

The Alderman said that on the contrary the investigating commission should be told that there is an overwhelming sentiment in favor of local supervision and control. He said that "a referendum on 'home rule' would soon convince them what percentage is for, and what against it."

The local transportation committee is almost unanimously agreed that Chicago voters would not countenance any other arrangement than home rule in a new traction ordinance, but the majority of its members have gone on record as favoring the terminable permit.

Mayor William E. Dever, Corporation Counsel Francis Busch and several Aldermen are to appear before the investigating committee in support of local regulation at its next session on Nov. 26.

Detroit Appointment Expected Soon

Mayor Smith of Detroit and the Street Railway Commission will meet on Nov. 30 to appoint a successor to Col. H. U. Wallace, manager of the municipal railway. Del A. Smith has been mentioned for the appointment, but no definite action will be taken until the Mayor returns to Detroit. Colonel Wallace tendered his resignation as general manager to become effective on Jan. 1. Press of private business including management of his 5,000-acre plantation in Georgia is his reason for resigning. There has been no dissension on the part of the general manager or the city administration during the term of his employment. Del Smith's salary has recently been raised from $7,000 to $9,000 a year.

It was in June a year ago that Colonel Wallace succeeded Ross Schram in charge of Detroit's municipal railway. He was selected for the post from a long list of candidates after Mr. Schram had been dismissed from office by Mayor Smith for "inexperience and inefficiency and for neglect to furnish me with reports which I have repeatedly requested." Counter accusations by Mr. Schram received short shrift.

City Officials at Odds Over "L" Lease Renewal

An array of facts and figures was presented on Nov. 18 to the Public Service Commission of Pennsylvania at the second hearing on the position of the city of Philadelphia and the Philadelphia Rapid Transit Company for approval of the 30-year extension of the Frankford Elevated lease.

The hearing was preceded by a controversy in the press between City Solicitor Gaffney and City Controller Hadley, the latter calling the amended lease "unnecessarily unfair" and pointing out that, on July 1, 1957, when the proposed 30-year lease would expire, the P.R.T. would owe the city $3,706,000. He offered a substitute amendment in which the payments in the last ten years are increased each year by an amount that will make up the $3,706,000. In this way, he declared, the city will actually have the excess due from the P.R.T. at the end of 1957.

Controller Hadley also maintained that the Frankford "L" is not unprofitable as the P.R.T. claims and declared that his "audits for 1923 and 1924 show the receipts were $2,031,534 and the direct expenses in the same years were $317,671."

Thereupon, City Solicitor Gaffney took issue with Mr. Hadley's pronouncement that the lease was "unnecessarily unfair," accepted his analysis of the proposed P.R.T. return and then pointed out that the aggregate, if correctly applied, meant $635,000 more to the city than would be due if the present rental scale was continued until 1957. He maintained that Mr. Hadley's substitute amendment would be unfair to the P.R.T. in that the company was entitled to use the money during the final ten-year period.

Mr. Hadley's attack on the amended lease, regarded in the city hall as a blow at the administration's plan speedily to execute the new lease so that borrowing capacity tied up in elevated bonds could be released, prompted Mayor Kendrick to declare that "Mr. Hadley's statement came as a surprise" to him and that he stood "solidly behind City Solicitor Gaffney and his legal advice."

Thus matters stood on the eve of the second Public Service Commission hearing.

Reference to the first hearing appeared in ELECTRIC RAILWAY JOURNAL, Nov. 6, 1926, page 858.

Interstate Free of Clause Limiting Profit to Fair Amount

The Interstate Public Service Company, operating an interurban electric railway from Louisville, Ky., to Indianapolis, Ind., was held not to be subject to the provisions of Section 15a of the interstate commerce act in a decision issued by the Interstate Commerce Commission on Nov. 16.

Section 15a provides that rates of railroads shall be made so as to produce "as nearly as may be" a specified percentage on fair return, on investment, and also provides for the recapture of half of any excess above 6 per cent.

The commission found that the interurban is an interurban electric railway not operated as a part of a general steam railroad system of transportation and not engaged in the general transportation of freight within the meaning of paragraph 1 of section 15a of the interstate commerce act; and that the respondent, in the operation of the interurban, is not a carrier within the meaning of that section and is not subject to the provisions thereof.

The opinion of the commission was that the interurban is not engaged in such general transportation of freight as to cause it to resemble steam roads in the performance of that function. Further the commission said that the differences between the freight service performed by it and that performed by steam roads generally are so great as to show that it does not belong to their class.

According to the commission the road has a larger share of interstate business than most interurban electric roads on account of its terminals being in different states, but the commission said that does not change the character of its operation. It also has greater facilities for and handles a larger percentage of freight than most interurban electric roads, but its characteristics in general are the same as those of most other interurban electrics, while the nature of its freight traffic, the character of its road and equipment, and its inability to interchange equipment with steam roads or to make through shipments in connection with them except to a very limited extent, its different scale of wages and its different passenger fares all distinguish it from steam roads and show that it is not to be grouped with the steam railroad system, for which, in the commission's view, section 15a was primarily intended.

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Committee Appointed to Draw Jacksonville Franchise

The City Council of Jacksonville, Fla., on Nov. 4 appointed a citizens' committee to aid the laws and rules committee of the legislative body to prepare a franchise for the Jacksonville Traction Company.

The meeting at which the committee was appointed was the last of the public hearings to permit those interested in the proposed 30-year franchise for the company to state their case. No one took the floor against the franchise. The meeting was of short duration and adjourned after the citizens committee was appointed. About 40 persons attended the meeting.

The citizens' committee will call upon the laws and rules committee only when it needs advice. The recent discussion incident to the consideration of the matter of a new franchise for the railway was reviewed in the ELECTRIC RAILWAY JOURNAL for Nov. 13, page 901.

New Operating Deal in Norfolk

A revision of the public transportation system of Norfolk, Va., has been worked out by the city manager, the Norfolk Railway & Light Company and the business men of that city, all co-operating.

The plan eliminates a zone system of fares, changes, routings and co-ordinates services of all street cars and buses. It fixes the fare at three tokens for 25 cents or 10 cents cash, with school tickets in books of 24 for $1. It also includes a weekly pass entitling the bearer to ride over the system at will for $1.50 a week.

An investment of $1,000,000 of new money will be made by the transportation company to put the plan into effect. It will result in the replacement of property now in service to the amount of about $750,000.

Under the new plan of fares, rerouting and co-ordination the average of the fare increase is estimated to be 7 mills. It is expected, however, that this will be sufficient to enable the company to earn a return on its property value and to supply public transportation acceptable to the community, by trolley cars and buses under a single management operating efficiently.

Berlin Plan Advocated for St. Louis

C. E. Smith, consulting engineer for the city of St. Louis, Mo., speaking before the St. Louis Railway Club on Nov. 12 advocated the adoption of a rapid transit system similar to that in Berlin as a means for relieving traffic congestion in St. Louis. He admitted that his proposal was still intangible, but suggested that the city buy a half block right-of-way from street to alley along a residential route and make it into a parkway with double-tracked electric lines in the center, either on elevated or depressed tracks. He estimated that it would cost $1,000,000 a mile to build such a line compared with $5,000,000 a mile to construct a subway.

Mr. Smith took issue with city planners who advocate limiting the height of buildings to ten stories. He said the use of this system would build up secondary congested districts which would be almost as bad as a central congested district and infinitely more annoying.

$3,500,000 for Additions to San Francisco Municipal Railway

A special bond election to vote $3,500,000 in bonds to finance construction of extensions to the San Francisco Municipal Railway, San Francisco, Cal., and provide more shops and other equipment is planned by the Board of Supervisors, following a recommendation by City Engineer M. M. O'Shaughnessy. The date of the special election will probably be set by the city officials in charge of the matter for early next spring.

Mr. O'Shaughnessy's report to the committee includes suggestions for a car repair shop, additional buses for connections, a garage to house the buses, the Sunset line through the Duboce tunnel, the Excelsior line through Bernal cut, an extension of the Church Street line; the Balboa line; Taraval extension to the municipal swimming pool and an extension into the Marina tract.

The projects involve a total expenditure of $4,000,000, of which there has already been apropriated the sum of $500,000 for track construction in the Sunset district.

The details of the program are:

Car repair shops at Seventeenth and Hampshire Streets	$ 250,000
Motor buses	150,000
Garage	60,000
Marina tract line—Connecting new residential section from end of Chestnut Street line	94,000
Sunset line—Connecting down town district with beach via Duboce tunnel and Judah Street ($500,000 already appropriated for this line)	1,602,000
Excelsior line—Extension of Church Street line via Bernal cut, across Mission Street to Excelsior district	1,245,000
Balboa line—Connecting with Geary Street line at Masonic Avenue to Turk Street, thence west to 33d Avenue via Balboa Street	540,000
Taraval extension—To municipal swimming pool	150,000

Hitting the Nail on the Head

Tommy was asked by the teacher to write an essay on safety. It was a very good essay, indeed, and one sentence we take the liberty of quoting. Says Tommy:

"One of the many advantages of crossing crossings carefully is that you get to the other side."

We have been for five years or more teaching safety and preaching safety, and all we have said could be boiled down to Tommy's one sentence.

"To get to the other side." Traffic regulations were not made to keep policemen busy. They were made to protect you. If every one would look at them in that light they would not need any boosting. —*Ottawa Electric Railway News.*

Petitions Filed Calling for Kansas City Franchise Vote

Referendum petitions calling for a vote of the people on the twelve-year railways franchise extension ordinance in favor of the Kansas City Public Service Company, Kansas City, Mo., have been filed with the city clerk. Operation of the ordinance automatically is held up by the filing until the matter is voted on by the people or the ordinance is repealed by the Council.

The petitions demand that the Council call a special election. The Council vote on the call for a special election would have to be by two-thirds vote and the expense of the election would be borne by the railway.

If no special election is called the matter would go over to the next city or general election. There will be no city election until April, 1930, and no general election until November, 1928.

The ordinance which it is now proposed to submit to the public for approval would extend the present railway franchise twelve years, making the grant one of 30 years duration.

Negotiations for a new franchise now are before the Council.

Sunday Passes Prove Popular in Cincinnati

It is understood that the Cincinnati Street Railway, Cincinnati, Ohio, is well pleased with the first day's showing with the Sunday pass. A total of 7,000 25-cent passes were sold on Nov. 13, when the plan was formerly put into operation. The passes are good on any of the lines operated in Cincinnati. They are sold by the conductors and are good from 6 a.m. to midnight Sunday. The passes are not accepted on the motor coaches operated by the railway. The plan is identical with that adopted by the Pittsburgh Railways some time ago.

London, Ont., to Vote on Railway Settlement

Operation of the London Street Railway, London, Ont., by the city may be in prospect. At any rate, the City Council of London, at a special session on Nov. 5, concluded negotiations with the company to provide for a plebiscite at the municipal election to be held on Dec. 6 on two alternative propositions, namely:

1. Purchase of the system in its present condition at a price of $1,135,351.
2. Extension of the company's franchise, granting it exclusive right for cars and buses.

On the first of these proposals only the ratepayers will vote. On the second proposition, however, all municipal voters will be entitled to pass on the issue.

The franchise extension scheme, if approved by the people, will provide for a 5-cent fare for the first two years from March 1, 1927, after which period the company will be entitled to appeal to the Council if more is required to earn a 6 per cent return on the present capital stock of $637,480. If in the future the city desires to purchase the

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property, six months notice may be given and the price fixed at the valuation now agreed upon, plus the cost of improvements, and minus depreciation. All capital expenditures must be approved by the city. If the company at any time suspends operations for a day, the City Council may authorize buses. The company property is to be exempt from all except school taxes. Real estate only shall be fully taxed. One-man cars will be operated when permitted by the City Council. The company has obligated itself to spend $500,000 on improvements over a three-year period.

Each Branch of Service Must Pay Its Way

Commission So Rules in Elmira Case, Although the Profit on Electric Division Exceeds Railway Deficit—If Railway Is Not Patronized More Liberally Newer Means of Travel Will Supersede It

THE Public Service Commission of New York decided on Nov. 15 the complaints made by the Mayor of Elmira against rates charged by the Elmira Water, Light & Railroad Company for gas and electricity and for street car fares.

Complaint against the gas rates is dismissed, the commission in the prevailing opinion finding that on a rate base established of $1,521,481 there is a return on the property used in giving gas service of 7.9 per cent. This return the commission finds reasonable.

The commission denies the petition of the city asking for an immediate reduction of the electric rates pending a study of certain optional rates filed by the company on April 8 and July 20 last. The company is directed to make a study of the results of these rates and submit it to the commission on or before Feb. 1, 1927, for its consideration with suggestions as to further adjustments of its electric rates, decision on these rates being reserved.

Memorandum on Fares

The commission holds that any change in fares should be held in abeyance until the final settlement of the electric rates after filing results of the study in the electrical department.

The majority memorandum of the commission was by Commissioner Van Namee, Chairman Prendergast and Commissioner Pooley concurring. After a detailed examination of the three departments of the company the memorandum says on fares:

> The number of fares on the car lines as shown in the annual report of the Elmira company is as follows: 1924, 6,572,189; 1925, 6,391,609; a decrease of 180,580. This figure is a decrease of approximately 2.75 per cent, and includes the results for seven months of the increase of fare in the city of Elmira from 6 to 7 cents.
>
> It is fair to assume that any increase now made would result in at least a 5 per cent decrease in passenger fares. The net deficiency of return as shown by the compilations is approximately $143,000. It is evident that any fare which could possibly be collected on the railroad would not make up this deficiency of return. The point is soon reached where the falling off in riders more than offsets the increase in fare. The commission believes that the highest rate of fare that is practicable in the city is a combination of token and straight fare of 10 cents. Deducting the 5 per cent, we assume that the number of revenue passengers will be approximately 6,100,000. If the company is given a straight increase from 7 to 9 cents on 6,100,000 riders, the 1925 revenue would be increased $112,456. Under a straight 10-cent fare the increase would be $173,456.
>
> Under the peculiar conditions existing in the city, the commission is of the opinion that any change in the fare should be held in abeyance until the final settlement of the rates of the electrical department after the filing of the results of the optional rates in that department on Feb. 1, 1927.

The majority memorandum by Commissioner Van Namee further says:

> The company contends that the Public Service Commission should view each public utility in the light of its peculiar situation in its particular community. If the convenience and welfare of the community are to be maintained by the commission only by consideration of the service utilities as a single entity, the commission has no higher duty than to effectuate such an arrangement.
>
> The circumstances in the case of the Elmira company are such that the consideration of the electric, gas and railroad utilities for rate-making purposes as separate companies might be to deprive the community of the railway. The city, in its briefs, concedes that the railway, by any valuation, does not earn a fair return. The patronage of the railway has been decreasing for a number of years, and there is a very definite point at which the loss of passengers will offset the increase in revenue derived from an increased fare.
>
> It is probable that a 10-cent fare would be the most the traffic would stand. Any higher rate than that would cause a loss in revenue, and even that fare will not give a reasonable return upon any value which could be placed on the railway property. If the revenues should be pooled, the losses of the railway would be approximately equal to the excess profits of the electrical department, thus enabling the company to maintain a utility which is essential to the welfare of the city.
>
> The city takes the position that each of the three utilities must stand upon its own feet and that it is unfair to the consumers of one utility to make them pay the losses sustained by another utility of which they may or may not be customers.
>
> The commission has heretofore held in matters connected with the city of Elmira that the above proposition was correct.
>
> If the citizens of Elmira do not by their patronage of the street railroad allow the utility to obtain a fair return upon the money invested we know of no way to compel them to do so, and if such situation continues, the utility will have to suffer the fate of other transportation companies which have been superseded by newer, more convenient and popular means of travel.
>
> We hold therefore, in this case, that each of these utilities must be considered separately, and to that end we proceed to an examination of the property of each, its operating revenues and expenses.
>
> The memorandum fixes the rate base, present-day value, in the electrical department, at $4,423,147, and says that after allowing operating expenses of $862,238 and an 8 per cent return upon the present-day value depreciated of the property used and useful in the public service, the company received, as excess earnings in 1925, $218,-131. This figure of excess earnings is further adjustable because of the lower federal income tax payable under new rates. The allowable return of $354,571 is determined by using the exact amount of the federal income tax as included in operating expenses for 1925 as estimated by the company, which amount appears reasonable. The taxes approximate $60,000. The amount of this tax would be lower were the company only earning its allowable revenue and not in addition thereto its excess revenue of $218,000. Under new rates, the company will not earn this excess revenue and so will not have to provide in its operating expense an amount to cover federal taxes on the same. This excess income tax we estimate at approximately $25,000, and to the excess revenue of the company should be added this amount to show the total excess revenue for 1925. This makes such excess revenue approximately $243,000.
>
> The rate base, gas department, present-day value, is fixed at $1,521,481. Operating revenues for 1925 are placed at $487,566; total operating expenses, $381,146; available for return, $121,533, or 7.9 per cent.
>
> The rate base railway department, Dec. 31, 1925, is fixed at $2,251,669. The operating revenues were $456,539 and the total operating expenses $401,-907, leaving $54,632 available for return. On the rate base allowed the deficiency in return is $125,501.
>
> The memorandum says that a further adjustment of federal income taxes is necessary in its railroad department. The total deficiency of return in this department is approximately $143,000.
>
> Commissioner Van Voorhis, in dissenting from the majority memorandum, held that the three complaints should be determined at the same time and that consideration should be given to the various departments of the company as a whole in determining reasonable and just rates.
>
> Commissioner Lunn concurs in the valuations found, but dissents on the ground that it appears that consideration is given only to reproduction cost new of the three properties. He was also of the opinion that determination of the matters should be held until Feb. 1, 1927.

More Moves in Springfield Modification Plan

By Jan. 1 it is expected all municipalities will have approved the proposed plan whereby the New York, New Haven & Hartford Railroad will control the Springfield Street Railway, Springfield, Mass. The City Council is going over the plan where it affects the city of Springfield. One of the important matters up for discussion concerns a preference between one-man and two-man cars.

President Clark V. Wood of the company has made it plain that this service with one-man cars is needed. One of the first steps in the rehabilitation of the Springfield lines will be the purchase of 50 new cars. The City Council is seeking to have them two-man cars.

Rerouting of lines to minimize rail traffic on Main Street is another feature of the rehabilitation plans. There is talk of having the Holyoke and Westfield lines terminate in a loop at Taylor Street. Other lines to be affected by rerouting include the Indian Orchard and Ludlow line and the Walnut Street and King Street line.

Fare Increase Likely on Florida Municipal Line

An increase in the fare from 5 to 7 cents is being considered by the committee on public utilities at St. Petersburg, Fla., to be charged by the local municipal railway.

According to the St. Petersburg *Independent* the chief reason assigned for the proposed increase, which also contemplates fixing the price of tokens at four for 25 cents, is that operating expenditures exceed those of last year, with the addition of the Shore Acres line and other improvements, while

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receipts have fallen off and the budget allowance is insufficient to provide against any large decrease.

Director Ludwig, in charge of the railway, is reported to have said:

So far as I know it has not been definitely decided by the committee that an increased fare will be necessary. The bulk of tourist business is ahead of us, but if the decrease in receipts continues, some practical solution must be sought. If any change is made, it should be done before the beginning of the winter season. The fact must be faced that we cannot continue to make improvements out of operating expenses without showing a deficit on the budget allowance approved by the commission.

The decrease in receipts is directly traceable, it is said, to the falling off in real estate and building activities, and also to increasing automobile traffic.

The affairs of the railway were reviewed in an article in the ELECTRIC RAILWAY JOURNAL for Oct. 30, page 818.

Baltimore Busybodies Would Dictate to the Lord

The United Railways & Electric Company, Baltimore, Md., has notified the Maryland Public Service Commission that beginning Nov. 22 the skip-stop plan will be extended to include all lines during the morning and evening rush hours. The company has had the plan in operation on about ten lines during the last few months and reports that it has been decidedly successful. It is expected that the Public Service Commission will be called upon to hold a public hearing.

The announcement has stirred up considerable opposition and some organizations have asked the Maryland Public Service Commission to hold a hearing on the subject in order that their views can be expressed. However, one champion of the plan has not failed to let the commission know his views. He is Oregon Milton Dennis, one of Baltimore's leading lawyers. He sent this letter to the commission:

I believe we have the best railway system of any large city. My only criticism, however, was the frequent stops—at every corner. I have been riding almost daily on the Edmondson Avenue line (No. 4) for about twenty years. Since the skip-stop schedule was put into effect I get to Walbrook not only about seven minutes sooner, but the riding has been more pleasant.

There is a class of people who are always "against," and in many instances they are called "Improvement Associations." If the Lord came to Baltimore they would try to dictate to Him what side of the street He should walk on.

I believe the real busy people of Baltimore—the ones that contribute largely of their time to make it the great city that it is—are in favor of the proposed skip-stop schedule, and I hope your commission will give its sanction to it.

I am not a stockholder—directly or indirectly—in the United Railways.

Speedier Service for Wisconsin Interurbans

Patronage of the Milwaukee Electric Railway & Light Company's high-speed transit line placed in service this summer to connect Milwaukee with Waukesha and Watertown has again shown a substantial gain compared with the first month's operation. This is evidenced from the fact that during September, 1926, 66 per cent more persons used the line than during the similar month of last year.

Actual operation has established the fact that high speed and frequent service, coupled with the use of the latest car equipment, make it possible for an interurban successfully to cope with the private auto and bus for transportation business. The company is now directing its attention toward adopting similar measures with its Milwaukee-Racine and Kenosha line. The running time here will be shortened almost a half hour when plans now under way are completed. This line will be so readjusted that the business districts of Cudahy and South Milwaukee will be avoided by a cut-off.

Punctilious Employees Honored

Sixty-one motormen, conductors and bus operators employed by the East St. Louis Railway, East St. Louis, Ill., recently were honored and awarded cash for cleanliness and neatness of their person and vehicles.

In accordance with a custom established several years ago by W. H. Sawyer, head of the East St. Louis system, a housewife of the city recently rode the cars and buses to check up on the crews. This was done surreptitiously as it was desired to obtain a cross-section of the actual every-day conditions on the cars.

On each car the housewife carefully noted the appearance of the conductor, whether his face and hands were clean and the condition of his collar, tie, suit, shoes, etc. Then she gave the car the once over, and finally the motorman came in for a similar checking. Her reports were sent personally to Mr. Sawyer and when finally every man employed in the city service had been investigated the list of those who had passed muster was revealed.

Special Safety Drive in Pittsburgh

Thirty men from the Pittsburgh Railways, Pittsburgh, Pa., 25 of them motormen and conductors, attended the National Safety Council convention, held in Detroit recently.

The men, all operators on the cars of the railway, sought to bring back to the 3,000 trainmen at home the message and methods of safety, in the hope of reducing the number of accidents.

Each man made a personal report, which will go to the carhouse or division he represents. The men were elected to the convention by their own associates on the cars.

The Philadelphia Company group, including the railways, Duquesne Light Company, Equitable Gas, Motor Coach and others, is taking part this month in a no-accident drive. There were also representatives of this group at the Detroit conference. In line with this move the railway decided several months ago that a series of stories and talks on safety by operators of cars would have the effect of decreasing the number of accidents and making the streets safer. Trainmen in the various carhouses were asked to co-operate and elect their own representatives.

Thomas Fitzgerald, vice-president of the railway; W. H. Boyce, commercial manager and chairman of the central safety committee; W. G. Marshall, personnel director, and J. M. Loftis, superintendent, represented the officials.

Banker Sees Chicago Situation as Possible Black Eye to Industry

F. J. Lisman, of F. J. Lisman & Company, New York, says whether or not his traction plan for Chicago is accepted a receivership for the surface railways there seems inevitable. Under his plan a receivership would be a formal matter, he thinks, and would not involve operation of the properties by a receiver. Regarding the Chicago traction situation Mr. Lisman says:

Contrary to general belief, the Chicago traction situation is far from being a local problem. Unless prompt and definite action is taken on the plan which has been submitted, certain default will occur in $165,000,000 principal of bonds maturing on the first of February, next, and a default in interest on about $70,000,000 bonds. If that is permitted to occur, the effects will be far-reaching and felt beyond the limits of the city of Chicago. Less than one-third of the entire amount of these traction securities is held in Chicago—the balance being in the hands of estates, insurance companies and individuals all over the United States. It is not at all unlikely that the broadcasting of the default on such a large amount of securities would have a depressing effect on traction bonds in general and tend further to weaken the confidence of the public in this type of securities. It is, therefore, evident that the problem is something more than the solution of a local traction situation.

The $165,000,000 of bonds mature on Feb. 1 simultaneously with the expiration of the companies' twenty-year franchises which have not been extended. The existing companies are not asking for renewal because they claim they cannot do the financing necessary for the expansion of their system under a twenty-year franchise, and they are endeavoring now, as they have been doing for the last ten years, to get the Illinois Legislature to authorize a franchise for a longer period. In the meanwhile they are asking the bondholders to await the outcome of such legislation.

Under the franchise now about to expire, the city of Chicago has been receiving 55 per cent of the surplus earnings of the street railways and this method is to be continued. These surplus earnings which heretofore have been turned into the city traction fund, now amounting to $45,000,000 and carrying a very low rate of interest, are hereafter to be used as a sinking fund to redeem the company's first mortgage 5 per cent bonds at par or below. Similarly, a renewal and depreciation fund, amounting to 8 per cent of the annual gross earnings, which has been allowed to accumulate during the last twenty years until it now amounts to $21,500,000—all but $5,000,000 of which is lying in Chicago banks at 3 per cent interest—is to be used hereafter in part for the purpose of redeeming the first mortgage bonds, to be issued for expansion.

Changes Suggested at Elizabeth Under Consideration

At a conference between officials of the Public Service Railway, Newark, N. J., and the Board of Works of Elizabeth, held on Nov. 12, Matthew R. Boylan Public Service vice-president, accepted for consideration two sets of resolutions, one prepared by the Board of Works and the other by the Civic Council on Transportation. It was recommended, among other things, that existing railway schedules be enforced rigidly and that bus lines paralleling the electric railway be rerouted. Back of the movement is a desire for single-fare transportation service to link all sections of the city.

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Recent Bus Developments

Tax of 4½ Per Cent Approved in California

Amendment No. 2 on the November ballot in California proposing a 4½ per cent tax upon the earnings of stage companies was passed at the recent election. Specifically the 4½ per cent gross earnings tax is established in lieu of other taxes except the gasoline tax. Its effect will be to relieve the operator of a multiplicity of state and local imports and levies. It will, for instance, exempt the stages hereafter from weight and license taxes and permit them to operate under a public service license, as is the case with the motor vehicles operated by other public utilities.

The *Motor Carrier*, the official organ of the Motor Carriers' Association of California, says that the advocacy of the legislation by the carriers was based not on the hope of reducing taxes, but of substituting certainty and system for uncertainty and lack of system.

The amendment goes into effect as soon as the result of the election is certified by the Secretary of State.

Among the advocates of the measure was Harvey M. Toy, chairman of the State Highway Commission. He put the matter clearly in one of his speeches in part as follows:

> This amendment will solve not only the problem of equitable taxation for the stage lines, but it will provide highway funds and put the stage lines on the same basis of tax relationship with the state as other public utilities. Two years ago I opposed a somewhat similar amendment proposing a 4 per ecnt tax on the earnings of the stage lines. My opposition then was based chiefly on the fact that the terms of that amendment provided the money derived should go to the general fund of the state instead of to the highway funds. The present amendment corrects that fault by requiring the use of stage taxes for highway purposes.
>
> I am informed that the stage lines regard the tax of 4½ per cent as somewhat excessive, particularly in view of the fact that they will be subject to the state gasoline tax, the revenues from which likewise go to state highway purposes. But, considering all the factors involved, I do not believe that the rate in the amendment is too high. Further, it should be borne in mind that the State Railroad Commission fixes the fares charged by the stage lines, and if at any time in the future the tax rate should be found too high or too low, the way is left open for its adjustment by a two-thirds vote of the Legislature.

More Buses for Lincoln

The Lincoln Traction Company, Lincoln, Neb., has ten buses in service. A half dozen more are to be put in service by Dec. 15. Most of these will be used in the suburbs. Some of the buses are being used for peak-load periods with success. Severer parking restrictions are being made for the downtown districts, and their enforcement is expected to result in increased traffic for the buses.

The Omaha, Lincoln & Beatrice Railway has a full complement of buses running between University Place and Lincoln. A competitive service has just been installed by the Traction company. The City Council has adopted the policy of full freedom of competition between the two railways for business in the downtown district, but is rigidly excluding all other forms of transportation for hire at rates comparable with those charged by the buses.

Columbia Case Unsettled

Jitneys, Buses and Trolleys All Still Furnishing Service in South Carolina Capital

The passenger transportation problem in Columbia, S. C., the capital of South Carolina, is still unsolved, but the three factors in the problem—the street cars, the 10-cent jitneys and the buses—are all in the field.

There is apparently no demand on the part of citizens for the restoration of railway service in sections recently abandoned by the Columbia Railway, Gas & Electric Company. That company is now operating only three trolley lines—these catering largely to the retail business district and the railroad station. Wires are up and the tracks in position in many other sections of the city, but no cars are being operated.

The bus line, however, is adding to its equipment; it is now serving many sections which the railway never reached and its patronage is growing steadily. Whether the price of cotton—on which the prosperity of this section depends to a certain degree—will have any bearing on the popularity of the bus lines remains to be seen. So far there has been little if any diminution in the sales of automobiles, even though cotton is selling below the cost of production.

The jitney is gradually being eliminated—not through action of the City Council—and indications are that it will soon disappear from the residential sections and confine its activities to the business district.

When the buses put on a fare of 5 cents for school children a number of jitneys emulated the example and on the windshields of the jitneys were displayed signs reading "School Children, 5 Cents." This competition, however, continued only about one week, when the jitneys removed their signs. The jitneys operate without regular schedule, are hard to locate in rainy weather and have many objectionable features, but they have not been outlawed by the City Council and so are competing on an even basis with the bus lines. Their regular fare is 10 cents to any point in the city limits.

The railway is now charging 10 cents for each passenger, as is the bus company, but interchangeable transfers are given between the trolleys and the buses without extra charge.

For a time the bus company sought to have the jitney competition regulated and once threatened to quit operations on some lines unless Council restrained the jitneys. Now the bus company is getting on its feet, is providing good schedules and is giving dependable service. The working agreement between the Carolina Transit Company, operating the buses, and the company operating the trolley lines indicates the community of interest that exists between these two corriers.

Would Operate Buses in Hudson

The Eastern New York Transportation Corporation, a subsidiary of the Eastern New York Utilities Corporation, Albany, N. Y., filed a petition with the Public Service Commission recently for permission to operate a bus line in the city of Hudson and the town of Greenport, Columbia County.

The company proposes to substitute buses for street cars in Hudson and to operate no fewer than three buses on the routes set forth in the consent of the city on a twelve-minute schedule between the hours of 6 a.m. and 11 p.m. The rate of fare for one continuous ride from one point to another on the route is to be 8 cents, with transfer privileges to and from interurban buses and interurban cars operated by the Eastern New York Utilities Corporation.

Holyoke Argument Heard

Power of states to require interstate bus companies to get licenses before operating within their limits was argued in the Supreme Court on Oct. 28 in a case from Massachusetts involving the Interstate Buses Corporation of Connecticut and the Holyoke Street Railway and others. The bus lines paralleled the railway a part of the distance from Hartford, Conn., to Greenfield, Mass., and the railway succeeded in the courts in Massachusetts in enjoining its operation and having fines and imprisonment imposed upon its operators. The bus company contended that the Massachusetts law was unconstitutional and in restraint of interstate commerce. Counsel for the railway based his argument largely upon the police power of the state to control the use of its highways.

New Feeder Service by Mesaba Railway

Bus service between Virginia Center and environs has been started by the Mesaba Railway Coach Company, Virginia, Minn., a subsidiary of the Mesaba Railway. James C. Chestnut, receiver, said the service, which would continue regularly until April 30, was instituted for the convenience of the public during the winter months. Buses will operate at regular intervals in accordance with time cards printed and distributed throughout the territory served.

Fare to the north and south side from Virginia Center will be 7 cents and between Virginia Center and West Virginia 10 cents, and also between the north side and south side. A 15-cent fare will be charged between West Virginia and the north side. Coupons, honored in this service, will tend to reduce fares about 10 per cent.

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Financial and Corporate

$15,000,000 Berlin Issue Offered in American Market

Speyer & Company, Equitable Trust Company and Blyth, Witter & Company, New York, offered on Nov. 12 at 94½ and interest, to yield 6.95 per cent, $15,000,000 of Berlin Electric Elevated & Underground Railways 30-year first mortgage 6½ per cent sinking fund gold bonds. Of the issue $3,000,000 was withdrawn for sale in Holland by Hope & Company, Teixeira de Mattos Brothers and Deutsche Bank, Amsterdam.

The city of Berlin, which (directly or through a corporation wholly owned by the city) owns a majority of the company's stock, has entered an agreement with the company providing that fares will be maintained adequate to insure earnings which will cover operating expenses, interest and sinking fund on all loans and proper provision for depreciation and other necessary reserves and that if, for any reason, the fares should not be maintained at rates adequate to insure sufficient earnings available for such purposes, the city will provide the funds necessary therefor.

The bonds are part of a total authorized issue limited to $25,000,000 (or equivalent in reichsmarks). The remaining bonds may be issued under restrictions to be set forth in the indenture.

Proceeds of this issue will be used for betterments, additions and equipment, for the payment of floating debt incurred in construction of lines acquired from the city and of extensions recently placed in operation, for the redemption of 13,463,700 reichsmarks ($3,205,261) outstanding bonds and other obligations, and for other corporate purposes.

The company was organized in 1897 as a private corporation and began operation in 1902. It owns about 28.7 miles of elevated and underground lines and operates a total, including connecting lines, of about 33.1 miles. These lines constitute the entire electric rapid transit system now in operation in Berlin, third largest city of the world, with a population of about 4,000,000.

Offer to Exchange Norfolk Stock

In line with plans to simplify its corporate structure the Virginia Electric & Power Company, largest subsidiary of Engineers Public Service, has made an offer to the stockholders of the Norfolk Railway & Light Company for the purchase or exchange of their stock. Two alternative offers are made: $33 a share in cash, or one share of 6 per cent cumulative preferred stock of the Virginia company and $9 in cash for each three shares of the Norfolk company. The holders of a large proportion of the capital stock of the Norfolk company have already agreed to one or the other of the options.

One of the purposes of a special meeting of stockholders of the Virginia Company to be held on Nov. 23 is to reclassify the unissued 7 per cent preferred stock into a 6 per cent stock, which will then be available under the terms on the offer to the Norfolk company stockholders.

Stockholders of the Virginia company will also be asked to ratify an offer of an additional $9,000,000 first and refunding 5 per cent bonds.

Barre Property Passes to Foshay

The W. B. Foshay Company, Minneapolis, Minn., will increase the public utility holdings which it operates through the Peoples Light & Power Company by assuming control of the Montpelier & Barre Light & Power Company and its subsidiary, the Green Mountain Power Company of Vermont, on Jan. 15. Properties of the Montpelier company will be taken into the Peoples Hydro-Electric Corporation, which will own all the common stock of the Green Mountain Power Company. The Peoples Light & Power Company serves 144 cities and towns in twelve states with electricity, gas, water and railway service. Foshay utilities serve 170,000 people.

Another Excellent Year in Brooklyn

Company Operating Rapid Transit and Surface Lines Reports Net Income of $5,748,187 for Year, an Increase of $674,652—269,233,866 Surface Passengers and 623,099,695 Rapid Transit Riders

CONSOLIDATED net income of the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., for the year ended June 30, 1926, was $5,748,187, an increase of $674,652 over the previous year. This and other facts concerning the operations of the company for the year were reported to the board of directors on Nov. 15. This is the third report of the company, which is the successor to the Brooklyn Rapid Transit Company.

During the last three years the expenditures for maintenance of way and structures and of equipment, including reserves for depreciation, have totaled $21,354,371, which is 24.22 per cent of the total operating revenues of $88,153.384 for the three years.

There were paid, for the fiscal year, on the outstanding preferred stock, four quarterly dividends, aggregating $1,496,808, and on the outstanding common stock, dividends of $2 per share for the period from the organization of the corporation to Sept. 30, 1925, and two quarterly dividends of $1 each, aggregating $3.079,644.

This shows that the increase in eight years in passengers on the rapid transit lines has been 134.7 per cent and the increase on the system 71.2 per cent. It also shows that the surface lines are carrying 30.1 per cent of the total traffic.

In discussing the rapid transit lines Gerhard M. Dahl, chairman, says:

> The city is now proceeding with the completion of the Fourteenth Street-Eastern line, with the construction of shops and storage tracks near Coney Island, and with the lengthening of certain station platforms to accommodate eight-car trains. In anticipation of requirements for additional equipment your rapid transit operating subsidiary, the New York Rapid Transit Corporation, during the preceding year had under construction twelve cars, comprising four units of articulated cars, designed to produce greater efficiency and safety in operation. They were completed and placed in operation on Aug. 31, 1925, and proved so satisfactory that contracts were placed for 201 additional cars, comprising 67 units of such articulated cars. Deliveries are expected to start in December. The work of assembling and equipping these cars will be undertaken at the Coney Island Shops.
>
> The city has not yet started work on the construction of the Nassau-Broad line. This line, with the added facilities mentioned above, would materially increase the capacity and efficiency of the rapid transit lines under contract No. 4.
>
> The city completed the Extension of the Fourth Avenue line from 86th Street to 95th Street, Brooklyn, and your corporation did the necessary equipment work and placed that extension in operation on Oct. 31, 1925.

The first annual report stated briefly the provisions of contract No. 4 as to the disposition of revenue arising from operations under the contract. The New York Rapid Transit Corporation is entitled to its operating and preferential deductions, including cumulative deficiencies thereof, ahead of any payments to the city. The accompanying table shows the order in which deductions are to be made from revenues and the application of revenues thereto, together with the cumulative deficiencies. It will be observed that the earn-

STATEMENT OF BROOKLYN OPERATION UNDER CONTRACT WITH CITY

	Year Ended June, 30 1926	Period Aug. 4, 1913, to June 30, 1926
Revenue	$32,418,173	$246,848,204
Operating deductions and corporation's first preferential	26,146,489	223,974,523
Balance available for return on new money invested under contract	6,271,684	22,873,681
Corporation's second preferential, representing interest and sinking fund on corporation's contribution to construction and equipment under contract	5,501,355	40,114,550
Balance above corporation's second preferential	770,328	.....
Deficiency representing amount by which revenue failed to equal interest and sinking fund on corporation's contribution to construction and equipment under contract	.....	*17,240,868*

PASSENGERS CARRIED

Fiscal Year	Surface	Rapid Transit	Totals
1918	255,569,584	265,400,020	520,969,604
1919	251,893,227	313,933,642	565,826,869
1920	278,832,742	380,190,890	659,023,632
1921	223,006,425	406,695,310	629,701,735
1922	250,412,364	446,384,508	696,796,872
1923	262,992,795	482,584,090	745,576,885
1924	266,421,409	539,069,076	805,490,485
1925	271,800,914	593,368,990	865,169,904
1926	269,233,866	623,099,695	892,333,561

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COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES OF THE BROOKLYN-MANHATTAN TRANSIT SYSTEM FOR YEAR ENDED JUNE 30

	1926	1925
Revenue from Transportation:		
Passenger revenue	$42,803,047	$41,383,763
Freight revenue	672,689	675,183
Chartered car revenue	532	716
Miscellaneous transportation revenue	521	641
Chartered bus revenue	70,494	13,331
Total revenue from transportation	$43,547,284	$42,073,635
Other Street Railway Operating Revenues:		
Advertising	$656,000	$656,000
Other car and station privileges	387,925	381,941
Rent of buildings and other property	171,597	150,900
Rent of equipment	802	240
Rent of tracks and terminals	21,035	21,634
Miscellaneous receipts	56,322	28,065
Total other street railoperating revenues	$1,293,682	$1,238,781
Total street railway operating revenues	$44,840,967	$43,312,417
Operating Expenses:		
Maintenance of way and structures	$4,721,411	$4,474,266
Maintenance of equipment	6,071,133	6,087,560
Operation of power plant	3,263,338	3,240,270
Operation of cars—trainmen's wages	6,952,159	6,872,091
Operation of cars, other expenses	4,310,478	4,193,723
Damages	1,616,237	1,416,701
Legal expense in connection with damages	218,625	198,978
General law expenses	106,047	134,985
Other general expenses	1,492,075	1,309,152
Freight expenses	469,332	493,660
Total operating expenses	$29,220,839	$28,426,390
Net revenue from operation	$15,620,127	$14,886,026
Taxes accrued on operating properties	3,260,384	3,068,461
Operating income	$12,359,742	$11,817,564
Non-Operating Revenue:		
Rents accrued from lease of road	$62,703	$60,571
Miscellaneous rent revenues	156,535	287,276
Interest revenues	783,731	544,337
Dividend revenues	.....	666
Miscellaneous	179,841	192,558
Total non-operating revenues	$1,182,810	$1,085,408
Non-Operating Revenue Deductions:		
Rent expense	2,317	827
Net non-operating income	$1,180,492	$1,084,581
Gross income	$13,540,235	$12,902,146
Income Deductions:		
Interest deductions	$7,462,322	$7,475,760
Rent for lease of other road and equipment	25,000	25,000
Other rent deductions	286,770	309,677
Sinking fund accruals	658	658
Amortization	3,125	3,125
Total income deductions	$7,777,877	$7,814,221
Balance	$5,762,358	$5,087,925
Less—Accruing to minority interests	14,171	14,390
Net income	$5,748,187	$5,073,534

ings for the year showed an excess over the year's deductions, applicable to the cumulative deficiency, as did the earnings of last year, and that the cumulative deficiency now totals $17,240,868 as the result of determinations made by the Transit Commission under provisions of the contract, which disposed of undetermined items of cost up to June 30, 1925.

Mr. Dahl says that with a continuation of favorable operating conditions and particularly with the additional facilities that the city is obligated to provide, it is hoped that the net revenue will continue to increase so that the cumulative deficiency of full deductions may be gradually made good.

The accompanying condensed comparative summary gives the results of operations under the contract with the city for the year ended June 30, 1926, and also for the thirteen-year period from the commencement of operation under the contract, namely, Aug. 4, 1913, to June 30, 1926.

North Jersey Transit Deal Approved

The Board of Public Utility Commissioners of New Jersey has sanctioned the sale of the cars, franchises, right-of-way and other property of the North Jersey Rapid Transit Company to the Public Service Railway for $200,000. Confirmation of the transfer was asked by Henry H. Parmelee, receiver for the transit company, the sale already having been approved by the Court of Chancery. Reference to the proposed sale was made in the ELECTRIC RAILWAY JOURNAL for Nov. 6, page 864.

Approving of Refunding Operation Sought at Boston

The Boston Elevated Railway, Boston, Mass., has petitioned the Department of Public Utilities for authority to issue $4,656,000, par value, 30-year, 6 per cent bonds to refund two bond issues of the West End Street Railway assumed by Boston Elevated on the consolidation of the two companies. The West End issues are $2,700,000 maturing on Feb. 1, 1927, and $1,956,000 maturing on May 1, 1927.

Reasons Given for Geneva Receivership

Justice Benjamin B. Cunningham of the Supreme Court has appointed Lansing S. Hoskins and James M. Ryan, both of Geneva, N. Y., receivers of the Geneva, Seneca Falls & Auburn Railroad, operating 15 miles of electric railway between Geneva and Seneca Falls and buses in the city of Geneva.

As noted in the ELECTRIC RAILWAY JOURNAL for Oct. 30, page 827, this action came when the company was unable to pay interest on an issue of $507,000 of first mortgage 5 per cent gold bonds issued July 1, 1913, with the Chatham-Phœnix National Bank & Trust Company, New York, as trustee.

Lansing G. Hoskins, attorney for the railroad and father of one of the receivers, issued the following statement in explanation of the receivership:

This road has been unable to meet the interest charges on its bonds during the present year, although the rate of interest during the preceding year was reduced to 3 per cent, and necessarily the trustee under the mortgage was compelled to commence foreclosure.

The gross earnings of this company have steadily decreased, while taxes, special franchise taxes, gross earnings taxes and paving assessments continued to accrue. The number of passengers carried on the city line in 1924 was 212,947 and in 1925 was 159,379.

The number of passengers carried on the interurban line during 1924 was 537,717 and in 1925 was 463,375.

Owing to the fact that the operating expenses of the Geneva line exceeded its receipts, the company was forced to abandon this line and substitute buses for street cars.

The revenue of the road has been steadily declining for ten years. The situation, both as to decrease of revenue and, necessarily, of passengers carried, is due largely to private automobile operation and competition, while operating expenses, taxes and paving assessments have not materially decreased.

The complaint of Carter, Ledyard & Milburn, New York City, the attorneys for the plaintiff bank, sets forth that, in addition to the mortgage, the company owes city, county, state and school taxes for 1925 and 1926 to the city of Geneva, the town of Waterloo, village of Waterloo, town of Seneca Falls and village of Seneca Falls.

It is further alleged that the company owes the state for gross earnings tax for 1925 and 1926.

During pendency of the case, the interurban railway and the Geneva bus system will be operated as usual, receivers stated.

$380,424 Surplus in Denver in Nine Months

Total operating revenue of $3,399,975 and a balance of $380,424 for depreciation and surplus after payment of expenses, taxes, bond interest, dividends on 5 per cent preferred and other charges are shown in a statement of the Denver Tramway, Denver, Colo., for the nine months' period ended Sept. 30.

Total operating revenue	$3,399,957
Operating expenses (not including depreciation)	1,823,123
Taxes	413,664
Total operat. exp. and taxes	$2,236,787
Net operating income	1,163,170
Total miscellaneous income	41,555
Gross income less operating expenses and taxes	*$1,204,726
Interest on underlying bonds	190,280
Balance	†$1,014,446
Interest on general and refunding 5 per cent bonds	241,631
Balance	$772,814
Less net and loss charges (estimated)	1,775
Balance available for depreciation and for dividend requirements on 104,164 shares of preferred stock	$771,039
Five per cent dividend	390,615
Balance for deprec. and surp.	$380,424

* Equals 6.33 times interest on underlying bonds.
† Equals 4.20 times interest on general and refunding bonds.

Abandonment Hearing Before Commission

A further hearing was held before the Public Service Commission on Nov. 12 on petition of the Hudson Valley Railway for permission to abandon that portion of its line between the villages of Thomson and Greenwich and the village of Lake George and the Hamlet of Warrensburgh. At the beginning of the hearing Judge Kiley of Glen Falls applied for adjournment to a subsequent date to permit the town of Warrensburgh to submit to the people of that town the question of whether counsel should be employed by the town board to oppose the abandonment of the Lake George-Warrensburgh branch. The commissioner decided to continue the testimony relating to the Thomson-Greenwich branch and to continue the hearing on Dec. 7 as to the future of the Warrensburgh lines. Evidence was submitted at the hearing as to the earnings of the company and expendi-

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tures required to keep these lines in satisfactory operating condition, also as to the number of passengers carried and general operating conditions in the territory served by these roads.

Bonds of Crawford County Railways Called

All of the outstanding first mortgage 40-year 6 per cent sinking fund gold bonds of the Crawford County Railways, Erie, Pa., dated July 1, 1921, have been called for payment on Jan. 1, 1927, at par and interest at the office of the Irving Bank & Trust Company, New York City. The Northwestern Electric Service Company of Pennsylvania, successor company, announces that it will purchase at any time before Jan. 1, 1927, any or all of the bonds presented at the principal office of the National Bank of Commerce, New York, at par and interest to the date of purchase. Holders have the option of exchanging their bonds into Associated Gas & Electric Company preferred stock.

American Foreign Buys Havana Stock

The stockholders of the American & Foreign Power Company at a special meeting on Nov. 13 approved the acquisition of the Electric Bond & Share Company's holdings of Havana Electric & Utilities Company.

They also authorized the issuance of 300,000 additional shares of common stock, which will be to pay for the Havana Electric stock.

Financial Structure of Brooklyn City to Be Changed

Stockholders of the Brooklyn City Railroad, Brooklyn, N. Y., will vote on Nov. 23 on a proposal to increase the authorized capital stock of the company from $16,000,000 to $18,500,000, each share to be of a par value of $10. At the same meeting the stockholders will vote on a proposal to approve an issue of convertible bonds to be issued in series. These proposals are being put before the stockholders as part of a plan which it is expected will result in the revamping of the financial structure, particularly with respect to creating an open end mortgage which will facilitate future financing.

Northern Cambria Road Sold

The Northern Cambria Railway, Johnstown, Pa., operating from Carrolltown through northern Cambria County towns to Barnesboro, has been abandoned and all articles of equipment disposed of at public auction to Roberts Brothers, Philadelphia, for $29,800. The Northern Cambria Bus Company, a subsidiary, was sold to Fred J. Fees, Ebensburg, for $4,100. The real estate of the railway, known as Sunset Park, Patton, was sold to Roberts Brothers and Joseph B. Broan, Philadelphia, for $4,000. Work on removing the tracks has been started. The sale of the line was under an order of the Ebensburg Trust Company, receiver. The system comprised 13 miles of line.

$14,553,437,951 Stock Value for Utilities

The fair value of the capital stock of all public utility corporations making returns in 1924 was $14,553,437,951, the bureau of internal revenue shows in statistics just made public. The subdivisions making up that total are: Steam railroads, $5,470,184,648; electric railroads, $462,973,378; all other railroads, $432,349,391; water transportation, $562,582,366; local transportation (cabs, delivery, etc.), $104,586,361; electric light and power companies, $1,580,465,582; gas companies, $909,056,432; telephone, telegraph and radio companies, $1,976,406,393; water works, $235,999,978; storage companies, $415,390,808; other public utilities, $2,319,330,273; lessor companies, steam and electric railroads, $32,595,542; lessors of public utilities, $51,516,799.

M. J. Ellis Gets Rockford Properties

The railway system centering at Rockford, Ill., was sold at auction on Nov. 15 to Milton J. Ellis, Beloit, for $550,000, subject to confirmation by the Circuit Court. This sale follows a court order entered recently by Judge E. D. Shurtleff in the Winnebago County Circuit Court calling for the sale of all properties of the Rockford City Traction Company, Rockford & Interurban Railway and Rockford, Beloit & Janesville Railway. The petition for the order for sale was presented by the Continental & Commercial Trust Company, Chicago, trustee representing holders of the first mortgage bonds.

Mr. Ellis, who bought the property, had recently acquired a majority of outstanding bonds at about 23 cents on the dollar.

Bondholders Take Utah Property

The Utah-Idaho Central Railroad, Ogden, Utah, was purchased on Nov. 5 at a receivers' sale by a committee of bondholders for $1,500,100. Acting under an order made by Judge Tillman D. Johnson of the United States District Court, P. H. Mulcahy, receiver and former general manager of the company, made the sale. James A. Howell, of counsel for the railroad, explained that the sale would be subject to rights which the Bamberger Electric lines had with the Utah-Idaho Central under a contract made Oct. 6, 1914.

The bid made by the representative of the bondholders was for two parcels of the company's assets. The first parcel included the stock of the Utah Rapid Transit Company. It brought $100. The second was all assets and stock of the Utah-Idaho Central, which brought $1,500,000. He said that bondholders of the Utah-Idaho Central Railroad owned all of the preferred and common stock of the railroad company and held about $300,000 in unpaid bond coupons.

The present Utah-Idaho Railroad is an outgrowth of the joining of the street railway systems of Ogden and Logan. The consolidation was made in 1914, when the company was building the present line which extends from Ogden to Preston, Idaho. When the company was formed it was known as the Ogden, Logan & Idaho Railroad. Early in 1919 the name was changed to Utah-Idaho Central Railroad. The change in name was made in order to avoid any confusion in the identity of this railroad and the Oregon Short Line by the common use of the initials of each road. With the increasing use of the automobile and truck, the business of the company diminished and led to the receivership, on Aug. 20 last. An action brought by the Westinghouse company in the federal court resulted in the appointment of Mr. Mulcahy as receiver. When the receiver was named, Judge Johnson ordered an investigation to determine if the receivership could not be worked out, but an adverse report was made, resulting in the order for the sale.

Attorneys for the railroad intended to go into the federal court on Nov. 15 to seek approval of the sale. It was said unofficially that a new company would be formed to operate the road.

Earnings at Minneapolis Increase

Earnings of the Twin City Rapid Transit Company, Minneapolis, Minn., for the third quarter and the first three quarters of the year show gains over 1925. Net income for the quarter was $178,639, compared with $56,387 in 1925; for the nine months $901,085, compared with $714,610. The comptroller's figures are as follows:

Third quarter	1926	1925
Gross revenues	$2,881,885	$2,847,326
Operating expense	2,161,170	2,253,774
Net revenue	$714,715	$593,522
Fixed charges, taxes	536,075	537,165
Net income	$178,639	$56,387
Nine months—		
Gross revenues	9,479,051	9,231,792
Operating expense	6,913,957	6,853,484
Net revenue	$2,565,094	$2,378,307
Fixed charges, taxes	1,664,008	1,663,696
	$901,085	$714,610

Coal Belt Line to Suspend.—The Coal Belt Electric Railway, Marion, Ill., operating from Marion to Herrin, Carterville and other points in Williamson County, Illinois, has been authorized by the Illinois Commerce Commission to discontinue service. No date for quitting has been set. The line had been leasing its rails to the Missouri Pacific Railroad. The cars of the electric railway were used mostly by coal miners in getting to and from work. The company operated 14 miles of line.

Loss in Youngstown in September.—Deficit resulting from operation of the Youngstown Municipal Railway, Youngstown, Ohio, during September was $7,808, which is $11,300 less than for a similar month last year, according to the monthly report of Traction Commissioner Engle. Though the income was higher this year, there was slightly more capital upon which to pay a return. Capital value in September, 1925, was $4,125,288 compared with $4,184,429 for September of this year. Other comparative figures for September of this year in relation to September, 1925, are: Increase of $10,240 in income from bus operation, and an increase of $2,520 in income from railway operation.

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Personal Items

J. C. Johnson Superintendent of Shore Line Coach Company

Jasper C. Johnson has resigned as general superintendent of transportation for the Aurora, Elgin & Fox River Electric Company, to become superintendent of operation in charge of the main line division of the Shore Line Motor Coach Company, a subsidiary of the Chicago, South Shore & South Bend and the Gary Railways.

Mr. Johnson entered the service of the Aurora, Elgin & Fox River Electric, then known as the Aurora, Elgin & Chicago Railroad, as a conductor in 1910. He was subsequently made motorman, dispatcher, service inspector and finally, in 1920, was promoted to division superintendent. In addition to his duties with the railroad, where he also had charge of several auxiliary bus lines, Mr. Johnson has been a director of the Illinois Motor Transportation Association for a number of years.

With the Shore Line Motor Coach Company he will be responsible for the operation of all through routes, particularly the newly established service between Chicago, Ill., and Grand Rapids, Mich. For the time being his headquarters are to be located in Michigan City, Ind.

A. D. McWhorter, Jr., has become affiliated with the Carolina Power & Light Company in Raleigh, N. C. Mr. McWhorter is a son of the general superintendent of the Memphis Street Railway, Memphis, Tenn. He was graduated from the University of Tennessee. During last year he was associated with the General Electric Company of Schenectady and Erie.

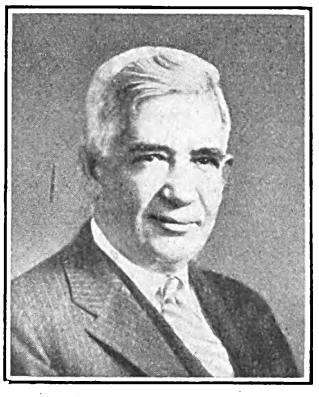
Arthur W. Thompson, president of the United Gas Improvement Company, Philadelphia, Pa., has succeeded Walton Clark, Philadelphia, as director of the subsidiary companies of the Public Service Corporation of New Jersey. Mr. Clark was elected a director of Public Service Corporation of New Jersey at the time of its organization on June 3, 1903, and a director of each of the underlying companies as it was organized. The companies the directorate of which he leaves include the Public Service Electric & Gas Company, Public Service Electric Power Company, Public Service Railway, Public Service Production Company, Public Service Transportation Company, Public Service Railroad and the Public Service Stock & Bond Company.

E. F. Hirsch, has resigned from the West Penn Railways, Pittsburgh, Pa., to take up his new work with Harper & Turner, investment bankers, in Philadelphia, Pa. Mr. Hirsch has been an employee since July, 1919, when he came with the company as an assistant to E. D. Dreyfus on appraisals and investigations. In the spring of 1922 he was made an assistant in Vice-President R. B. Keating's office and in August, 1924, he was promoted to the position which he held at the time of his resignation as assistant to Vice-President C. P. Billings. Mr. Hirsch was graduated from Carnegie Institute of Technology and attended night school at the University of Pittsburgh for five years, taking law and finance.

Colonel Wallace Leaves Detroit

Manager of Municipal Railway Tenders Resignation to Take Effect on Jan. 1

Col. H. U. Wallace, general manager of the Department of Street Railways at Detroit, Mich., tendered his resignation on Nov. 17 to the Street Railway Commission to take effect on Jan. 1. Colonel Wallace will take a much-needed rest before he announces his future plans.



Col. H. U. Wallace

Colonel Wallace took to his task at Detroit, upon which he entered in June, 1925, 30 years of engineering and railroading experience. Just before going to Detroit he was assistant general manager of the Knoxville Power & Light Company, with direction of all of that company's railway activities. In fact he supervised the reorganization of the railway department there.

Colonel Wallace was born in Rock Island, Ill., in 1872. He is the son of John Findley Wallace, chief engineer of the Panama Canal under President Roosevelt. He was graduated from Purdue University and in 1894 was engaged as assistant engineer for the Illinois Central Railway. During his years of service with that railroad, of which his father was general manager, he was resident engineer in charge of the Illinois Central's lake front improvements, roadmaster of the Chicago division, roadmaster and assistant superintendent of the Louisville division and superintendent of the Louisville and Freeport divisions.

From 1903 until 1906 he was chief engineer of the Illinois Central in charge of all maintenance and construction work. He resigned in 1906 to become third vice-president of J. G. White & Company, New York, in charge of construction work. He was later general manager of the Chicago, Lake Shore & South Bend Railway, which he operated for eighteen months. He resigned this position to go into business as consulting engineer in Chicago. His return to active railroading was as vice-president in charge of operation and reconstruction of the Fort Dodge, Des Moines & Southern Railway.

In 1912 Colonel Wallace inspected the holdings of the Northern Colorado Power Company. As a result of his work on this property and his recommendations a new company, the Western Light & Power Company, was organized.

During the World War he was commissioned as major of engineers and assigned to the construction division as supervising construction officer of a large number of important ordinance plants.

George A. Iler has resigned as chief electrical engineer of the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, to look after his commercial interests. He will devote his time to the development of several articles he has patented. Just prior to his departure Mr. Iler was the guest of members of the Officers' Club at dinner at the Poland Country Club and at a similar affair by his associates in the engineering and line department.

Obituary

C. S. Cook

Charles S. Cook, vice-president and treasurer of the Kaestner & Hecht Elevator Company and formerly with the Westinghouse Electric & Manufacturing Company and the Duquesne Light Company, died in Pittsburgh on Nov. 15. Mr. Cook was widely known in electrical, manufacturing and business circles. He had been identified with the electrical industry since 1887 and was an outstanding figure in the electric light and power field, street and urban railway development and the electrification of street railways.

In 1904 he was made manager of the railway and lighting department of the Westinghouse company at East Pittsburgh. In 1917 he became general manager of the Duquesne Light Company and later vice-president. He had been with the Kaestner & Hecht Company since early in 1924. He was a native of Amherst, Mass., and was graduated from Worcester Polytechnic Institute.

C. E. Warren

Charles Edward Warren, long connected with the New York Railways and its predecessors and with the Interborough Rapid Transit Company, New York, died at New London, Conn., on Oct. 3. By reason of his close application to the various interests under his charge, he became fairly familiar with nearly every detail and feature of electric railway affairs, and possessed more than ordinary ability,

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being fully qualified to speak with rare intelligence on most any subject connected with electric railway work.

Mr. Warren was born and educated in Philadelphia. He became identified with the Broadway & Seventh Avenue Railroad, New York City, in 1886 and a short time afterward was made secretary of that company. Later he became vice-president of the company as well as vice-president of the Metropolitan Street Railway. When the surface railways in the old city of New York were consolidated in 1894 he was also made an officer of the underlying or subsidiary company. This was before the formation of Greater New York. He was secretary of the New York City Railway and served in that capacity until the reorganization in December, 1911. He then became vice-president and transfer agent of the New York Railways and later vice-president of the Interborough Rapid Transit.

W. H. Long

W. H. Long, superintendent of power of the York Railways, York, Pa., and general superintendent of the Edison Light & Power Company, which is controlled by the railway and supplies power to it, is dead. The death of Mr. Long marked the passing of a man who has given 40 years of his life to public service in York. To his unusual resourcefulness and energy, judgment and decision is due very largely the successful development of the present extensive light system at York.

Mr. Long enlisted in public service when electric lighting was in its nascent state, served through the early years of progress of the art as engineer of the Edison power station, and rose to general superintendent of the Edison company at the beginning of the era of development of the electric power industry.

In that position he had full charge of the physical property of this public utility, from its power generating station to the point of use by the consumer, and the expansion of these facilities to meet public needs.

Hugh A. Heulings, sales representative of the J. G. Brill Company, Philadelphia, died on Nov. 12 at his home in Moylan, Pa., after an illness of several months. Mr. Heulings had been affiliated with the Brill organization since 1902, and with the exception of a few years when he was with the American Car Company, the Brill subsidiary in St. Louis, had been located at the Philadelphia plant. In recent years he devoted his attention mainly to bus body sales. Mr. Heulings was a brother of the late William H. Heulings, Jr., formerly vice-president and general manager of sales of the Brill company. He was 53 years old.

Walter H. Nelson, who represented the Ohmer Fare Register Company, Dayton, Ohio, for a number of years as an installing agent, died on Nov. 3. Mr. Nelson had a great many friends among electric railway men and his death will be a matter of sincere regret to those who knew him. He had been an employee of the Ohmer Fare Register Company for more than 25 years.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Compressor Mounting for Buses Discussed by Christensen

The seventh of an informative series of publications on bus brakes has been issued by the Christensen Air Brake Company, Cleveland, Ohio. It is called "Compressor Mountings and Drives." Other topics, namely, compressor cooling, control valve and maintenance on different types, will appear in the above order.

The latest of the series on the A B C's of bus brakes and braking systems states that there are three general types of compressor mountings. Front end: mounted on the front cover plate of the vehicle engine and driven direct from an eccentric on the main crankshaft. Side: mounted beside the vehicle engine and driven by gears, chains, belts, an auxiliary shaft, or some combination of these. Transmission: mounted beside the transmission and driven through gears from a special power take-off.

The side and transmission mounted compressors are not difficult to install and can be put on practically any vehicle. However, if the compressor is efficient, trouble usually develops in the drive, particularly on the side-mounted type. The pulsating compressor load wears gears, chains, and universals rapidly. Chains and universal renewals are common, and where the timer is driven from the same shaft timing trouble appears. The transmission-mounted compressor is less subject to drive trouble, as only gears are used and, of course, no timer or other trouble can develop from it. However, it is inclined to become noisy and is not the simplest or most satisfactory installation.

The front-end mounting and drive is by far the simplest and most rugged. When installed it is practically a part of the motor and not a piece of auxiliary apparatus. An eccentric on the main engine crankshaft drives it. There are no gears, chains or universals. The compressor hasn't even a crankshaft of its own. It has less than half the number of parts contained in any self-contained or auxiliary compressor. Vibration is reduced to the lowest possible point because the pulsations are absorbed by the main engine crankshaft and bearings—those designed for the heaviest duty.

Not all motors at present can take a front-end mounted compressor, but wherever possible it is much to be preferred from every standpoint—installation, operation and maintenance.

Warner Builds Freight Trailers and Removable Bodies

Six automatic detachable semi-trailers, to be operated with twenty removable bodies in extending freight business on a door-to-door basis, have been ordered by the Rockford & Interurban Electric Railway of Rockford, Ill., operating through Beloit, Wis., and surrounding towns. With this fleet of tractor-drawn trailers equipped with removable bodies, the railway company expects to eliminate four steps in freight handling, to do away with transit losses due to theft, breakage, etc., to cut the cost of receiving and delivering goods, increase its freight business in the territory served, and vastly enlarge its area. It expects to enlarge its freight business from 800 to 1,000 per cent.

L. P. Warner, vice-president of the Warner Manufacturing Company, which

Removable Body Is a Separate Unit and May Be Left with Shippers for Loading and Unloading

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is building the trailers and bodies, stated that already six other electric railway companies have under consideration the adoption of similar installations recommended by committees of engineers which have examined the Rockford & Interurban trailer fleet.

The mechanical equipment that is responsible for this development in the Rockford & Interurban Company's freight handling consists of a fleet of Warner automatic detachable trailers—standard commercial semi-trailers with a 4-ton capacity—equipped with removable bodies that can be run on and off the trailers without difficulty. It is estimated that a single tractor can serve five trailers and 25 bodies.

When a shipper announces he has a shipment of merchandise the tractor couples to a trailer and goes to the shipper's door, where it drops the trailer and departs. The body is run into the shipper's warehouse, if desirable, and loaded at his convenience. It is then locked and run back on the trailer. The railway, when notified, dispatches the tractor to pick up the trailer, which is dropped again at the nearest rail terminal, where the body is run into a car direct from the trailer. The process is repeated at the delivery end and the body arrives under lock and key at the consignee's door. It is unloaded by him.

The trailers ordered by the Rockford & Interurban will be stationed in Rockford, Freeport, Beloit, Janesville and Belvidere. The bodies are 12 ft. long, 5 ft. 10 in. high, and 6 ft. wide. A railway flat car can accommodate three of them.

Electric Locomotive for Great Northern

Inspection Held at Plant of Westinghouse Company in Pittsburgh—F. H. Shepard Explains Features of New Equipment

THE world's largest motor-generator locomotive was inspected on Nov. 16 at Pittsburgh by prominent railway officials and members of the Railway Club of Pittsburgh. The locomotive is the first completed of those ordered by the Great Northern Railway for operation in mountain service over the Cascade Mountain grade in Washington. It will be used on all trains operating on the electrified division of the road, which runs from sea level to the Cascade Mountains and includes one of the longest and steepest mountain grades in America. The 24-mile section over which the locomotive will initially operate runs from Skykomish, Wash., to the eastern portal of the Cascade tunnel.

In discussing the locomotive, F. H. Shepard, director of heavy traction for the Westinghouse company, said:

This locomotive makes it possible to combine the principles of high-voltage alternating current, transmitted over great distances from great hydro-electric stations, and the direct-current motor, which is no more complicated than the street-car motor in use on a hundred thousand trolley cars in America. Power is drawn from an overhead trolley which carries an 11,000-volt alternating current. This is then passed through a transformer and motor-generator set by which it is converted into direct current for the traction motors. Having the facilities to convert power embodied in the locomotive eliminates the requirement of numerous substations for this purpose erected at intervals along the right-of-way Furthermore, the power is converted just as it is used by the locomotive.

The motor-generator locomotive is a development from the first of this type built in 1925 at the Ford plant in Detroit with equipment of the Westinghouse company and now in use on the Detroit, Toledo & Ironton, Henry Ford's railroad.

A wide range of operating speeds is available with this new engine; in the case of the Great Northern, full power at any speed from 2 to 35 m.p.h. can be obtained, while the ordinary direct-current motors have only a very limited number of running speeds.

In order to negotiate curves the locomotive is divided into two cabs. It has a total length of nearly 100 ft. and weighs 680,000 lb. It can exert 7,000 hp. under maximum conditions, which makes it rank with the most powerful electric locomotives ever built and far outranks any steam locomotive. The locomotive has a continuous rating of more than 3,500 hp. at a speed of 15 m.p.h., has eight driving motors and operates from an 11,500-volt, 25-cycle overhead trolley.

These huge locomotives are for the purpose of surmounting at double steam speed the heavy grades of the Cascade Mountains, rising abruptly from the Coast in Washington. The present line of the Great Northern crosses these mountains at an elevation of 3,385 ft.

An important feature of the new locomotives is the system of regenerative braking effective at all speeds by which the heavy trains can be taken down the mountain grades without the use of airbrakes. This is accomplished by utilizing the traction motors as generators. The descending train generates power which is fed back into the trolley and to the power system for any other trains or general power use, while at the same time controlling the speed of the train.

M. R. Runyon in New York for Bridgeport Brass

Mefford R. Runyon has been appointed district sales manager for the New York metropolitan district for the Bridgeport Brass Company, Bridgeport, Conn. He was born and reared in New Jersey and educated at Rutgers as a chemical engineer. The World War called him overseas for a period of eighteen months, during which time he had complete charge of medical supplies for a large base hospital. He returned to Rutgers and after he was graduated he started in the wholesale hardware business. For four years following this experience he traveled as a public accountant in South America, Panama and West Indies. His metallurgical leaning again asserted itself and he took up the work of reorganizing the Benson Rolling Mills, one of the oldest brass and bronze manufacturing mills outside of Connecticut. In this work he was associated with Mr. Benson, an expert on phosphor bronze, and G. J. Marcy, formerly superintendent of the Rome Brass & Copper Company.

A.C.F.-International Harvester Working Argreement

Negotiations looking toward a general working agreement between the American Car & Foundry Motors Company and International Harvester Company have reached an advanced stage, according to newspaper reports. These claim an agreement has virtually been reached under which International Harvester will buy its truck engines from A.C.F. Officials of the latter refuse to comment on the proposition.

ELECTRIC RAILWAY MATERIAL PRICES—NOV. 16, 1926

Metals—New York

Copper, electrolytic, cents per lb.	13.875
Lead, cents per lb.	8.00
Nickel, cents per lb.	55.00
Zinc, cents per lb.	7.60
Tin, Straits, cents per lb.	71.00
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	64.00
General service	32.50

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$9.00
Somerset mine run, Boston	3.25
Pittsburgh mine run, Pittsburgh	2.75
Franklin, Ill., screenings, Chicago	1.875
Central, Ill., screenings, Chicago	1.725
Kansas screenings, Kansas City	2.35

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.30
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.20
Steel bars, cents per lb.	2.00
Ties, white oak, Chicago, 6 in.x8 in.x8 ft.	$1.45

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (24 gage), cents per lb.	3.00
Sheet iron, galvanized (24 gage), cents per lb.	3.85
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	2.50

Waste—New York

Waste, wool, cents per lb.	12–18
Waste, cotton (100 lb. bale), cents per lb.:	
White	13–17.50
Colored	10–14

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	11.40
White lead in oil (100 lb. keg), cents per lb.	15.25
Turpentine (bbl. lots), per gal.	$0.88
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	5.25–5.50

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire, cents per lb.	16.00
Rubber-covered wire, No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, cents per lb.	17.50

Paving Materials

Paving stone, granite, 5 in. New York—Grade 1, per thousand	$147
Wood block paving 3½, 16 lb. treatment, N. Y., per sq.yd.	$2.70
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3x8½x4 N.Y., per 1,000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	1.94
Cement, Chicago consumers' net prices, without bags	2.10
Gravel, ¾-in., cu.yd., f.o.b. N. Y.	1.75
Sand, cu.yd., f.o.b. N. Y.	1.00

Old Metals—New York and Chicago

Heavy copper, cents per lb.	11.50
Light copper, cents per lb.	9.50
Heavy brass, cents per lb.	7.00
Zinc, old scrap, cents per lb.	4.25
Lead, cents per lb. (heavy)	6.50
Steel car axles, Chicago, net ton	$17.25
Cast iron car wheels, Chicago, gross ton	14.75
Rails (short), Chicago, gross ton	16.50
Rails, (relaying), Chicago, gross ton	28.50
Machine turnings, Chicago, gross ton	6.75

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President Alexander Legge of the Harvester company on Nov. 13 said:

"Our negotiations . . . have not progressed to the stage where any definite statements can be made. The most active discussion has centered around the proposition of using Hall-Scott motors in the heavier sizes of our trucks. . . . While other matters, such as the possible use of our service stations by buses and trucks manufactured by American Car & Foundry subsidiaries and co-operation in the motor business, have also been touched on they have not got beyond discussion. . . . Among other things we may arrange to round out bus orders by drawing from the bus subsidiary of American Car & Foundry."

Rolling Stock

Brooklyn City Railroad, Brooklyn, N. Y., it is understood, may be in the market soon for more cars, presumably of the front-entrance center-exit type.

San Diego Electric Railway, San Diego, Cal., received three street car type Fageol buses early in September. All of these units were equipped with air brakes.

Los Angeles Railway, Los Angeles, Cal., purchased two double-deck Fageol buses in September and two of the same type during the month of October.

Williamsport Traction Company, Williamsport, Pa., expects delivery in the near future of five light-weight one-man two-man safety cars, which are being built by the J. G. Brill Company, Philadelphia, Pa.

Boston & Worcester Street Railway, Framingham, Mass., has purchased five 29-passenger suburban Mack buses for operation between Framingham and Boston, a distance of 18 miles, and at a 50-cent fare. Fifteen trips daily will be made.

Detroit United Railway, Detroit, Mich., through its receiver, W. C. Dunbar, has been authorized to expend $29,706 in the purchase of four new buses from Fageol. The buses are to be used in interurban passenger service, it was said.

Track and Line

Reading Transit Company, Reading, Pa., has been actively engaged in thermit welding defective rail joints on Ninth, Tenth and Penn Streets during the past six months. Four miles of track has been gone over and 300 joints welded without any service interruption.

Des Moines City Railway, Des Moines, Iowa, will start service on the Sevastopol line to Park Avenue on Dec. 1. The extension line will be about 3,700 ft. The improvement will cost the company approximately $35,000.

Nashville Railway & Light Company, Nashville, Tenn., will complete shortly the laying of 1,600 ft. of rail to provide a double track on the Harding Road. The work will cost approximately $20,000. Work has been started on the laying of double track rails from a point near Craighead Avenue on the Harding Road, and extending west on Harding Road a distance of 1,600 ft. Laying of double tracks at this point is one of two steps taken by the company in improving service conditions on the West End line, it was pointed out. The company also is spending $8,250 as its part in widening the overhead railway bridge on Harding Road, which will, in turn, make room for widening Harding Road at that point.

Power Houses, Shops and Buildings

Los Angeles Railway, Los Angeles, Cal., has installed in its main shops a new motor-generator set for arc-welding process. The apparatus consists of a General Electric 600-amp., 60-volt arc-welding set, with 750-amp. overload rating for one hour. This capacity is sufficient to take care of the intermittent load on two metallic circuits or one carbon circuit. It will, in addition, handle the necessary load requisite for the present automatic welding head in use for building up car wheel flanges. The increased amount of work to be handled by arc-welding methods at the South Park shops will be taken care of by this new arc-welding process.

Trade Notes

J. D. Elsom has resigned as vice-president of the Economy Electric Devices Company, Chicago, Ill.

J. R. Brandt has joined the Cleveland office of the Bridgeport Brass Company as raw materials salesman in the Pittsburgh territory and parts of Ohio. Before joining the Bridgeport Brass Company Mr. Brandt had experience with the United States Copper Products Corporation, Rome Hollow Wire & Tube Company and the Hennig Nickel Rolling Mills.

Robert J. Anderson, Inc., Cincinnati, Ohio, has been formed to operate as a commercial testing laboratory, specializing in metals and alloys. The new laboratory is fully equipped for chemical analysis, mechanical testing, metallography, heat treatment and radiography.

Rollway Bearing Company, Inc., Syracuse, N. Y., announces the appointment of John Parker as New England representative. Mr. Parker's engineering experience includes eleven years with Brown & Sharpe and more than fifteen years with three manufacturers of heavy equipment.

F. W. Stockmar has been appointed assistant general manager of the Railway Audit & Inspection Company, Philadelphia, Pa. Mr. Stockmar will make his headquarters in St. Louis, Mo., and will divide his time between that city, the general offices at Philadelphia and all of the district offices located throughout the United States. Mr. Stockmar became associated with the Railway Audit & Inspection Company during the war, first spending some time at Philadelphia as representative and later going to St. Louis in 1917. He was made district manager of the district office in that city in March of 1918.

Advertising Literature

Consolidated Car Heating Company, Albany, N. Y., has issued a new bulletin, No. 13-C, covering "Thermostatic Control for Electric Heaters."

Templeton, Kenly & Co., Ltd., Chicago, Ill., has announced a new line of Simplex trench braces in its bulletin No. 1126. These braces are of value in all types of underground construction where loose soil is encountered, and they have further applications in building and construction operations.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has published a descriptive leaflet, No. 29,297, covering the type TC-2 railway control and reset switch developed recently. This switch represents a new type of single-pole, double-throw magnetic blowout switch, so designed that it is more accessible and simpler in action than older type control switches, as well as being 50 per cent lighter. This switch is for use with either standard HL or K type control.

Portland Cement Association has emphasized the tremendous economic wastes suffered by industry each year through fire losses and recommends the more extensive use of concrete for industrial construction in a bulletin which it has just published. With this bulletin, entitled, "Half a Million a Year," is included a small leaflet telling what the Portland Cement Association is attempting to do, its organization, research work and similar data of interest.

Lincoln Electric Company, Cleveland, Ohio, has issued a booklet on automatic arc welding with Lincoln "Stable-Arc" automatics. Information on various types of automatic welding equipment to meet different service requirements is given.

International Motor Company, New York, N. Y., has issued catalog No. 95, a recent revised edition of 56 pages on the Mack buses, containing many illustrations and diagrams of the exclusive Mack features. A list of the factory branches is included in this pamphlet. The company has also published its first catalog, No. 61, on the Mack six-cylinder bus. It is described as a heavy-duty Mack chassis. "It is on the market to stay, not to satisfy a temporary craze," in the words of the booklet.

Railway Steel Spring Company, New York, N. Y., has published a 56-page catalog covering its springs for locomotive, passenger and freight car service, as well as special springs for many purposes. In addition the catalog contains a section on steel-tired wheels and one on locomotive and car wheel tires. In the back of the catalog are tables for reference in ordering equipment; circumference and area tables are also given, and various supplementary data are included.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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CHARLES GORDON, *Editor*

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The 1927 Convention Goes to Cleveland

BY UNANIMOUS vote, the executive committee decided to hold the 1927 annual convention of the American Electric Railway Association in Cleveland provided that satisfactory arrangements can be made with the convention committee of that city. All signs indicate that such arrangements will be made, not the least of which is the fact that J. H. Alexander is the chairman of the Cleveland convention committee with an evident determination to meet the association more than half way in working out any details that may be necessary to the completion of the negotiations. That Colonel Alexander, together with the late Mr. Stanley and the Cleveland Railway, met the association and the industry more than half way last year is appreciated by every one who went to Cleveland.

Despite the heroic work of the Cleveland Railway and its organization, there were some criticisms of the arrangements and facilities during the last convention. These centered chiefly about the hotel accommodations, telephone service and location of meeting rooms. The committee on location put these facts squarely before the representatives from Cleveland in discussing the arrangements for next year. It was apparent that the Cleveland hotel men did not quite understand the caliber of the men who go to the American Electric Railway Association conventions and had not planned adequately for their accommodation.

But the temper of the Cleveland people is well illustrated by the fact that satisfactory arrangements to overcome the objections of the location committee were laid before the executive committee the very next day. Cleveland wanted the convention to return to the shores of Lake Erie, and was prepared to make every necessary concession to bring it there. This did not seem to be true of Atlantic City. Although the natural attractions of the famous seaside resort were considered superior to Cleveland, there seemed to be no satisfactory way of providing for an adequate car exhibit. The best that could have been done would have been to go through a laborious and expensive process of skidding cars into place on the boardwalk and stringing them along the rail from the Million Dollar Pier toward the inlet.

These and many other factors connected with the two convention locations were considered. The newspapers in Cleveland gave a degree of co-operation seldom experienced during a convention of the association, both as regards the local space devoted to the convention activity, and the amount of material sent out to the country over press association wires. The greatest car exhibit which the industry has ever held was made possible only because of the prominent place given to the exhibit in the center of convention activity, to the space available for the cars and to the wholehearted co-operation of the Cleveland committee in urging both manufacturers and operators to send cars to the show.

Every one who went to Cleveland seems agreed that the evidence of car progress shown there stimulated new interest and enthusiasm throughout the industry. There was likewise a feeling that this was only the beginning of a momentus development in the direction of improved car facilities and better electric railway service. This showing of car improvements, combined with the records of accomplishment on the properties which have succeeded in building revenue and reducing costs through the use of modern equipment, carried new hope and inspiration to every property in the country.

Thus in capitalizing on this new spirit and setting out to exceed the showing of the last convention by providing the facilities for an even bigger and better car exhibit the executive committee has acted wisely in again selecting Cleveland for the 1927 convention.

Mr. Insull Fixes Responsibility for Transportation Difficulties

A FRANK statement of the effect which political manhandling has had on the development of transportation in Chicago was made by Samuel Insull in an address before the Electric Association of Chicago on Nov. 18. Coming as it does from the man who has had as much to do with the establishment of utility financing on a basis to command public confidence as any single individual in the country, Mr. Insull's direct indictment of local politics on the score of destroying the investor's confidence in transportation securities was supported by figures which tell their own story.

Various branches of the electrical industry in Chicago attracted for development and extension $137,500,000 during the year ending June 30, 1926. Of this amount only $14,000,000, or approximately 10 per cent of the total, was expended for the improvement of electric railways, although the electric transportation investment in the Chicago district exceeds by $50,000,000 that of any other group of electrical enterprises. Even this comparatively small proportion of new money was divided between the various transportation systems almost in direct proportion to their susceptibility to political interference.

Chicago is not the only city in which the transportation system has been a political football. Automotive competition, high taxes, paving charges and many other difficulties may be contributing factors to the investors' coolness toward electric railway securities. But the primary agent in driving money away from the development of transportation facilities has been the unscrupulous politician who while shouting about

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"traction barons" has destroyed the value of securities into which the savings of millions have been invested in good faith and has held back transportation development in practically every city in the country.

Chicago today presents the ultimate spectacle of what political chicanery can do to sound utility investments. In the case of the Surface Lines properties, whose franchises expire in February, 1927, there can be no question of management. Here for once in transportation history the issue becomes clear cut. Even the politicians themselves admit the efficiency of the operations, and the public has been given the utmost in service, despite the pending critical financial situation. In the face of severe franchise requirements which include all the objectionable indirect taxes on the car rider that could be devised in the form of street cleaning, paving, etc., 55 per cent of the net receipts of the property has been needlessly taken out of the pockets of car riders to build up a fund in the city coffers. Despite all this, and with a comparatively low rate of fare and the most liberal transfer privileges of any city in the country, the operations make a favorable financial showing.

Measured on the basis of the company's showing as a business enterprise, investment in Chicago transportation securities should be sound. But this is not the fact. All signs point to a receivership when the present bonds become due, because of the impossibility of refinancing under existing conditions. When this comes it might well be termed a political receivership.

Bad as is the Chicago situation from the investor's standpoint, it may prove to be not an unmixed evil in the long run. There is promise in this situation that the part played by political meddling in the retardation of transportation development will be forcefully brought home to the public at large. In that event it may prove to be the means of awakening the public mind to the changed conditions which have come about in local transportation and definitely fixing the responsibility for failure of transportation facilities where it belongs—on the shoulders of politicians who talk much and know little about the subject.

The Metropolitan Section Takes a Forward Step

AT ITS recent meeting in New York the Metropolitan Section of the American Electric Railway Association took a long step forward in stimulating co-operation between various factors in the industry by the election of T. R. Langan of the Westinghouse Electric & Manufacturing Company to its presidency.

This is a decided break with precedent in the conduct of electric railway association affairs. In few industries does the manufacturer play so important and intimate a part as is the case in the electric railway industry. When the operator is in difficulty he does not hesitate to call in his manufacturer friends. Nor do they hesitate to lend a degree of helpfulness which exceeds by a wide margin the limits of ordinary commercial service.

In association activity the manufacturers have played an important and helpful part. Does some new association activity call for the raising of additional money, the manufacturers are always ready to do more than their share. Does a program require a speaker who is a specialist and an expert on a given subject, a manufacturer's representative may be counted on to prepare a suitable paper. Does it become necessary to make arrangements for a meeting and to prepare an appropriate entertainment program, a committee of manufacturers is always willing and glad to give the time and effort necessary to work out the details.

Recognition of the good work done for the Metropolitan Section by Mr. Langan is very fittingly expressed by his election to the post of president. It is to be hoped that this is the beginning of a more general recognition by the industry of the aid extended by its manufacturers, and that other bodies will likewise give consideration to this auspicious move in opening wider the doors of association office.

The Least of Many Evils Is a Poor Decision at Best

FOOD for much thought is contained in the remarks of Thorne Brown before the banquet meeting of the Iowa Electric Railway Association held recently at Omaha. He apparently reflects the discouragement that engulfs this section of the country at the present time. From his background as chairman of the Nebraska State Railway Commission Mr. Brown is in position to know of the dwindling revenues and of the serious condition of many of Nebraska's railways. He paid high tribute to the Omaha system, and yet pointed out that through lack of public understanding this city has but recently refused the company a new franchise even though the present franchise expires in 1928 at the same time the principal bond issues become due.

The statement made by Mr. Brown that perhaps municipal ownership was the way out was a sad commentary on the business sense of Omaha and of those in control of its political life. Mr. Brown is not a municipal ownership enthusiast. He frankly states that one of the prices that Omaha or any other city will have to pay under municipal ownership will be poorer service and less courtesy. He suggested this plan only because he has exhausted in his mind all other possibilities and comes at last to government ownership as perhaps the only port left in a bad storm.

Certainly Mr. Brown realizes the need for adequate transportation in Omaha. He realized it as a member of the state commission, but the need has been even more forcefully borne in upon him as industrial commissioner of the Omaha Chamber of Commerce, to which post he was recently appointed. Omaha is ambitious. It is not content to stand still industrially. It wants new industries. Omaha, however, must first care for its present industries before it can expect to attract new ones. Omaha can hardly extend the glad hand of welcome to other industries at the same time that its railway bespeaks in its physical aspects the niggardly policy that has characterized its dealings with its street railway. Omaha is to be congratulated on its aspiration, but it is hardly to be congratulated on its acts—at least its acts in so far as they affect its street railway. If Omaha would escape the fate of municipal ownership that Mr. Brown appears to see ahead for it, then the responsible business interest of the city should set about the task of freeing the railway situation from political bickering. That cannot be accomplished until the communities involved realize that it is part of their responsibility to see that the utility is so treated that it may become a community asset.

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Insurance Committee Deserves Support of the Industry, Based on Past Performance

CAREFUL perusal of the last insurance committee report of the A.E.R.A. gives the impression that the information contained is of more than ordinary significance. In the first place, embodied in the report is a two-year history of the fire insurance experience representing two-thirds of the capitalization of the industry—perhaps the most complete analysis that has ever been made of this important element of operating expense.

Secondly, it is observed that an average of 31.92 cents was paid for every $100 of the $670,000,000 of insurance carried by the 304 reporting companies. The premiums paid are the sizable total of $2,140,000 annually. Prorating this for the entire industry it is safe to say that at least $3,000,000 is paid out each year to safeguard investment against loss from fire. An interesting sidelight is that the premiums of individual reporting companies ranged between the limits of 10 cents and 60 cents per $100.

In 1924 the average rate was 35.05 cents per $100, so that the reduction of 3.13 cents obtained in 1925 represents something more than $200,000 saved in premiums. But is this enough? Of the $2,304,000 paid out in premiums in 1924 by 304 companies, $1,312,000 or 56.93 per cent was recovered in fire losses. Compare this with the $2,140,000 premium in 1925, out of which only $607,000 or 28.38 per cent was reported as recovered through fire loss. What has happened? It certainly does not take more than 70 per cent to do insurance business.

What stands out as of greatest significance is that in 1925 the fire loss was less than half that of 1924. Evidently the combined efforts of committees and insurance companies have resulted in improved construction and lessened fire hazards.

There is, perhaps no class of fire risks that should be better than electric railways. Many factories, office buildings, and similar fire risks are vacant the greater part of the day as well as on holidays, watched over during these periods only by poorly-paid and oftentimes pensioned employees. Contrast this with the electric railway properties that are actively working at all hours, actually performing a major service eighteen hours a day and often 24 hours a day for 365 days a year. This very situation keeps many employees constantly on the premises where they are always available to report or fight fires. It is almost inconceivable that a sizable fire could gain great headway unnoticed.

Then, also, is the question of exposure, one of the greatest elements of fire hazard. By virtue of necessity the major fire risks of railway properties are located at points remote with respect to the congested areas.

Insurance at best can only cover the capital invested. Payment in full for a loss due to a major conflagration would be poor compensation to a public depending on an essential service, just as it would be to the company that would have to wait from three to five months for replacement equipment.

All of these arguments are combining to make the fire hazard less and less. The committee has done a notable work in obtaining the data and setting forth the facts. Its work this year will be commendable if only another year is added to this enlightening history.

Co-operation of companies is needed. Why did the missing third hold out the information last year? Was it through shame, fear or just a desire for blissful ignorance? Ultimate good is the only net result that can accrue through a statement of facts, and the insurance committee has proved itself deserving of painstaking efforts on the part of companies in the prompt reporting of insurance experience.

Constant Turmoil Accomplishes Little Good

ONE is sometimes led to wonder whether a few railway managers are not so carried away with a determination to prevail in their position on a disputed question, as to lose sight of the ultimate objective for which the cudgels were taken up—the best interests of the security holders. In the case of a certain railway property whose affairs have long been a source of bitter contention, nothing short of a 10-cent cash fare would seem to be acceptable. This management has not lost sight of the coveted goal for an instant in recent years. In line with this policy, a value five times as great as that fixed by the Public Service Commission for rate-making purposes is claimed for the railway property. Although the bonds outstanding exceed the commission value only by one-seventh in amount, and although the outstanding capital stock is only about two-thirds the amount of the bonds, the company seems to recognize nothing anomalous in its attitude. In support of its avowed demands, it has evoked the aid of the courts. But it has effectively alienated the regard of the public and the representatives of the public elected to office.

There is apparently no likelihood of default in bond interest. Still, some of the bond issues farthest removed from being a direct lien on tangible property are selling at a discount which approximates quotations for similar securities either in actual or technical default. This, of course, is a reflection of the insecurity of the company's present public position. It would no doubt be difficult and it might even be impossible to bring about a voluntary readjustment and a scaling down of capitalization more nearly in keeping with the proved earning capacity of the property in recent years. Perhaps that is not necessary, but it does appear to be the height of folly to insist upon a predetermined rate of fare under conditions that make it extremely unlikely that any increase in gross earnings would result. It is, of course, always distasteful to surrender as a matter of expediency rights to which one justly feels entitled; but it often happens that rights to which one thinks he is entitled are merely the shadows of the real thing and are obligations rather than assets.

The case here cited is not a supposititious one, but it is an isolated one. Problems no less difficult than those that beset this company are being successfully surmounted in other communities. There is ample reason for believing that the energy expended by this management in battling for what it construes as its rights would, if directed to the development of the system and the sale of service to the public, have won for the company respect that is now almost totally lacking, and even the coveted 10-cent fare, if that really proved to be necessary and desirable. This company has for too many years been a public storm center. It could, perhaps, achieve its ends better by being more persuasive and less pugnacious. A public utility may, through unforeseen and unavoidable circumstances, fall into temporary difficulty; but there is something wrong with a utility that is in constant disrepute.

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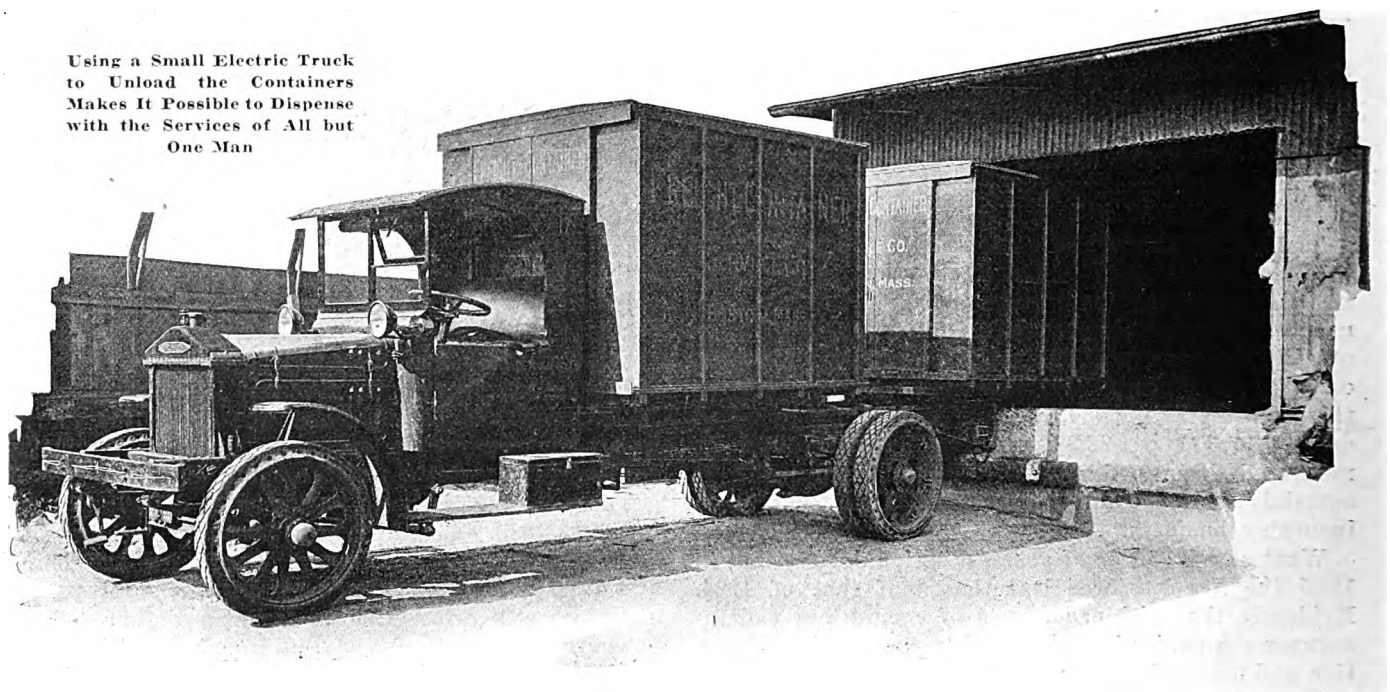
Making Profitable Electric Freight Service a Reality

Freight Containers Have Been Adopted by the Boston & Worcester and the Springfield Street Railways for Less-than-Carload Shipments to and from Boston—Shipments in Both Directions Are Now Practically Balanced—Overnight Service Is Given



Using a Small Electric Truck to Unload the Containers Makes It Possible to Dispense with the Services of All but One Man

SHORT-HAUL, pick-up-and-delivery service for assorted freight in small lots, generally classified as l.c.l. shipments is unprofitable from the viewpoint of carriers of the greater portion of the country's tonnage, the steam railroads. The conditions that preclude the possibility of profit to the steam lines do not hold in equal degree with the interurbans. The items mentioned, together with guarantee in transit and rapid delivery, do, however, impose on the electric lines the task of devising methods and practices that will enable the business to be handled on a profitable basis.

That it is possible to work out a satisfactory system is shown by the experience of the Boston & Worcester Street Railway and the Springfield Street Railway in establishing a profitable through freight service connecting Boston and Worcester and Springfield. This has been accomplished by dint of an intensive campaign carried on among distributors in Boston and producers in the territories surrounding the two cities farther west to sell the transportation services of the electric railways in connection with the use of freight containers.

The total distance between Boston and Springfield is approximately 100 miles, this mileage being divided about evenly between the two companies. It has been found by these railways, after their experiences with the handling of the containers, that short-haul electric freight service has reasonable possibilities of profit, provided that freight carrying by all forms of public transportation with particular reference to trucking companies, be regulated as to schedules, tariffs and responsibility on a basis similar to the provisions under which the railway must operate.

Beginning on July 1 sixty standard freight containers leased from the Freight Container Company of Boston, were adopted by the two railway companies, with a view to promoting their use for shipments in less-than-carload lots. It was felt that with these containers it would be possible to eliminate many of the non-productive factors which have hitherto rendered electric freight haulage an unprofitable venture.

The containers are moisture-proof, strong, portable boxes, equipped with either refrigerating or heating equipment, according to the requirements of the shipper. They are 8 ft. long, 7 ft. wide and 6 ft. high and each one is capable of holding 5 tons of freight. They may be easily manipulated into place, it being possible for two men to push them on or off a car, but the companies have found it economical to use a small motor truck for shifting as this practice eliminates one man. The containers slide into place on a standard flat car, five to a car.

Actually, the railway companies do not undertake to pick up or deliver the containers. The Freight Container Company, through its agents in the various cities served, handles this entire phase of the work, the containers only coming under the care and responsibility of the railways when they are delivered to the freight

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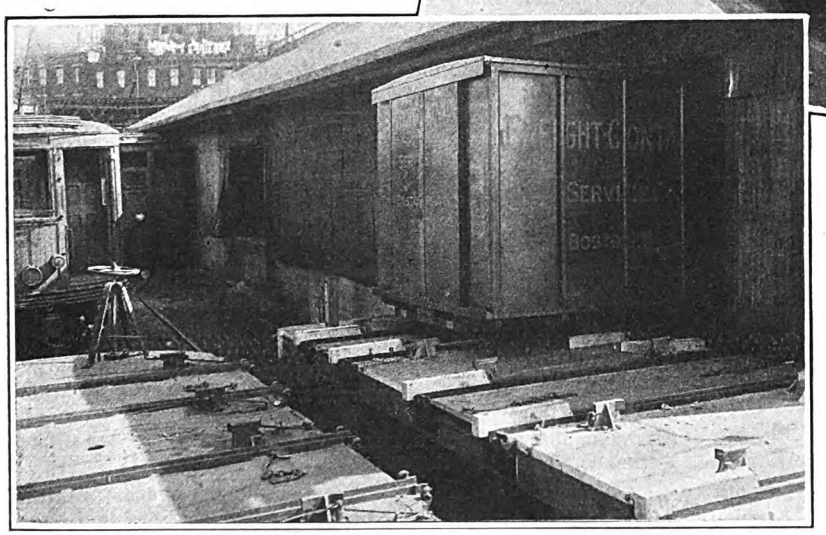
sheds in Boston, Springfield and Worcester. The shipper packs the containers on his own platform at his plant and they are then picked up by the Freight Container trucks and transported to the freight depots. The railways simply are responsible for the containers and their contents to the extent of loading them onto their flat cars, transporting them from city to city and unloading them at the other terminals.

Since Boston is the natural distributing center for both Springfield and Worcester, as well as for the smaller communities near those two cities, it might be assumed that difficulty would be experienced in finding return shipments for the empty containers, after they have carried loads from Boston to the outlying points. The railways state, however, that a practical balance is being maintained in both directions. During the first few weeks of the newly inaugurated service there was about a 20 per cent return of empties to Boston. A large increase in through shipments in an eastward direction soon developed as a result of the intensive campaign carried on by agents of both the railways and the Freight Container Company. At the present time about 60 per cent of the entire tonnage is carried through between Boston and Springfield over the lines of the two electric railways. Overnight service between Boston and either Springfield or Worcester is given.

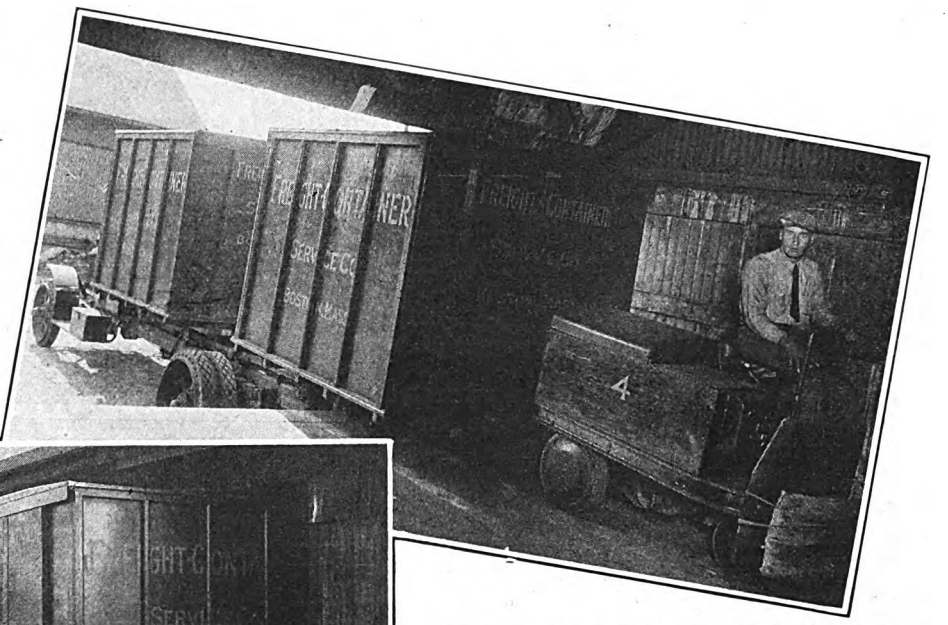


The Containers Are Run Directly Onto Rails on the Top of the Flat Car, Where They Are Securely Locked Into Place

Shippers Interested in Containers

Contributing to the balance of east and west shipments, solicitors have been able to interest a number of regular and heavy shippers in the container idea. Accordingly it has been possible to set up against this kind of steady traffic enough in the opposite direction to balance the exchange of containers. Thus, freight agents have had definite figures in mind, in canvassing their prospects, with respect to the exact amount of traffic needed to maintain this balance. It has been necessary, occasionally, actually to reject shipments in the westward direction in order to cause a topheavy balance of shipments out of Boston. A little less than eight weeks was required to build up the eastbound service from practically nothing to its present status, where it virtually is equal to that in the westbound direction.

At times the Freight Container Company has been hard put to it to provide enough containers to care for a sudden increase in haulage requirements. Shipments have been rejected on this ground more than once, but in general the business has grown with a fair degree of steadiness, so that the container company and the railways have been able to predict for future requirements in the matter of equipment prior to the dates on which that equipment was needed. Care has been taken to keep the containers moving as rapidly as possible, so that none will become inadvertently sidetracked at either end of the line.



Containers Are Brought to the Freight Sheds on Trucks of the Freight Container Company

The direct result of the use of the containers for electric freight service is striking. More than 100 shippers have specified a preference for this method of transporting commodities. During the first month, July, container shipments between Boston and Worcester, both ways, reached 1,200,000 tons; during the next month the total recorded was 1,500,000, and in September the month's total was approximately 4,000,000 tons.

Such encouraging results present a strong argument for freight containers. In addition, the advantage in their use is further attested by a résumé of the type of commodities shipped, as well as the standing of the shippers. For example, each week one chain store company ships 250 tons in containers packed, sealed and delivered to the terminal; also, one paper manufacturing company ships weekly from Holyoke to Boston 200 tons of paper, largely envelopes and gummed wrappers. Others shipping in small lots, classed as l.c.l., according to standard freight classification, and who would not benefit from door-to-door practice under ordinary railway service are manufacturers of various kinds of perishable or easily contaminated products, among which may be noted soap, candy, groceries, gummed materials, paints, knit goods, coffee, tea, metal products sensitive to corrosion and supplies for 5 and 10-cent chain stores.

Since freight containers have been introduced not only do they offer to shippers an improved means

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for handling products as compared with bulk shipments loaded loose in standard freight cars, but also from the standpoint of the carrier as they eliminate terminal charges and give a number of incidental advantages.

Short hauls make a profit only on full carloads, based on transportation costs; terminal charges, if included, nullify any profit and damage claims further reduce the favorable margin. By the use of containers, the carrier becomes solely a transportation agent whose business it is to carry freight and, in the majority of cases, not to handle it. In this practice the shipper assumes the responsibility of cartage and delivery as well as packing and hands over the containers, sealed, to the freight agent at the terminal, who merely places the boxes on the cars. This practice is a solution of the problem of haulage overhead.

Handling Details Simplified

The time required to load a standard freight car is estimated at from 1½ to two hours; the time required for sorting and trucking in terminals is equally as much. Compared with these items, the container loading charge is practically nil for the carrier, as it requires in all, for booking, placing and loading, not more than fifteen minutes per car. In addition, all tracer and claim costs are eliminated, according to the officials of the Boston & Worcester company. The freight agent's duty is, in consequence, a simple matter of routing containers instead of, as is true under ordinary freight practice, routing numerous assorted commodities. For this work a multiform shipping leaflet is used which is quite adequate for the purpose.

The rates quoted for container shipments are: Boston to Worcester, a distance of approximately 45 miles, 25 cents per hundredweight; Boston to Springfield, approximately 100 miles, 35 to 40 cents per hundredweight. With practically all non-transit charges cut down to a low figure, direct electric freight service offers, from these companies' experience, an encouraging prospect. It is further enhanced by a decided increase in inquiries for the container service on the part of shippers.

Record of Five Years of Enterprise in Toronto

FIVE years ago the city of Toronto, Ont., took over the local railway lines. As September marked the birthday month of the activities of the Toronto Transportation Commission, that body deemed it fitting to review the major accomplishments during the last five years. This it did in the *Coupler* for September. Here is the summary:

Cars—Purchased 575 modern steel cars necessary to replace 482 of the 830 Toronto Railway cars which had many years ago become obsolete, many of which were originally horse cars.

Entirely rebuilt the remaining 348 Toronto Railway cars to modern types, such as the one-man treadle cars and six-motor two-car trains.

The total number of cars for service is approximately 1,000.

Trackwork—Extended the trackage of the former systems to the extent of 44 miles. Entirely rebuilt 54 miles of track which was quite unfit from the standpoint of safety and efficiency for street car operation.

Partially rehabilitated 55 miles of track which had sufficient useful life remaining in it to justify the expenditure, yet which was in a very much run-down condition. The commission now operates 244 miles of track.

Coaches and Buses—Inaugurated motor transportation as feeders for street cars; special fare Hill route, racetrack, exhibition, Sunnyside Beach service, sightseeing, chartered work, etc.

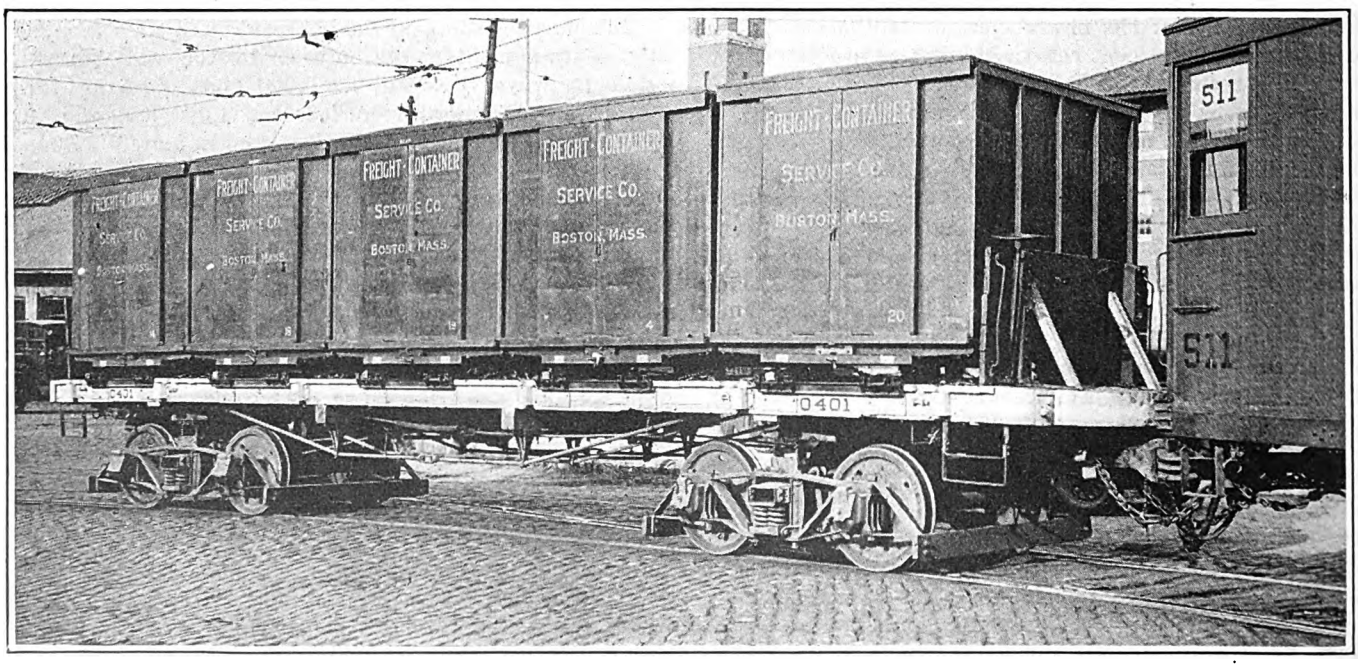
The commission has 75 vehicles for use on this work.

Buildings—Purchased old Board of Trade building and completely rebuilt this to serve as a head office building.

Rebuilt and enlarged four of the existing carhouses and constructed a new one.

Built new repair shops, the best street railway shops on the continent, by which savings are effected in reduced cost of rolling stock maintenance sufficient to meet all carrying charges and to pay for the cost of the buildings well within their lifetime.

Public Relations—Lastly, but by no means least in importance, the commission has reasons to feel confident that through the willing co-operative spirit of the men, and by means of the fair, impartial and unbiased policy of those to whom the matters of transportation have been intrusted, the confidence and support of Toronto's citizens has been finally regained.



Five Containers in All May Be Loaded on Each Flat Car, Thus Giving the Railway the Benefit of Full Car Load Haulage

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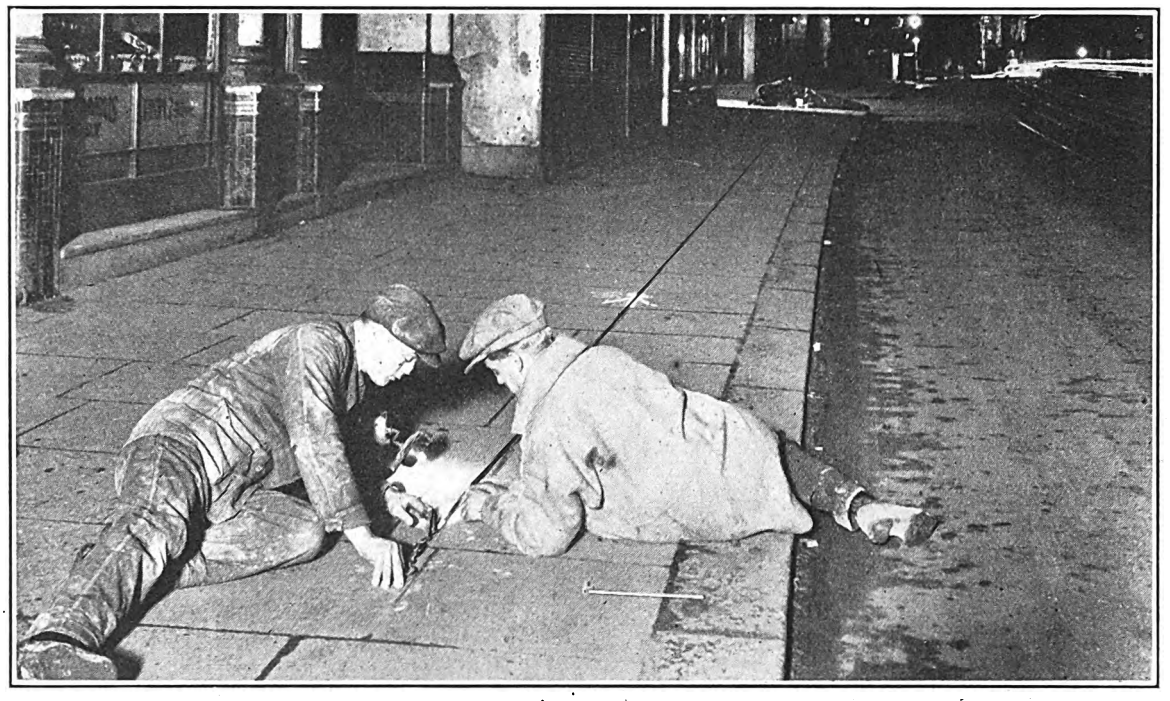

Measuring One of the Main Surface Survey Lines, from Which the Center Lines of the Tunnels Were Calculated. Metal Plugs Were Fixed in the Pavement to Mark the Ends of the Survey Lines. This Work Was Carried Out at Night

London Subway Extended by Tunneling

Five-Mile Addition to Underground System Built in Ten Sections—Accurate Surveys Required to Insure Proper Alignment—In Hard Ground Shields Were Driven Forward by Hydraulic Rams, While in Soft Ground Rotary Excavators Were Used

CONSTRUCTION of the extension of the London Underground from Clapham to Morden, which was begun in 1923, was completed during the present year. Practically all of the new line is tube construction. In hard ground the tunnel was advanced by means of the Greathead shield, while in softer ground a rotary excavator was used. Methods adopted for the layout and execution of this work are typical of the latest British practice, and differ in many respects from those usually followed in this country. The story of the work as told by the London Underground is therefore of particular interest.

From Clapham to Morden is a distance of 5 miles. Except for the last half mile, where the extension runs in the open, the line is of standard tube design, with tunnels of 11 ft. 8¼ in. diameter, located at an average depth of 40 ft. below the surface. Between the stations the tunnels are an average distance of 5 ft. apart. At the stations, where the tunnels are of 21 ft. 2½ in. diameter and the lower portion of an escalator shaft comes between them, they are considerably farther apart.

On leaving a station each tunnel has a declivity of 1 in 30 for about 300 ft., while on approaching a station it has a rise of 1 in 60 for about 600 ft. Thus the tunnels are at the same level for a considerable distance between the stations, but they rise and fall at different angles in the sections immediately adjoining them. This switchback principle, applied wherever practicable, promotes acceleration of the trains as they depart from the stations and retards speed as they approach stations, making for economy and energy consumption and reducing wear and tear on the brakes. Preliminary to construction a route survey was made. First, the course to be followed was laid down approximately on large-scale maps. A detailed survey of the route was then carried out. The chief consideration was to select an easy route, making the curves as flat as possible, and to insure that the tunnels would not encroach on private property except where this was unavoidable. The levels of the highway were taken and all available data collected with respect to underground works, sewers, gas and water mains, etc.

Except for one short stretch, it was found practicable to lay out curves of such long radius that the tunnels could be of the standard 11 ft. 8¼ in. diameter throughout. At one point, however, the northbound tunnel had to be made of 12 ft. diameter. In general the curves of the Underground tunnels previously built are of larger diameter than are the tangents.

Arbitrary lines from which the center lines of the tunnels could be calculated were laid out on the street. This process is shown in an accompanying illustration. All places where the tunnels approached close to the building line were carefully checked with a theodolite, to make sure that there would be no encroachment on private property.

TEN SECTIONS IN 5 MILES

Having arrived at a satisfactory layout, the next step was to decide the general scheme of construction. Boring the tube from one point only would have been an extremely protracted undertaking. It is estimated that under such circumstances the Morden extension

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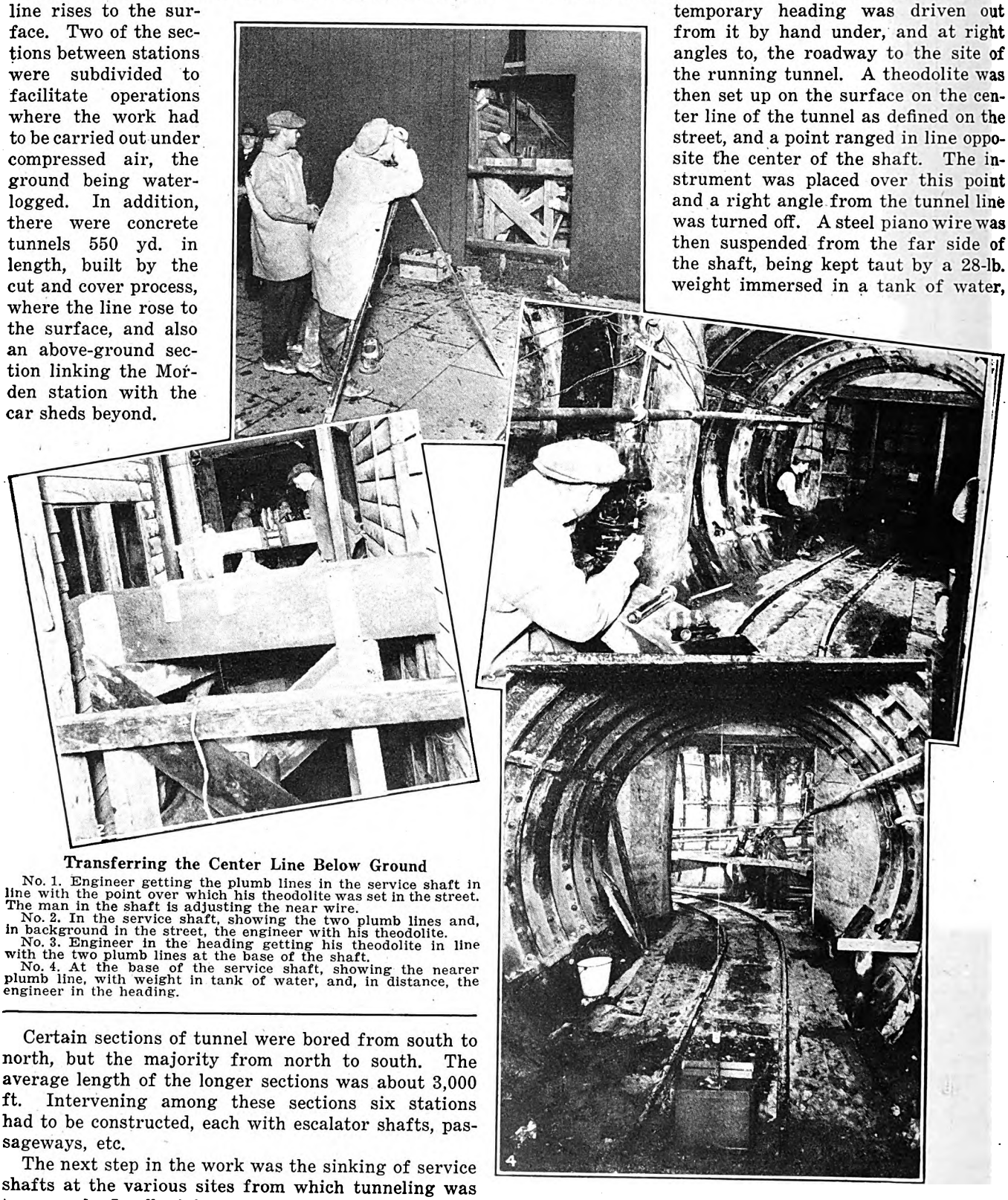
would have taken about fifteen years to complete. Work was arranged, therefore, in ten sections, five of which represent the distances between stations and another the section from the last station to the point where the line rises to the surface. Two of the sections between stations were subdivided to facilitate operations where the work had to be carried out under compressed air, the ground being waterlogged. In addition, there were concrete tunnels 550 yd. in length, built by the cut and cover process, where the line rose to the surface, and also an above-ground section linking the Morden station with the car sheds beyond.



Transferring the Center Line Below Ground

No. 1. Engineer getting the plumb lines in the service shaft in line with the point over which his theodolite was set in the street. The man in the shaft is adjusting the near wire.
No. 2. In the service shaft, showing the two plumb lines and, in background in the street, the engineer with his theodolite.
No. 3. Engineer in the heading getting his theodolite in line with the two plumb lines at the base of the shaft.
No. 4. At the base of the service shaft, showing the nearer plumb line, with weight in tank of water, and, in distance, the engineer in the heading.

Certain sections of tunnel were bored from south to north, but the majority from north to south. The average length of the longer sections was about 3,000 ft. Intervening among these sections six stations had to be constructed, each with escalator shafts, passageways, etc.

The next step in the work was the sinking of service shafts at the various sites from which tunneling was to proceed. In all, eighteen shafts were sunk. While in the construction of the older tube railways of London these shafts were from 16 ft. to 30 ft. in diameter, on the Morden extension they were only 10 ft. 6 in. in diameter. In previous construction it was customary to install elevators and emergency staircases for the stations in the shafts after the completion of tunneling. On the Morden line, however, the stations have escalators and the temporary shafts were made of small diameter for reasons of economy.

A shaft having been sunk to the requisite depth, a temporary heading was driven out from it by hand under, and at right angles to, the roadway to the site of the running tunnel. A theodolite was then set up on the surface on the center line of the tunnel as defined on the street, and a point ranged in line opposite the center of the shaft. The instrument was placed over this point and a right angle from the tunnel line was turned off. A steel piano wire was then suspended from the far side of the shaft, being kept taut by a 28-lb. weight immersed in a tank of water, great care being taken to insure that the wire hung perfectly clear. This wire was then adjusted across the field of view until it exactly bisected the cross-hairs of the telescope. A similar wire, hung from an adjusting screw, was suspended from the near side of the shaft, the two wires being as far apart as the shaft would allow. By means of the adjusting screw the second

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Checking Horizontal Location of the Shield by Means of the Plumb Lines

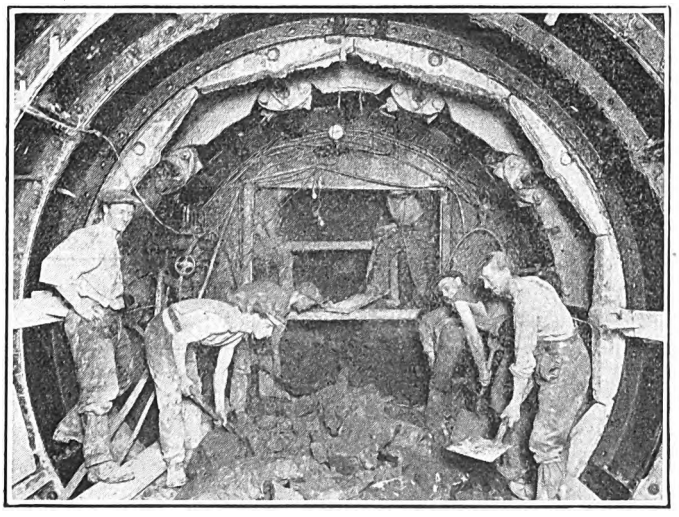
Checking the Level of the Shield by Sighting Over Suspended T Rods

wire was then traversed across the field of view until it coincided with the first wire. The two wires were thus on a true line at right angles to the center line of the tunnel. The distance from the instrument to the nearest wire was next measured.

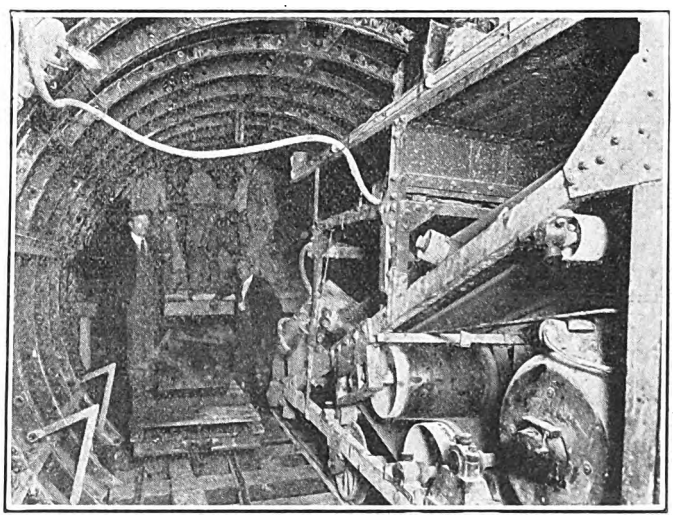
To transfer the center line to the heading, the theodolite was set up in the heading at the same distance from the near wire as was the case on the surface. The wires were again sighted and the instrument moved on its sliding plates until the two wires appeared as one. When this had been done the instrument was plumb under the point at which it had been set on the street above. With this as a base, the center line of the tunnel was determined by turning off a right angle. The operation was repeated from time to time as the tunnel increased in length until the engineer was assured that the center line had been established with sufficient accuracy to be used to the end of the drive.

Excavation Done by Two Methods

The base line below ground having been established, tunneling began. A chamber 15 ft. in diameter was cut at right angles to the heading. The shield was then built up into the chamber, and the correctness of its position and direction having been verified by repeated checkings with the base line data, the task of excavating the tube began in earnest.



Digging the Tunnel by Means of the Greathead Shield. This View Shows the Work South of Camden Town



Rotary Excavator in Use When the Tube Was Pushed Through Soft Material

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The shield was driven forward by means of hydraulic rams around the periphery, pressing against the iron lining segments of the tunnel already constructed. By regulating the force exerted by the various rams, a straight tunnel, a curving tunnel, a downward slope or an upward slope were made as occasion demanded. An exigency that had to be taken constantly into consideration was that owing to the weight of the shield there was a tendency for the nose to go downward when uniform pressure was exerted by all the rams.

Operations began on one tunnel only, work on the other not being undertaken until the first tunnel had been driven some little distance ahead. Two shields, therefore, were never working alongside each other.

The skin was carried forward as the shield went ahead and the space that it occupied was then grouted through holes in the lining segments. At the end of a drive, when the shield could be projected no farther, the skin was necessarily left in place between the segments and the earth.

Each cast-iron ring with which the tunnel is lined consists of six segments and a key piece, the latter being inserted in the top of the ring. Where the diameter of the tunnel is increased to 21 ft. 2½ in. at the station platform, twelve segments and a key piece are used. The segments were placed in position and bolted together at the flanges after each advance of the shield, the forward movement being 1 ft. 8 in. for the standard tunnel and 1 ft. 6 in. for the large diameter tubes.

Two types of shields were used, the Greathead and the rotary excavator. In the case of the Greathead shield, men work inside the shield and dig out the earth at the face, as it is broken down by the forward movement. This method was used where the ground was firm. With the rotary excavator the digging is performed by rotating cutters and the earth is thrown back mechanically. The rotary excavator was used only for tunneling through clay when expeditious work was necessary.

Strata Carefully Investigated

Trial bores were made of the ground through which the tunnel was to be driven. While such borings afforded a general idea of the nature of the strata in which operations were to proceed, they did not, of course, indicate every peculiarity of the lower levels throughout the course of the line. Borings were made from the surface and also horizontally ahead of the shields. This was done with a long-handled carpenter's augur with sufficient length to penetrate for several feet through the earth to be excavated. When work was proceeding under normal conditions, this was done as a precaution against suddenly encountering water-bearing or other bad ground. When operations were being carried out in compressed air, it was necessary also as a precaution against running unexpectedly into some outlet for the air. The wisdom of these precautionary measures was demonstrated several times during the course of the construction.

In water-logged ground below the surface compressed air was used. An airtight compartment was built in the tunnel between the shaft and the tunnel face. In some cases it was a section of the tunnel itself, from 10 ft. to 20 ft. or more in length, closed by stout bulkhead walls of brick or concrete, each wall having an airtight steel door for the passage of men and materials. In other cases the air lock was a horizontal steel cylinder with a bulkhead wall and steel door at each end. Sometimes the pressure used was as low as 5 lb. per square inch. In exceptional cases it was as high as 25 lb., or even higher. The average was approximately 10 lb. per square inch. When work was proceeding under a river the pressure had to be adjusted in conformity with the ebb and flow of the tide, which caused a fluctuation in the weight on the clay above the tunnel.

Direction and Level Checked Frequently

During the process of tunneling, checks on the position of the shield and the direction of drive were taken periodically. As the tunnel was bored iron dogs were fixed in the roof about 35 ft. apart. From them plumb lines were suspended. These dogs were set by an engineer and the plumb lines were placed in exact line with the theodolite. When necessary to check the position of a shield, a bar called a fiddle was placed across the horizontal diameter of the shield. The top of the fiddle was at axis level and had a notch in the middle denoting the center of the shield. A small piece of wood having a slit illuminated by a candle was then placed on the fiddle and shifted back and forth until the slit coincided with the plumb lines. It was then noted how much the notch on the fiddle was to the right or left of the center line of the tunnel and the error in position determined.

For testing the level of the shield, hangers were bolted to the roof of the tunnel on which adjustable pins had been set by the engineer to an exact level. From these pins T-shaped rods were suspended, the crosshead representing the true axis level of the tunnel. The piece of wood was then placed against the face of the fiddle with the slit horizontal and raised or lowered until it coincided with the line of sight of the crossheads. The position of the top of the fiddle was then noted in relation to the slit and any necessary adjustment of the shield was made by variation in the force exerted by the rams.

For further guidance, square lines were set out at right angles to the center line of the tunnel, and trailing rods divided into feet and inches were attached to each side of the shield. If the shield was proceeding square with the center line, readings were equal on the scales of the trailing rods. When the readings were unequal it indicated that the shield would soon be out of line.

For boring curves the engineer furnished the foreman with a list showing for every foot the shield advanced how much to the right or left of the center line it should be. When sighting on the fiddle the foreman could therefore ascertain his position by referring to the list. Trailing rods with different scales were provided for curves. While the rod for the inside of the curve was divided into feet and inches, on the outer rod the divisions, although marked as feet and inches, were "stretched" to correspond with the lengths on the inside. Vertical lines also were established by the engineer and it was thus possible to ascertain from the readings on the trailing rods whether or not the nose of the shield was being kept to the correct line of the curve. The maximum deviation from level or center allowed in a shield was 1¼ in.

When the construction of the Morden extension was at its height, eighteen shields were in operation simultaneously on various parts of the line. Twelve were at work on the running tunnels and six of extra large size on the platform tunnels of the stations.

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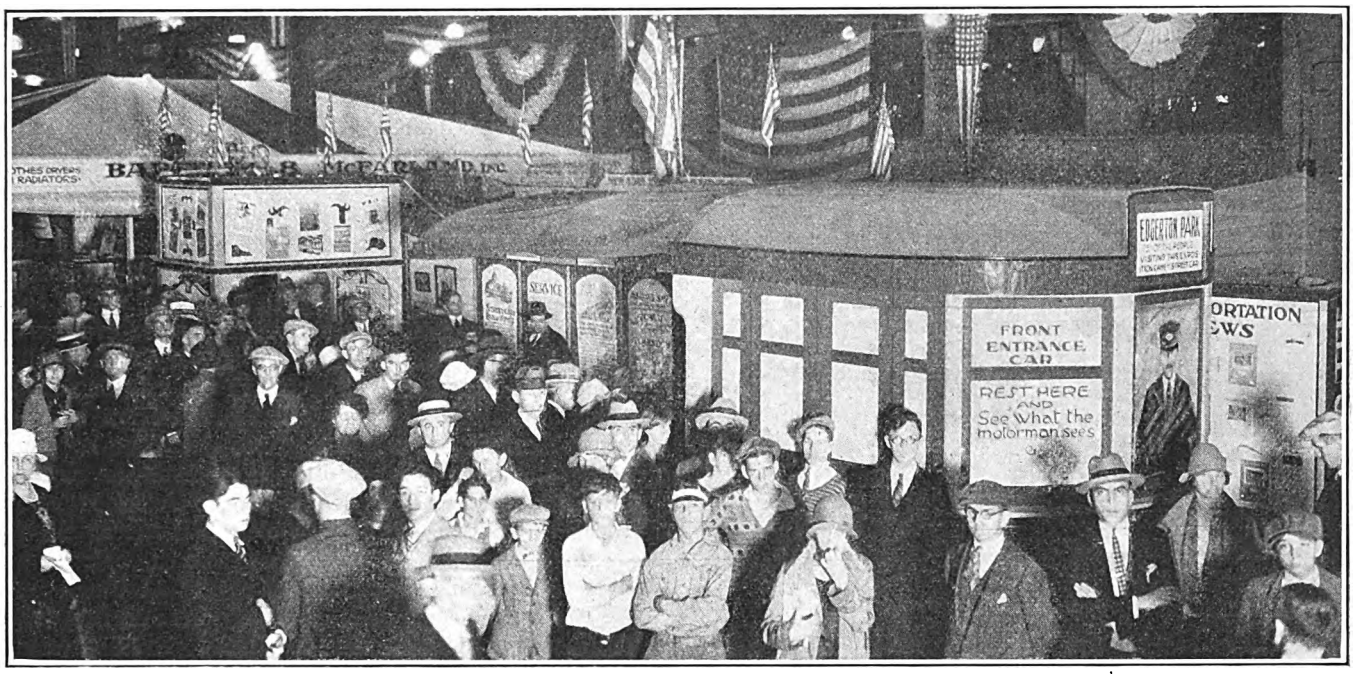

Large Crowds Were Interested in the Exhibit of the New York State Railways at the Rochester Industrial Exposition

Seeing What the Motorman Sees

Motion Picture Displayed by the New York State Railways at the Rochester Industrial Exposition Attracted Large Crowds—Taken from the Front Vestibule of a Moving Car, It Showed the Many Hazards of Operation Through Congested Streets

By L. R. Brown
New York State Railways, Rochester, N. Y.

FOR the first time in several years the New York State Railways was represented this year at the Rochester Industrial Exposition. The company rented three adjoining booths on the center isle in the building housing the industrial exhibits and combined them. The space was arranged as a miniature motion picture theater resembling the interior of a street car. The front vestibule of a car was built to actual size facing one of the aisles. Behind this were seats arranged in the same way as in a street car. At the back was a booth housing motion picture and lantern slide machines. The screen was inside the front vestibule in the position of the motorman's window and the surrounding woodwork painted black.

The back wall of the booth was arranged to represent the side windows of a street car, except that, in place of

Posters Took the Place of Glass in the Side Windows

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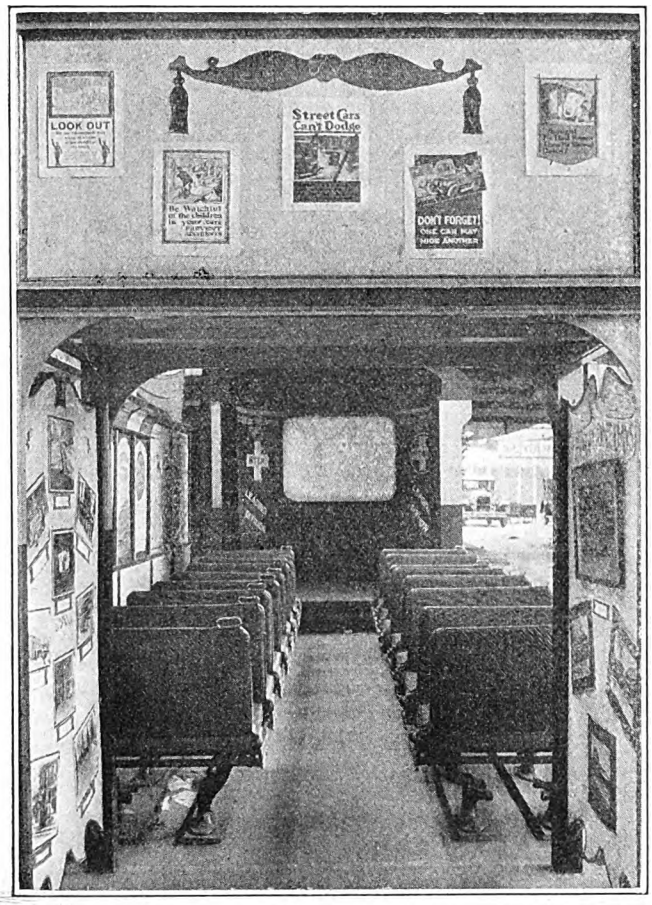
glass, posters were displayed telling the value of street car service to the community. Posters carrying facts about the street railway in Rochester were placed in the space above the windows ordinarily used for advertising merchandise. The walls supporting the projection room were used to advertise the electric railway industry.

These street car seats accommodated 32 people and



The Railway Booth Was Arranged to Resemble a Car Interior

afforded about the only opportunity inside the exposition buildings for people to sit down and rest. On one of the front windows of the car and on one of the panels in the rear were painted these words, "Rest Here and Enjoy Street Car Comfort."

"What the Motorman Sees" was one of the principal motion pictures shown to the audience. It was taken in Rochester by a local motion picture man, under the supervision of the safety director, from the front vestibule of a street car. When looking at this picture displayed on the screen one got the effect of riding in a street car and seeing what the motorman sees.

Five different incidents were displayed. One was an automobile "cutting in" in front of a street car without warning. Another was a street car being delayed by a slow-moving vehicle refusing to turn out and give the right of way. The third consisted of boys playing in the streets. One of them darted suddenly out in front of an oncoming car to retrieve a fumbled ball. A fourth scene depicted a boy catching a ride on the rear of a street car and getting a bad fall by jumping off in front of an oncoming car. The fifth showed a man alighting from a street car and walking around the rear onto the other track in front of an oncoming automobile.

In addition, other pictures taken by the railway in Rochester were shown. One was entitled "Traffic Conditions in Rochester" and showed a number of violations of the law by automobilists which endangered street car traffic. Another was "The Gap in the Line" and showed the efforts of the railway to take care of the service when a blockade occurs. Lantern slides from the National Safety Council were used also to interest the crowds in the dangerous practices in which street car patrons often indulge.

It was necessary at all times to have two or more men present at the exhibit to operate the motion picture and lantern slide machines and keep a continuous attraction before the people. Two motion picture machines of the bulb type and one lantern slide machine were used. At first the pictures did not show up so very well in the daytime as all the artificial lights in the building kept burning and there was considerable reflection on the screen. This was to a great extent overcome by constructing a canopy of black oilcloth to shade the screen.

From the opening of the exhibit at 10 o'clock Monday morning until its closing at 11 o'clock Saturday night the exhibit was an unqualified success in attracting crowds. The seats were filled at nearly all times and many times the people were crowded four and five deep in the standing space outside the booth. Even when no pictures were being shown many people occupied the seats just for the purpose of rest and relaxation. When so doing they, of course, were gazing around and reading the messages painted on the walls for their benefit. The crowd was constantly changing and owing to the

Full-Size Front Vestibule at One End of the Exhibit

booth's prominent location nearly every one who visited the exposition passed the booth and all who passed paused for a moment to read the messages or watch the pictures. Children were especially interested in the exhibit and a parent with a child had difficulty in getting by without stopping to see the pictures. A comedy motion picture was displayed occasionally to attract the crowd and the safety slides and film were shown between the scenes of comedy.

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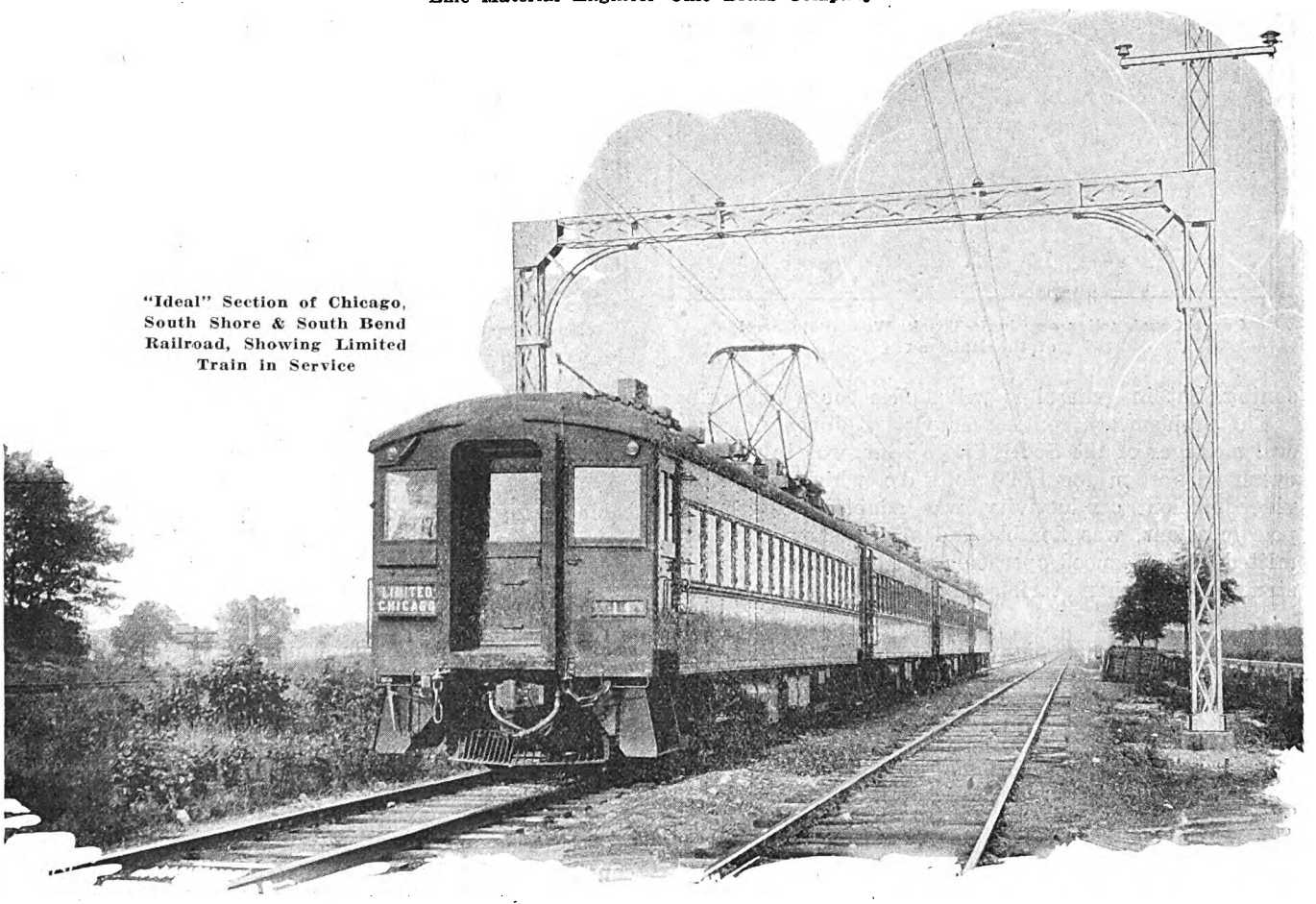
High Current Capacity with Exceptional Flexibility Feature of Catenary

New Overhead of Chicago, South Shore & South Bend Railroad Gives Uniform Load of 0.7 Lb. per Foot on Pantograph—Maximum Life Assured by Use of All Non-Ferrous Materials

By L. W. Birch
Line Material Engineer Ohio Brass Company



"Ideal" Section of Chicago, South Shore & South Bend Railroad, Showing Limited Train in Service

SLIGHTLY more than a year ago the Insull interests purchased the Chicago, Lake Shore & South Bend Railway and, after renaming it the Chicago, South Shore & South Bend Railroad, proceeded to spend an aggregate of $3,615,000 for new equipment and rehabilitation of the right-of-way. Of this amount, $1,330,000 was spent for new equipment and $1,428,000 for the rebuilding of overhead, structures and roadway. In addition, the Northern Indiana Public Service Company has spent $857,000 for substation equipment and high-tension lines. Twenty-five new steel motor passenger cars and four locomotives have been placed in service. In addition to these, there will be delivered later two dining cars and two parlor-observation cars. The overhead system is being completely rebuilt and a 1,500-volt d.c. system has replaced the old 6,600-volt a.c. system. Eight new substations and interconnecting high-tension lines have been added and many waiting rooms and stations rebuilt. New 100-lb. rail and ballast are replacing the old. In other words, a new railroad has been built on an old right-of-way.

For the past few years it has been recognized that there are two ways to design an overhead system, either of which could be considered as good design, even though it be selected without consideration of current requirements and cost. One method is to build a light overhead collection system with separate feeder for conductivity and the other is to construct an overhead system in which all conductivity is placed in the contact and supporting messenger wires. With the former design the advantage of light-weight overhead is obtained, thus diminishing the size and weight of structures, hardware and fittings. With the latter, owing to larger cables resulting, a system employing long pole spacing, heavier structures and a single insulated set of conductors is possible. By comparing the cost of one system with that of the other for some given railroad it is fairly easy to determine which system is preferable. Considerable economy will show for one of the systems. This method of selecting an overhead system should not be decisive. There are innumerable jokers which may creep in and upset this line of rea-

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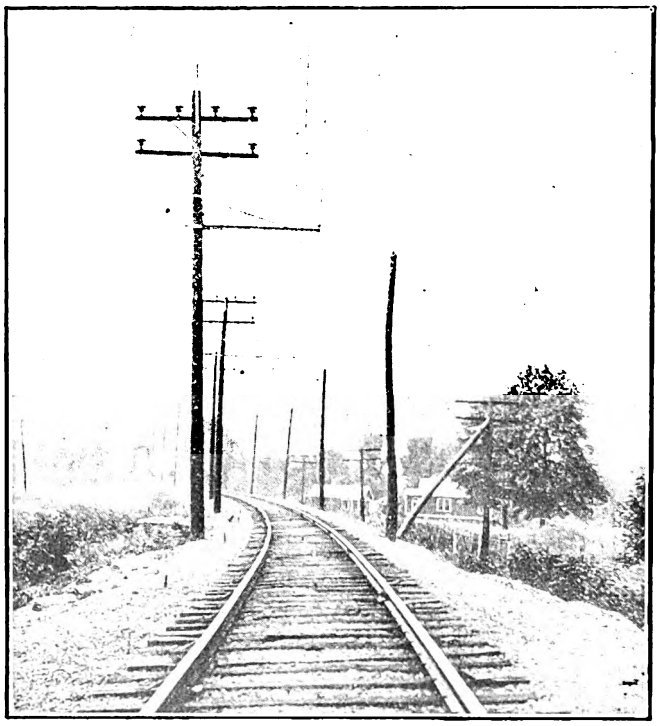
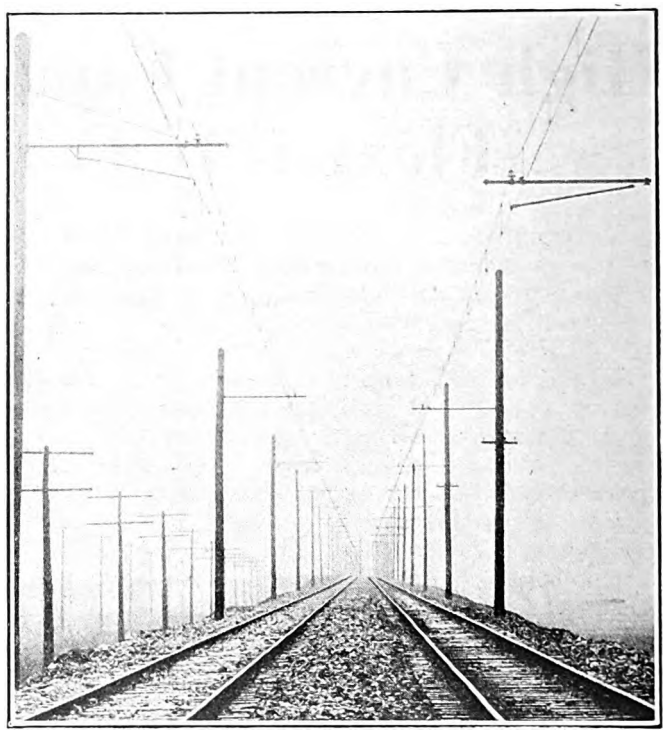


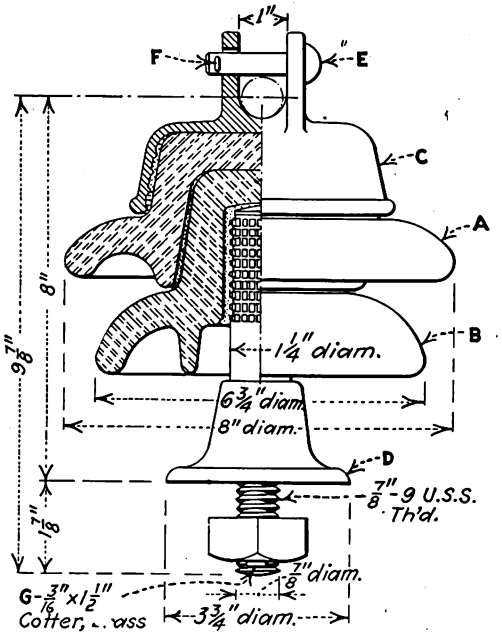
Curve Construction on Single-Track, Wood-Pole Section of the Railroad



Original Installation of Overhead, Chicago, South Shore & South Bend Railroad, Kensington Division

soning, but in general it will suffice for a beginning.

The problem confronting Charles H. Jones, now general manager of the South Shore Line, was to select an overhead system for 1,500 volts d.c. which would provide sufficient conductivity, was adaptable to the old pole locations, was flexible and at the same time permitted of high-speed operation. It should also be constructed of such materials as to insure maximum life



Messenger-Supporting Insulator Used on Ideal Section

under existing smoke and atmospheric conditions and should be cheapest from the standpoint of dollars per ampere-mile. The answer to the problem was a system embodying supporting cable, feeder and contact wires in the same grouping. In brief, the additional copper necessary to provide sufficient feeder capacity for the contact wires was not hung separately from the structures, but became a part of the overhead system. This was accomplished by proportioning the copper between contact wires and messenger wires in the catenary make-up. A skillful division of copper and steel in the main messenger wire made possible the selection of a cable of higher ultimate strength, with less sag to be considered and, as a result, a saving in hanger lengths, particularly on curves.

The original overhead system as built some eighteen years ago consisted of a ½-in. Siemens-Martin steel cable with a No. 0000 copper intermediate wire and No. 0000 steel contact or slipper wire. Rigid hangers of the "sister hook" type connected the main messenger with the intermediate wire, while the intermediate wire and steel contact wire were connected with cast bronze duplex clips. The latter were spaced equidistant between hangers and provided flexibility as well as a feeder connection. This system operated remarkably well, considering the speeds which were attained at the start of operation. However, as the railroad progressed and every one learned more concerning current collection and the problems of overhead maintenance a great difficulty became apparent. This appeared in the steel contact wire. It was not working out satisfactorily. Motormen complained of rust-stained windows and the shop men of too rapidly wearing contact shoes on the pantographs. The overhead man suddenly noticed an unusual amount of arcing and burning. This condition, however, continued until eliminated by the substitution of copper contact wire during the present rehabilitation. A like substitution was made by a number of Eastern roads about the same time. This combination continued in operation until recently, when it was replaced by the new overhead.

New Overhead System

Owing to the soundness of the wood poles and the added expense of resetting for greater pole spacing, the old poles were considered adequate for most of the new construction. Having been previously reset in concrete, they were sufficiently secure to withstand the loads im-

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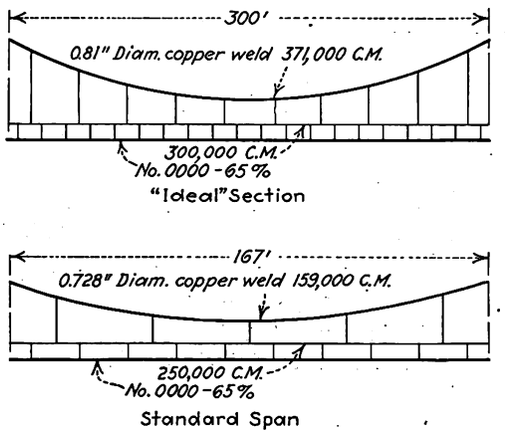
posed by the new catenary. Hence, only a certain amount of straightening was necessary before the pole job was considered complete. Bates steel trusses were attached to these old poles to span the two tracks and support the catenary. Suspension insulators were attached to these trusses by a clamping device which permitted of alignment with track centers after the messenger had been strung. Along the single-track section an adjustable type of galvanized bracket arm was used on each pole.

It is interesting to note that the original bracket arms, which were of T section and plain, were almost entirely eaten away with rust when removed. The new galvanized brackets will not be subject to this condition. The pole spacing on the old work was 167 ft. on tangents, consequently this became the normal span for the new work, with the exception of that portion of the track paralleling the New York Central Railroad, known as the Ideal section. This section has 300-ft. tower spacing and employs built-up galvanized Bates bridges. The general span design, however, is identical with that chosen for the replacement on 167-ft. spans.

In order to incorporate conductivity and strength in the same combination, a span design was selected as shown in the line diagram. The main messenger or supporting catenary wire was connected to the intermediate wire by means of a rigid hanger, while the contact wire was supported from the intermediate wire with a flexible hanger. The rigid hanger provided good electrical conductivity between main messenger and intermediate messenger, while the flexible hanger provided a relief from the "hard spots" during pantograph passage along the wire. Frequent feeder connections or bonds were placed between intermediate wire and contact wire to aid further in increasing the current-carrying characteristics of the line. A similar arrangement for inclined hanger construction was designed for the curve work, the plan of using short flexible hangers being continued through the curve.

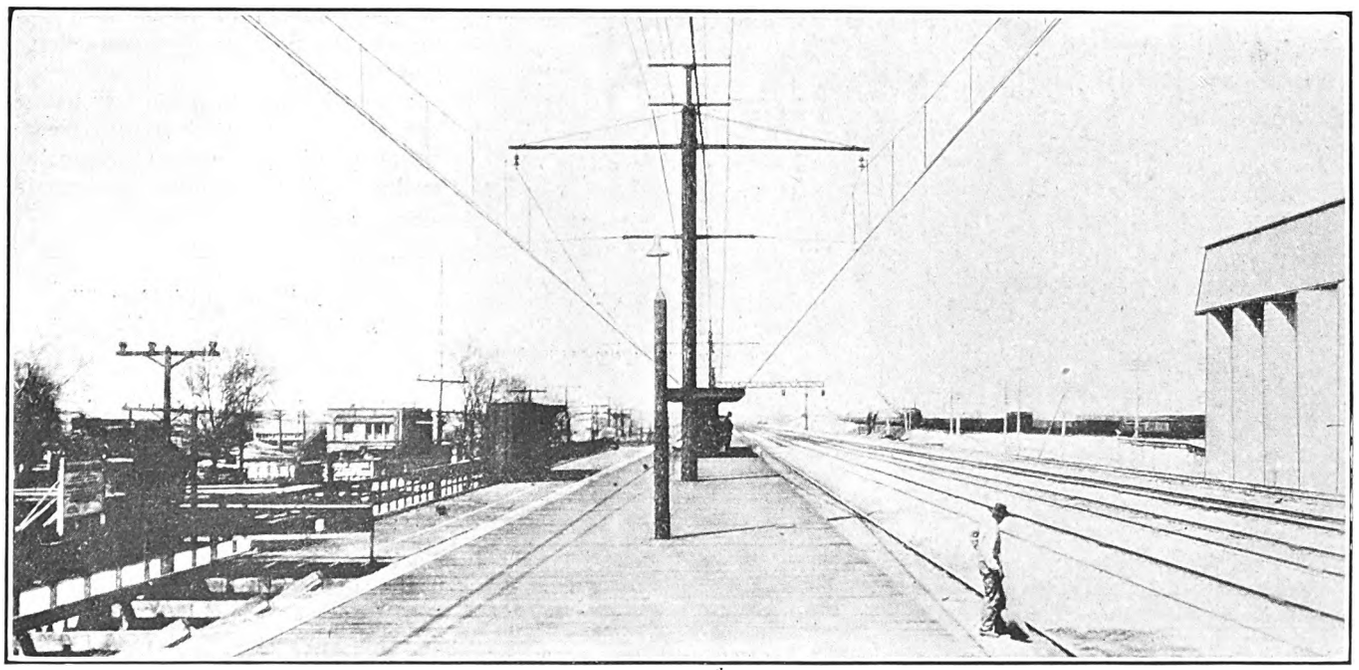
In addition to good collection characteristics, this form of catenary gave a very pleasing span as far as appearance was concerned and provided a uniform load of 0.7 lb. per foot on the pantograph.

This particular type of span design, in addition to providing good conductivity and mechanical strength, lends itself admirably to the replacement of the contact wire. With pantograph operation, the new contact wire may be strung while the old one is in service. This may be accomplished by suspending the new wire with the short flexible hangers alongside the old one. The old wire and hangers may then be removed after the new wire is properly sagged. It is even possible by a slight change in curve hanger design and a resagging of main messenger wire to add a second contact wire in case load conditions materially increase.



At Top, Ideal Section Span. Below, Standard Span

Insulation on the bracket arms was similar to many other existing 1,500-volt d.c. lines. However, the insulation on the steel towers in the Ideal section was of a somewhat new design. This insulator, which has had a long field record, was of the two-piece design and provided a good factor of safety in case of breakage of one part or in case of an extremely high inductive voltage from the adjacent high-tension line. A saddle casting formed the cap and the main messenger rested in this saddle. Messenger anchorages were placed at approximately 1-mile intervals. The arrangement used was that of dead-ending direct to the steel truss of a bridge through high-strength ball-socket insulators.



Illinois Central Right-of-Way Over Which Passengers Are Carried from Kensington to Randolph Street, Chicago

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Maintenance Notes

Effective Means of Supporting Armature Coils

WHILE insulating armature coils on taping machines the operator should have coil hangers on both sides. Those on one side support the coils before they are taped and those on the other hold the finished coils. A convenient arrangement of hangers, which can be shoved under the table out of the way when not in use, is incorporated in the equipment of the new electrical repair shop of the Brooklyn-Manhattan Transit Corporation. As shown in the accompanying illustration, the hangers consist of 3-ft. lengths of 1¼-in. iron pipe fastened to the underside of the table on each side of the operator. Into each length of the supporting pipe is a piece of ¾-in. pipe on which the coils are hung. The ends of the small pipe which support the coils are provided with bushings, so that there are no sharp edges, and in order to prevent the pulling out of the pipe entirely the larger pipe is fitted with a bushing which closes in the end opening sufficiently that the bushing on the end of the ¾-in. pipe cannot pass through.

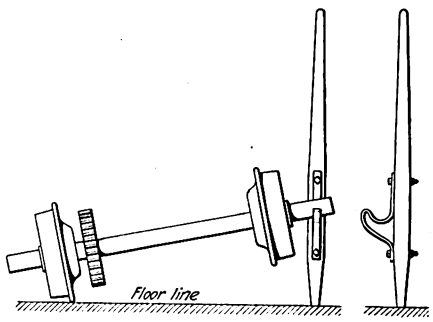
In a shop like this, all of the appointments of which are cement or metal, this construction will harmonize particularly to bring out a pleasing appearance and also provide a most convenient arrangement.

"A.E.R.A."
"A"dvocates "E"xpert, "R"egular "A"ttention—to all details in the upkeep of your equipment.

Benches on Which Taping Machines Are Operated in the Shops of the Brooklyn-Manhattan Transit Corporation Have Pipe Supports on Each Side for the Armature Coils That Can be Shoved Underneath When Not in Use

Handling Wheels by a Wheel Stick

MOVING a pair of wheels from one location to another is very easily accomplished by means of a wheel stick as used by the New York Railways. This stick is made of a piece of 3-in. x 4-in. oak about 4½ ft. long upon which is mounted a bearing made of ⅜-in. x 2½-in. flat iron.



Moving Pair of Wheels with Wheel Stick. At Right, Side View of Wheel Stick

The center of this bearing is located so that when placed under the journal end of the axle it will raise one wheel about ½ in. off the floor, thus permitting the wheels to be swung to any desired angle.

From the bottom of the bearing bracket the stick is tapered down to about 2 in. x 2 in. and from the top of the bracket it is rounded and tapered to permit of a good hand grip.

This stick will prove a very useful tool where a pair of wheels are to be moved about the floor and no immediate lifting facilities are available.

"All's well that's oiled well"
Is the tale your bearings tell.

Round Soft Steel for Truck Repairs

FAILURES in truck members are now repaired in the shops of the Portland Railroad, Portland, Me., with round soft steel rod. Diameters of ⅞ in. or ⅞ in. are frequently used for this purpose. The round lengths are electrically welded to the metal of the truck following the welding of

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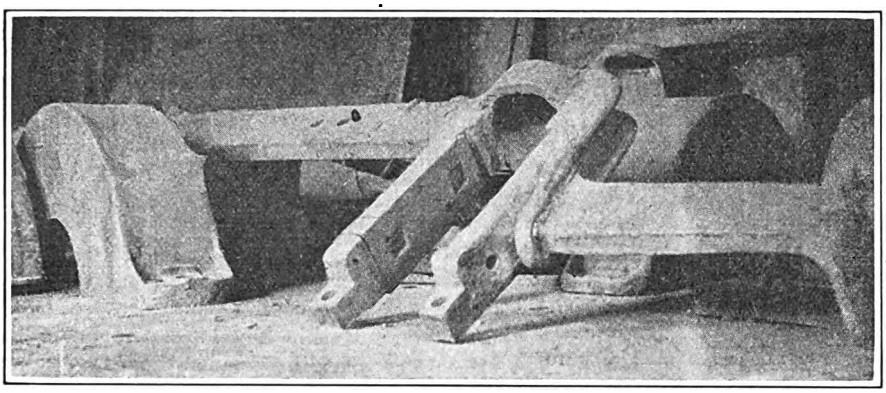


Using Soft Steel in Repairing Truck Failures

the actual section which had failed. Thus the new metal assists in holding the members in position and absorbs much of the shock which would otherwise be transmitted to the repaired part.

Kinks from Decatur, Ill.

Earnest Efforts and Modern Methods Bring Satisfactory Savings on the I.T.S.

CAMPAIGNING in the direction of systematizing and correlating work in the shops of the Illinois Traction System, coupled with effort to select shopmen carefully and provide them with pleasant working conditions, has been bringing results, according to the brief of the company in the 1926 Coffin Award contest. Time-saving devices used in the shop include such innovations as intercommunicating telephone systems and development of special machinery and devices in the air brake, blacksmith, electric and painting departments. In addition to cutting down the time required for the several operations of car maintenance and construction there has been an intensive study of reclamation.

By the use of a mechanical separator in the foundry, bits of iron and steel which are removed from brass borings and which were formerly sold at from 3 to 4 cents a pound are now used over again. The resulting saving amounts per pound to from 4 to 5 cents. Compressor heads which formerly were junked are now repaired at a cost of 40 cents by the use of special tools. This results in a saving of $14 for each compressor head thus salvaged. Slides for Miller trolley shoes are built up for 43 cents, as compared with the previous cost of $1.75 for a new slide. Cast steel wheels formerly considered too hard for turning are now turned in the company's shop, and wheels once scrapped for flat spots are now again made available for service.

Car axles which have become worn at the journal are built up by the welder and used again. Gear cases costing $48 each and frame heads costing $50 are saved from the scrap pile by a special method recently developed. Car axles worn to condemning limits but showing no structural flaws are treated and turned down to smaller sizes.

A system of ventilation for the GE-73 motor has been worked out by means of which the capacity of the motor has been increased 66 per cent. The capacity of trolley poles and trolley bases has been increased by running heavy cable in shunt with these parts.

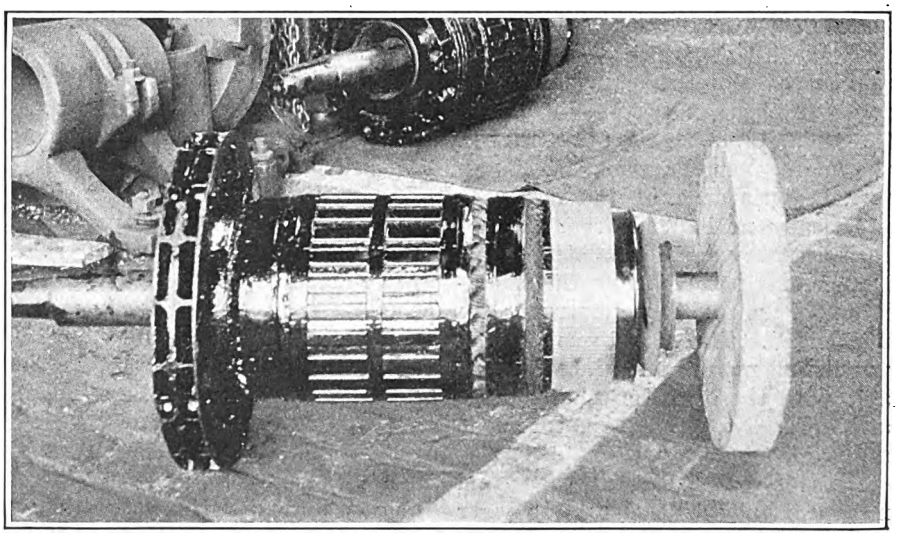
Pull rods and equalizer bars are now made from one piece of metal. No welding is permitted in these pieces and the breakage of these parts has been practically eliminated. Headlight switches have been given a uniform location and so placed that the motorman need not take his eyes off the right-of-way to operate the switch. Large lights of opalescent glass in the top outside sash have been split and a metal mullion has been inserted. This has meant that the number of lights of this kind which have been broken has been greatly reduced.

The composite result of this campaign is shown by the following comparison: During the twelve months ended April 30, 1926, there was a total of only 391 car failures on the main division for 6,148,240 car-miles, or an average of one car failure for 15,720 car-miles. This compares with an average of one failure for 13,016 car-miles for the previous three years, and of one car failure for 8,804 car-miles for 1920—five years ago. Incidentally, during the past eighteen months all of the regularly operated passenger equipment and 800 of the freight cars have been put through the paint shop.

End Block Used to Protect Armatures from Injury

ARMATURES with a construction as used with the GE-264 or Westinghouse 508 motors have a ventilating fan at the end. As this housing is of considerably larger diameter than the armature core there is danger of damaging the commutator or small end in handling.

In order to keep the small end of such armatures off the floor, Ernest Lunda, master mechanic of the Grand Rapids Railway, fits these types of armatures with a circular wooden block. The diameter of this block is 1 in. less than that of the ventilated end housing, so that in



Keeping the Small End of Armatures Off the Floor by Use of a Wooden Block Support

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rolling the shaft has a tendency to work into the block rather than out of it. The blocks are 2 in. thick.

New Equipment Available

Dust Kept from Carbon Brushes of Railway Motors

WHEN self-ventilation was incorporated in railway motor design some years ago it resulted in a somewhat shorter life of the brushes, brush-holders and commutators than in the totally inclosed types, due to additional wear caused by dirt. Although this condition was considered undesirable, it was accepted by railway operators because of the advantages of reduced weight per horsepower and the increased ratings possible with a ventilated motor of specified dimensions.

Several improvements have been devised by engineers of the Westinghouse Electric & Manufacturing Company in order to overcome the disadvantages. The closed front brush-holder and, later, the dust cap holder, which totally inclosed the carbon except the contact surface, were brought out. Further study and experimentation have resulted in the conception of a dual ventilation scheme. An experimental type motor, No. 508, with dual ventilation, was placed in service, and as a result of the satisfactory operation this dual ventilation will soon become a feature of all standard motors of 25 and 35 hp. rating.

Dual ventilation is obtained by having a baffle inside the frame which separates the commutating mechanism from the coils in the main portion of the frame. The air is taken in through two inlets, one in the commutator housing, the other in the main frame casting. The external appearance of the motor is practically unchanged from that of the ordinary self-ventilated type. Dimensions pertaining to the installation of the motor on car trucks are unchanged. The armatures of dual ventilated motors are interchangeable with those in the other motors as before. No special armature coils are required.

Records of brush mileage and measurements of commutator wear in the motor under test indicate that the life of these parts as affected by wear due to dirt is four times the life of similar parts in the ordinary self-ventilated motor of the same type.

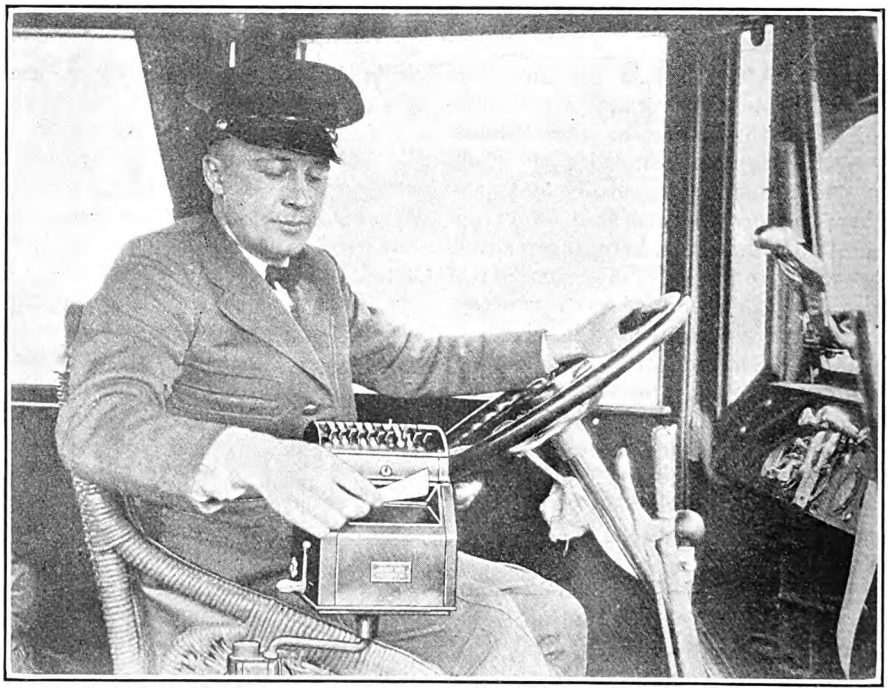
Ticket Printing and Registering Machine

FROM 1 cent up to $99.99 any amount may be registered by the No. 79 Ohmer ticket printing and auditing machine which has recently been announced by the Ohmer Fare Register Company of Dayton, Ohio. A ticket is printed and issued for the amount desired and at the same time a duplicate record of the data which are printed on the ticket is also printed on the day's report within the machine. The machine may be mounted upon a bracket or may be carried by the operator by means of a belt and shoulder support. It weighs but 10 lb. and measures 6½ in. x 6½ in. x 8 in. high.

An earlier form of this machine was illustrated in this paper for Dec. 19, 1925, page 1079.

The machine was designed to give complete protection against manipulation and the usual losses due to carelessness and dishonesty. Ticket fares, transfers, interline tickets, mileage and all paper fare mediums receive the same protection as do cash fares. It is also possible to issue round-trip tickets with the machine, one ticket being issued to the passenger for the immediate ride and being taken up as the passenger leaves the car, while the second ticket, marked R.T., is given to the passenger for collection by the return operator.

When taking his car or bus the operator must place his identification key in the machine before he can operate it. This prints his number on the daily report opposite the record of each ticket issued. Pulling out this key locks the machine. The operator issues the first ticket to himself with fare designation in blank and holds this ticket. All tickets are lifted as passengers leave the car or bus and are turned in to the office with the day's collection, which should balance with them. An inspector entering the car may examine any ticket to see whether the consecutive number is higher than that issued by the conductor to himself, thus determining whether the ticket is one that has been picked up from the floor or one that has been held out from a previous settlement with the office.



Each Ticket Issued by the Conductor Bears Complete Data Printed on Its Face While the Same Information Is Listed on the Day's Record Inside the Machine

The No. 79 Ohmer ticket printing and auditing machine is made in four types as follows:

79-O—To record up to nine zones and with a maximum cash capacity of 99 cents.

79-A—To record up to 99 zones and $9.99.

79-B—To record up to 999 zones and $9.99.

79-C—To record up to 999 zones and $99.99.

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Association News & Discussions

Iowa Railway Operators Convene

Interspersed with Shop Talks and More General Subjects Was the Annual Convention of the Operators' Section—Talks on Grand Rapids and an Actual Demonstration of Motor Bus Oil Dilution Were Features

WELL thought out papers and addresses followed by a lively discussion constituted the serious side of the two-day convention at Omaha of the Operators' Section of the Iowa Electric Railway Association held Nov. 17 and 18. The banquet on the evening of the first day was both of a serious and entertaining nature. Thorne Brown delivered an address that depicted the railway situation viewed from his recent years as railway commissioner of Nebraska. The entertainment following the address was produced by songs and other music by some of the talent known to the radio world through stations WOAW, Omaha, and WOC, Davenport.

The entire program was well up to the standard expected by Chairman John Sutherland. After "good" Mayor James Dahlman presented an address of welcome at the opening session, the meetings were turned over to regular business.

L. J. DeLamarter, president and general manager Grand Rapids Railway, Grand Rapids, Mich., prepared a paper which was read by J. W. Knecht, general superintendent of the same company. In this paper were set forth some of the facts of the recent Grand Rapids success with new cars. An abstract will appear in a future issue. Mr. Knecht added much information to show that increased revenue as well as reduced expenses have followed the steps of progress taken by the Grand Rapids company in recent years. On lines equipped with the 27 new cars recently purchased an increase in gross revenue of 2.93 per cent has been experienced as against a decrease of 1.22 per cent for the same period on lines having old cars. Total operating expenses for the property month by month since the new cars started have been reduced this year from last as shown in the table on page 972. -The results were analyzed to show that these reductions were obtained in maintenance, power, and other departments as well. Old cars average about 3.22 kw.-hr. as against 2.10 kw.-hr. per car-mile for the new cars. The first three sample cars weighed about 25,000 lb. each. The new lot of 27 weigh 29,500 lb. apiece.

In discussion Mr. Knecht spoke of the continued advertising done in papers, talks, special stunts and the company paper, *Trolley Topics*.

P. G. Swars, Westinghouse Electric & Manufacturing Company, in discussion stated that marked improvement could be made on many systems by closer attention to maintenance. In particular the noise arising from the overhead trolley could be reduced to the great advantage of the car operation. C. M. Feist, master mechanic Sioux City Service Company, told of a shock absorber that he had built for one of the Sioux City cars that has greatly improved its riding qualities.

Leonard C. Donohoe, chief clerk motor carrier department, Board of Railroad Commissioners of Iowa, in a paper on the regulation and development of motor carriers in Iowa, gave much data which present an excellent picture of the bus situation in Iowa from the standpoint of the railway commission.

The first Iowa motor carrier law was enacted by the 40th General Assembly and became effective on July 4, 1923. It lived less than two years, but during that time several changes were made that formed the background for the present law. This latter was passed by the 41st General Assembly and became effective on April 17, 1925, and is still in effect. It provides for the assessing of taxes and penalties against motor carriers and for the collection and distribution of them. The tax provided is 0.25 cent per ton-mile for vehicles equipped with pneumatic tires and 0.50 cent per ton-mile for motor vehicles equipped with solid tires. Although the rate of taxation as provided by the present law is twice the rate provided by the old law, the present law requires motor carriers to pay the tax only on the actual operations, whereas the old law, in providing the manner of assessing the tax against passenger motor carriers, provided that "In no event, however, shall the number of miles operated be considered as less than the number of miles required to be operated to maintain its filed schedules."

Twenty per cent of all moneys collected is for the use of the board in administering and enforcing the provisions of the law and the regulation of motor carriers, and 80 per cent of such moneys is allocated each month to the various counties in the proportion that the number of ton-miles of travel in the respective counties bears to the total number of ton-miles of travel within the state. The money allocated to the counties is for the use of the county boards of supervisors in maintaining and repairing the highways used by motor carriers.

The board is given power to fix or approve rates, fares, charges, classifications, and regulations pertaining thereto; to regulate and supervise the accounts, schedules, service and safety of operations of each motor carrier; to prescribe a uniform system and classification of accounts; to require the filing of annual and other reports, and to supervise and regulate motor carriers in all other matters affecting the relationship between such carriers and the traveling and shipping public.

It is also declared unlawful for any motor carrier to operate without first having obtained a certificate of convenience and necessity. Before such a certificate can be issued, the board is required to hold a public hearing and make a finding that the service proposed will promote the public convenience and necessity.

What the railway industry is doing to meet changed conditions was the subject discussed in a paper by E. W. Miller, general superintendent Des Moines City Railway. The several subjects discussed by Mr. Miller will be abstracted in a future issue. It was brought out that there had been a special wheel designed in Des Moines that would chip or scoop ice and snow that had become packed in the rail slots.

Standard for Pull-ins Needed

All through the meetings the question of pull-in records were discussed. The figures offered by different properties varied over a very wide range from 4,000-5,000 car-miles per pull-in up to 20,000 car-miles per pull-in reported by Des Moines. It was pointed out that no standard for pull-ins had ever been determined and hence relative figures meant nothing. Reference was made to figures reported this spring as high as 98,000 car-miles per pull-in for a Southern property.

Much valuable information pertaining to motor bus lubrication was given in a talk by Major Parker of the Standard Oil Company, who differentiated between "road" and "shop" troubles of lubrication. Most road troubles arise from excessive oil consumption, generally resulting in dilution of the crankcase oil.

Thinning out of oil becomes more noticeable with distance traveled and generally increases with improper combustion of the gasoline used; too rich a mixture, often caused by excessive use of choke; operation at too cool a temperature; and poor fuel having too large a component that will not vaporize below 450 deg. F. Engines operate most efficiently at about 180 deg. temperature of cooling water and should never be allowed to drop below 130 deg. Less dilution will result in operation at temperatures near 180 deg. than at lower points.

Major Parker demonstrated the Sleigh dilution testing method. From a 100-c.c. sample of oil removed from a motor truck after 800 miles of running about 15 c.c. of gasoline was removed, after heating and condensing the gas boiled off. Then by mixing

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some Fuller's earth with the remaining oil the mass was filtered and clear oil was recovered.

ELECTRIC RAILWAYS FROM THE ECONOMIC STANDPOINT

Thorne Brown faced frankly the electric railway situation as he sees it in relation to other utilities. For years he has been on the Nebraska State Railway Commission and for a considerable part of this time its chairman. At present Mr. Brown is industrial commissioner of the Omaha Chamber of Commerce.

The telephone industry, according to Mr. Brown, is the only natural monopoly, as every user adds to the potential service possible to every other user. The telephone service does not begin to cost what it is worth. Likewise the gas rates of $1.10 to $1.25 per thousand cubic feet are not up to what the traffic will bear. The electric light and power companies have always had potential competition in the formation of public or municipally-owned systems, and fortunately because of the growth of this industry it has been possible to offset the dwindling purchasing power of a dollar.

Electric railways, however, are facing the ever-increasing use of private transportation and are, according to the speaker, a semi-decadent and semi-obsolete business. With the exchequer constantly decreasing it becomes economically impossible to increase fares to offset the declining net revenues. The reason for this seems beyond the control of operators since they cannot cut overhead to a great extent and likewise cannot reduce the service.

While the parking problem and street congestion in cities of 500,000 population and over seem to have checked the dwindling revenues to some extent, this is not true of smaller communities. The picking up habit of many drivers in small cities is not a hostile act against the railways.

Mr. Brown stated that the transportation system of cities was necessary and that in his opinion buses were not the answer. The facts boiled down to the statement that the railways had not successfully sold their service. They have not reached rates as yet to equal the value of the service, but an economic limit apparently exists beyond which increased rates will not produce proportionate increased revenue.

City fathers have generally failed to grasp the situation and still insist on unreasonable taxes and burdens for no reason except that they once existed.

Reluctantly Mr. Brown advanced a theory that public ownership was the solution, not because he favors government operation, but only through that channel can municipal authorities be brought to realize the problems of the transportation companies. He states frankly that poorer service will ensue, less courtesy will be shown under municipal operation; but this is the price that the public will have to pay for the apparent inability to create conditions of fairness and common sense that will permit private capital to continue to finance and operate city transportation.

At the outset Mr. Brown said he would not give a frivolous address, since he saw no frivolity in the business. It takes courage to operate a railway today. A railway operator is like a farmer in many respects, but even the farmer has the sympathy of the people.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Dec. 2-3—Highway Research Board—Division Engineering and Industrial Research, annual meeting. National Academy of Sciences—National Research Council Building, Washington, D. C.

Dec. 3—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

Dec. 6-9—American Society of Mechanical Engineers, annual meeting, New York City, Engineering Societies Building.

Jan. 6-7—Midwest Electric Railway Association, midwinter meeting, Mayo Hotel, Tulsa, Okla.

Jan. 10-14—American Road Builders' Association, convention and road show, Coliseum, Chicago, Ill.

Jan. 25—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.

Jan. 26-28—Association of Equipment Men—Southern Properties—Memphis, Tenn.

Feb. 3-4—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.

STOREKEEPER PLAYS IMPORTANT PART

Frank McDonald, superintendent of purchases Waterloo, Cedar Falls & Northern Railway, gave an excellent analysis of the good that can arise from proper co-operation between department heads and the purchasing agent. Extensive work planned by the company should be brought to the purchasing agent's attention so that he may have adequate time to locate proper materials and wisely to plan their purchase. The purchasing agent who buys on price without regard to quality or the use to which the materials will be put does an injustice to his company and the manufacturer as well.

When materials require extensive labor in their installation it oftentimes proves more economical to use a high grade of material when longer life can be obtained.

According to John Duncan, master mechanic of the Fort Dodge, Des Moines & Southern Railroad, his is one of three roads in Iowa to be living up to the rules of the bureau of locomotive inspection. The bureau requires very rigid inspection of air-brake equipment.

Frosting of windows in the locomotive cabs has been troublesome in winter. This difficulty has been corrected by allowing air to blow against the inside of the window through a small 1/64 in. opening. This small current of air prevents frost forming and likewise sleet or snow and is even successful in breaking up large drops of rain so that a clear vision is obtained.

William G. Brooks, Westinghouse Electric & Manufacturing Company, decried the practice of manufacturing carried on in many repair shops. He advised the use of labor-saving tools and equipment such as bearing presses, car-body jacks and chucks designed for centering bearings. Mr. Brooks called attention to the fact that maintaining is 30 per cent material and 70 per cent labor and that it made for far greater success to perform more work in the maintenance shop than to wait until the equipment broke down and went to the repair shop. He commented favorably on the maintenance methods of the Omaha & Council Bluffs Street Railway and stated that it was maintaining cars for 2.23 cents, whereas the average for twenty roads of similar size has been reported as 3.78 cents per car-mile.

Unfortunately Henry Cordell, master mechanic Chicago, North Shore & Milwaukee Railroad, because of sickness, was unable to attend the meeting and deliver the paper for which he was scheduled.

The meetings were attended by 101 delegates and several guests. Fifty-three of the delegates were operating men from the Iowa and Nebraska properties and 48 were manufacturers' representatives.

Maurice Welch, superintendent and traffic manager Waterloo, Cedar Falls & Northern Railway, was named chairman of the executive committee, with directors as follows: R. W. Herrick, superintendent Sioux City Service Company; F. S. Welty, assistant general manager Omaha & Council Bluffs Street Railway; E. W. Miller, superintendent of transportation Des Moines City Railway; A. H. Smith, Dubuque Electric Company. Manufacturing representatives on the executive committees are: W. F. Weil, sales representative American Brake Shoe & Foundry Company, Chicago; H. R. Sampson, district sales manager Ohio Brass Company, Chicago; K. A. Hills, manager Davenport office General Electric Company; G. J. Hart, sales engineer Westinghouse Electric & Manufacturing Company, Des Moines.

John Sutherland, master mechanic Tri-City Railway, was re-elected for his fourth term as chairman of the convention.

SAVINGS IN OPERATING COST WITH NEW CARS ON GRAND RAPIDS RAILWAY

	Reduction, 1926 below 1925			
	July	August	September	October
Maintenance	$1,474	$2,784	$5,883	$4,881
Power	767	1,102	1,217	1,480
Total operating saving	4,295	9,143	10,046	13,450

Midwest Annual Meeting in Tulsa Jan. 6-7

DATES for the midwinter meeting of the Midwest Electric Railway Association have been set for Jan. 6 and 7 by the executive committee. The meeting will be held at the Mayo Hotel, Tulsa, Okla. The banquet will be on Thursday evening, the first day of the meeting.

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New York Railroad Club Holds Electrical Night

ELECTION of officers and other business of the annual meeting of the New York Railroad Club was taken care of Friday night, Nov. 19, in connection with the club's electrical night. The general topic for discussion was "The Relation of Transportation to Electrical Development." W. S. Jones, president of the club, presided and the subject was discussed from different viewpoints by F. Darlington, assistant vice-president Westinghouse Electric & Manufacturing Company, by J. P. Jackson, assistant vice-president New York Edison Company, and by J. C. Parker, vice-president in charge of engineering Brooklyn Edison Company.

Motion pictures furnished by the General Electric Company were presented to illustrate the various stages of manufacture of Mazda lamps and to illustrate what a single drop of water contains.

The new officers elected were: President, William G. Gove, superintendent of equipment Brooklyn-Manhattan Transit Corporation; first vice-president, Eliot Sumner, superintendent of motive power Pennsylvania Railroad System; second vice-president, George Le Boutillier, vice-president Long Island Railroad; third vice-president, J. M. Davis, president Lackawanna Railroad; treasurer, David W. Pye, president Tuco Products Corporation; executive member for three years, Colonel Charles Hine, consulting railroad expert, New York City; member of finance committee for three years, George T. Cooke, president American Railway Products Company; Arthur N. Dugan, vice-president Bronze Metal Company, was elected to fill out the unexpired one-year term of John T. Neff, who resigned as a member of the finance committee.

Industry Organizes for Corporation Tax Relief

REPRESENTATIVES from a large number of national manufacturing, transportation and commercial organizations in various lines of industry met in conference in Washington, D. C., on Nov. 10 to consider the formulation of a definite program for corporate tax relief to be requested of the incoming Congress. This conference was called by a committee on tax co-operation composed of the following: James A. Emery, counsel National Association of Manufacturers, chairman; R. P. Hazzard representing National Association of Boot and Shoe Manufacturers, James Craig Peacock representing American Cotton Manufacturers Association, Harry L. Gandy of the National Coal Association, William S. Bennet representing the National Lumber Manufacturers' Association, McKinley W. Kriegh of the American Mining Congress, and Fayette B. Dow of the National Petroleum Association. C. S. Duncan, economist Association of Railway Executives, was also added to the permanent committee organization to represent the transportation industry. Leslie Vickers, economist, attended the conference for the electric railway industry.

A presentation of the history and facts of corporate income taxation was made by James A. Emery, Counsel National Association of Manufacturers, who was elected chairman of the conference. By invitation, the under-secretary of the Treasury, Garrard B. Winston, made an informal statement of the Treasury viewpoint on taxation.

Thereafter the session was devoted to a discussion of corporate tax relief in the light of existing information and the conditions to be anticipated in a short session of the Congress. On motion of William Bennet of Chicago the following declaration was adopted:

That the present corporation income tax rate represents an invidious and inequitable discrimination against that form of business as distinguished from the individual and the partnership. The rate has been increased where all other rates have been reduced. The chairman is directed, on behalf of the conference and all co-operating associations:

1. To petition the ways and means committee for a public hearing before the meeting of Congress on the subject of corporate income tax relief.
2. That Congress be urged to repeal in the short session:
   (a) The additional one-half of 1 per cent levied on corporate income and becoming effective in the calendar year 1926.
   (b) Repeal the additional one-half of 1 per cent made effective for the calendar year 1925, since, from the public statement of the Treasury, one-half of 1 per cent additional for 1925 is unnecessary and the additional revenue to be derived from the further one-half of 1 per cent in 1926 will not be required.
3. That, in addition to this obviously justified permanent relief, Congress be asked to afford such further temporary and permanent relief as the fiscal circumstance of the Treasury may justify.
4. That the conference, through its executive committee, present to the joint congressional tax committee created by the revenue act of 1926 further proposals for reform of the present inequitable system of corporate taxation.

The conference requested the present National Committee on Tax Co-operation to become a permanent committee and act as the executive committee for the execution of the policies of the conference. That committee was further directed to extend an invitation to all interested organizations to join in the execution of the policy adopted.

Automotive and Rail Men Stage Transportation Meeting

Co-ordination of Highway Freight and Passenger Traffic with Existing Rail Carriers Discussed—Design and Maintenance Problems Receive Attention

SUBJECTS of common interest to rail and highway transportation men occupied the attention of approximately 400 members and guests of the Society of Automotive Engineers at its National Transportation and Service meeting held in Boston Nov. 16-18. A full program of papers covering in general the subjects of terminal freight handling, use of containers, co-ordination of rail and highway traffic, and including a discussion of design and maintenance problems incident to the development and operation of both freight and passenger highway vehicles, occupied attention during the meetings.

A resolution was adopted recognizing the necessity of general agreement by transportation men on the fundamentals of the relationship between highway and rail transport facilities. To define these fundamentals a joint committee was proposed, consisting of representatives from the Society of Automotive Engineers, the National Automobile Chamber of Commerce and the Railroad Motor Transport Conference.

Exception to the popular conception of the term co-ordination was taken by Prof. Lloyd Wilson of the Wharton School of Finance and Commerce, Philadelphia. There is no valid basis, his paper held, for the current belief that co-ordination involves the ownership or domination of the motor by the older instrumentalities of transportation—the steam and electric rail lines.

Practical features of bus operation were outlined by Arthur P. Russell, president New England Transportation Company. In working out its policy of protecting the passenger business of the New York, New Haven & Hartford Railroad, the bus business has been built up until the present total of rail-bus traffic equals that carried on the rails in 1923 plus the normal expectation of increase. Mr. Russell said that about 265,000 passengers were now being carried each month, and 475,000 bus-miles operated. The cost of operation averages 29 to 30 cents a mile for the first nine months of this year. For maintenance about 10 cents a mile is spent, and for tires, 1.5 cents a mile. Fuel consumption is 5.7 miles to the gallon, and 56 miles is obtained to the quart of oil. These figures are for a fleet of 168 buses, all parlor cars except 27, which are semi-de luxe type.

The development of motor transport was compared with that of the steam railroads in the main banquet address, made by Prof. W. J. Cunningham, now of the Harvard School of Business Administration, but formerly an active railroad official. He urged as an essential of co-ordination a statesmanlike attitude by both automotive and rail groups, with a subordination of their private interest to those of the public. The competition of the motor vehicle was a healthy tonic, which has led the railroads to improve their service and equipment. Professor Cunningham said the bus operation of the Boston & Maine, New York, New Haven & Hartford, and the Great Northern Railroads was a move in the right direction. He believed the rails should take over bus service in their territory, under wise regulation.

Control of interstate motor carriers was discussed by Hon. David I. Walsh, recently elected to the United States Senate from Massachusetts. If convinced of its necessity, he promised to work for fair legislation. He pledged himself to promote the extension of the federal highway system and to help in removing the 3 per cent excise tax on automobiles which has hung over from the recent war.

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Standardization on one type of bus for each class of service was recommended in a paper by G. T. Seeley, general manager Chicago Motor Coach Company, which in his absence was presented by F. C. Horner of the General Motors Corporation. Non-standardization has a far-reaching effect, according to Mr. Seeley's paper. Not only costs of maintenance and operation, but efficiency of maintenance, efficiency in service rendered and passenger revenue are influenced when many different makes are used. In discussing this paper the possibilities of a small bus, ten to fifteen passengers capacity, were brought out by C. D. Smith, general manager Beaver Valley Traction Company. This could be operated at an adequate fare to give private automobile comfort and make house-to-house solicitation of passengers. Edward F. Loomis, National Automobile Chamber of Commerce, disagreed with a statement by Mr. Seeley that at present there are few locations in which new bus installations can be made. There are many opportunities in the South as more good roads are built, also on routes where rail service is too expensive. Very few cities have given an intelligent trial to bus transportation and many more vehicles can be used as its place is better appreciated.

New Officers for Pennsylvania Association

AT A MEETING of the executive committee of the Pennsylvania Street Railway Association held in Philadelphia on Nov. 19, the resignations of Frank Phillips as president and William Bell as vice-president were received and accepted. To fill the vacancies thus created new officers were elected, as follows:

President, Jilson J. Coleman, vice-president and general manager Scranton Railway; vice-president, H. L. Mitchell, vice-president West Penn Railways; members of executive committee, T. Fitzgerald, vice-president Pittsburgh Railways, and H. F. Dicke, vice-president Lehigh Valley Transit Company.

Safety Council Elects Officers

MORE than 5,000 people drawn from twenty industries attended the fifteenth annual congress of the National Safety Council, held in Detroit Oct. 25 to 29. The electric railway section was represented by a large delegation. Many constructive methods were suggested and plans for future activities formulated. The following men were elected to hold office in the electric railway section during the ensuing business year:

Chairman, R. W. Emerson, vice-president general manager Cleveland Railway.

First vice-chairman, in charge of motor bus operation, A. W. Koehler, superintendent of accident prevention the Milwaukee Electric Railway & Light Company.

Second vice-chairman, in charge of interurban transportation problems, H. K. Bennett, safety manager United Electric Railways, Providence, R. I.

Third vice-chairman, in charge of urban transportation problems, E. K. Eastham, safety director United Railways of St. Louis, St. Louis, Mo.

Secretary, J. J. Connors, safety director Georgia Railway & Power Company, Atlanta, Ga.

American Association News

Cleveland Gets 1927 Convention

American Electric Railway Association Executive Committee Votes Unanimously to Return to Cleveland—Adequate Car Exhibit Considered of Vital Importance to Industry

BY UNANIMOUS vote, the executive committee of the American Electric Railway Association decided to return to Cleveland for the 1927 convention, provided satisfactory arrangements can be made with the Cleveland convention committee. The date was fixed for the week of Oct. 3-7. This action followed a report made by H. B. Potter, chairman of the committee on convention location, after a careful study had been made of the facilities offered by Atlantic City and Cleveland.

The advantages offered by Cleveland from the standpoint of insuring an adequate and representative car exhibit were a large factor in this decision on convention location. The opinion was strongly expressed that a large and representative car exhibit is of utmost importance to the industry at this time and overshadows any other single element in determining the location for next year's meeting. Both the executive committee and the location committee made their decision after a very exhaustive study of the situation. J. H. Alexander, president Cleveland Railway and also chairman of the Cleveland convention committee, was invited to appear before the executive committee to explain the additional facilities that would be made available at Cleveland for the coming year. He explained that a new north wing is to be added to the Cleveland Auditorium. This will be an addition to the main auditorium building, and will be equipped with meeting rooms of various sizes, sufficient to handle all of the meetings during the convention. Entrance to this new wing will be by the grand staircase leading down from the arena floor so that exhibit space in the exhibit hall below will thereby be made more desirable. Construction of the new wing will permit taking the American Association meeting room out of the west wing, where the bus exhibit was held. It is also expected that the west wing itself will be further enlarged.

New Hotel Buildings to Be Available

Three new hotel buildings are expected to be available before next October. These consist of an addition to the Hollenden, and the new Allerton and Auditorium Hotels. The latter will be located directly across the street from the Public Auditorium. Arrangements have also been made by the Cleveland convention committee to provide improved telephone facilities and a more satisfactory arrangement for hotel room reservations than was carried out this year.

Lack of proper facilities for adequately displaying electric railway cars at Atlantic City was one of the conditions which militated against that location for the next convention.

President Sawyer announced for the Charles A. Coffin prize committee that the award will be continued for 1927 and details of the competition announced at an early date. He reported a strong desire on the part of the committee in favor of recognition of more than one company by the Coffin award. The American Electric Railway Association committee is to meet with a similar committee of the National Electric Light Association and representatives of the Coffin Foundation to discuss this subject. The executive committee adopted a motion recommending that recognition be extended to more than one company in future contests.

J. N. Shannahan, national councillor representing the association on the United States Chamber of Commerce, strongly recommended an affirmative vote by the association on the various questions in Referendum No. 49 of the United States chamber on its taxation program. The secretary was instructed to communicate with electric railway member companies to urge that they use their influence in local chambers of commerce to assure affirmative votes on the questions in this referendum.

Management and Operation Committee to Broaden Functions

A letter from George H. Clifford regarding the work of the committee on management and operation was discussed. Mr. Clifford made certain suggestions for broadening the scope of this committee's activities, which received the hearty approval of the executive committee. It was decided to request Mr. Clifford to present his ideas personally to the Advisory Council at its next meeting in order that the cooperation of that body may be enlisted in working out the program suggested.

Leslie Vickers, reporting on the subject of taxation, announced that this committee is scheduled to hold a meeting on Dec. 10 at association headquarters. An advisory group of 40 members has been appointed to maintain contact with the progress of taxation legislation in various states. Mr. Vickers pointed out that local and state taxation are the primary points of attack for the committee since national taxation is a minor element in the load carried by electric railways. Mr Vickers also gave a brief outline of the activities of the National Association of Manufacturers, which held a meeting recently in Washington to organize a

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program for placing the subject of corporation tax relief before the ways and means committee in the coming session of Congress.

MANUFACTURERS PLAN BROADER CO-OPERATION

For the committee on co-operation of manufacturers, M. B. Lambert, vice-chairman, reported in the absence of Mr. Wickwire. Tentative plans contemplate broadening the scope of this committee's activities to include promotion of the development of electric railway cars and the stimulation of interest on the part of the industry in the advantages of modernized equipment. The committee also plans broadening its work so as to reflect more clearly the collective views of the manufacturers as a whole regarding current subjects before the industry.

Although the personnel of all committees has not been completed, a list of chairmen of the principal American Association committees was announced. The list, together with the tentative committee personnel of American and affiliated associations, is published later on this and following pages.

The next meeting was set for Friday afternoon, Feb. 4, in Toledo, Ohio, at the time of the annual meeting of the Central Electric Railway Association. Those present at the meeting included the following members and guests:

President, W. H. Sawyer, J. P. Barnes, J. H. Hanna, Barron Collier, E. P. Waller, M. B. Lambert, T. W. Casey, L. E. Lippitt, C. B. Proctor, H. L. Brown, S. J. Cotsworth, E. B. Meissner, G. A. Richardson, C. E. Morgan, B. A. Hegeman, Jr., Harry Reid, Thomas Finigan, C. R. Ellicott, T. A. Kenney, Edward Dana (representing J. V. Sullivan), J. W. Welsh, C. L. Henry, C. D. Emmons, J. N. Shannahan, F. R. Coates, J. H. Alexander, Thomas Langan, Charles Gordon, H. B. Potter, H. V. Bozell, Leslie Vickers, F. C. J. Dell, G. C. Hecker, J. W. Colton, Labert St. Clair.

Committee Appointments Announced

American and Affiliated Associations Make Selections for Handling the Work During Coming Year—Additional Appointments Will Be Announced Later

ORGANIZATION of committees of American Electric Railway Association and the affiliated Accountants', Claims, Engineering and Transportation & Traffic Associations is progressing rapidly. The Engineering Association committees are virtually all completed, save for a few acceptances which have not yet been received. Several of the American Association committees are complete and have organized, while invitations for the remainder are still being sent out. The same is true of the other associations.

A list of the committee members who have been chosen and who have accepted their appointments is given below. As indicated, in a number of instances additional appointments may be announced. More complete lists will published as the information becomes available.

American Association

CHARLES A. COFFIN PRIZE

W. H. Sawyer, president American Electric Railway Association, care of East St. Louis & Suburban Railway, East St. Louis, Ill., chairman.
James H. McGraw, New York, N. Y.
R. P. Stevens, New York, N. Y.

CONVENTION LOCATION

H. B. Potter, general manager United Railways & Electric Company, Baltimore, Md., chairman.
C. E. Morgan, New York, N. Y.
J. H. Alexander, Cleveland, Ohio.
G. B. Anderson, Los Angeles, Cal.
F. G. Buffe, Kansas City, Mo.
G. H. Clifford, Houston, Tex.
Edward Dana, Boston, Mass.
B. J. Fallon, Chicago, Ill.
H. B. Flowers, New Orleans, La.
Charles Gordon, New York, N. Y.
J. P. Griffin, Dallas, Tex.
D. W. Harvey, Toronto, Ont.
C. S. Hawley, Albany, N. Y.
A. L. Kasemeier, Winton Place, Ohio.
H. J. Kenfield, Chicago, Ill.
G. L. Kippenberger, St. Louis, Mo.
S. P. McGough, Chicago, Ill.
J. C. McQuiston, East Pittsburgh, Pa.
A. L. Price, Mansfield, Ohio.
A. J. Purinton, Atlantic City, N. J.
J. A. Ritchie, Chicago, Ill.
A. M. Robinson, Philadelphia, Pa.
L. W. Shugg, Schenectady, N. Y.
D. W. Snyder, Jr., Springfield, Ill.
S. B. Way, Milwaukee, Wis.
E. A. West, Salt Lake City, Utah.
Walter White, Cleveland, Ohio.

CO-OPERATION WITH MANUFACTURERS

E. F. Wickwire, vice-president Ohio Brass Company, Mansfield, Ohio, chairman.
M. B. Lambert, New York, N. Y., vice-chairman.
W. H. Boyce, Pittsburgh, Pa.
H. B. Doyle, New York, N. Y.
H. J. Kenfield, Chicago, Ill.
E. B. Meissner, St. Louis, Mo.
G. R. Rowland, New York, N. Y.
J. P. Sloan, New York, N. Y.
L. F. Stoll, New York, N. Y.
E. P. Waller, Schenectady, N. Y.

CO-OPERATION WITH MOTOR VEHICLE INDUSTRY

Lucius S. Storrs, managing director American Electric Railway Association, New York, N. Y., chairman.
R. P. Stevens, New York, N. Y., vice-chairman.
A. W. Brady, Anderson, Ind.
C. D. Emmons, Baltimore, Md.
E. W. Wakelee, Newark, N. J.

CO-OPERATION WITH STATE AND SECTIONAL ASSOCIATIONS

F. R. Coates, Henry L. Doherty & Company, New York., N. Y., chairman.
Complete personnel to be announced later.

DEPRECIATION

J. H. Hanna, president Capital Traction Company, Washington, D. C., chairman.
L. R. Nash, Boston, Mass., vice-chairman.
A. W. Brady, Anderson, Ind.
William Chamberlain, Cedar Rapids, Iowa.
F. W. Doolittle, New York, N. Y.
W. F. Ham, Washington, D. C.
A. S. Richey, Worcester, Mass.
C. E. Thompson, Highwood, Ill.

EDUCATION

Edward Dana, general manager Boston Elevated Railway, Boston, Mass., chairman.
J. S. Hyatt, Chicago, Ill., vice-chairman.
H. H. Adams, Chicago, Ill.
G. B. Anderson, Los Angeles, Cal.
A. H. Armstrong, Schenectady, N. Y.
W. H. Boyce, Pittsburgh, Pa.
W. H. Burke, Fort Worth, Tex.
J. A. Dewhurst, New York, N. Y.
M. B. Lambert, New York, N. Y.
R. J. Lockwood, St. Louis, Mo.
M. McCants, San Francisco, Cal.
F. H. Miller, Louisville, Ky.
H. H. Norris, Boston, Mass.
A. J. Rowland, Milwaukee, Wis.

FINANCE*

C. E. Morgan, vice-president and general manager Brooklyn City Railroad, Brooklyn, N. Y., chairman.
B. A. Hegeman, Jr., New York, N. Y., vice-chairman.
F. W. Doolittle, New York, N. Y.
T. A. Kenney, New York, N. Y.
*Personnel not complete.

HOOVER CONFERENCE

J. P. Barnes, president Louisville Railway, Chairman.
Complete personnel to be announced later.

INSURANCE*

P. E. Wilson, vice-president and secretary Cleveland Railway, Cleveland, Ohio, chairman.
H. B. Potter, Baltimore, Md., vice-chairman.
O. H. Bernd, Des Moines, Iowa.
A. C. Blinn, Akron, Ohio.
G. H. Bourne, New York, N. Y.
C. E. Brown, Napa, Cal.
W. C. Campbell, Chattanooga, Tenn.
N. H. Daniels, Boston, Mass.
F. M. Hamilton, Chicago, Ill.
A. D. Knox, New Haven, Conn.
F. H. Miller, Louisville, Ky.
J. H. Moran, Boston, Mass.
A. B. Paterson, New Orleans, La.
B. L. Tomes, Philadelphia, Pa.
F. J. Petura, New York, N. Y.
E. A. West, Salt Lake City, Utah.
*Personnel not complete.

MANAGEMENT AND OPERATION

G. H. Clifford, Southwestern district manager Stone & Webster, Houston, Tex., chairman.
Complete personnel to be announced later.

MEMBERSHIP

C. R. Ellicott, Eastern manager Westinghouse Traction Brake Company, New York, N. Y., chairman.
Complete personnel to be announced later.

MOTOR BUS DEPRECIATION

L. H. Palmer, vice-president and general manager Fifth Avenue Coach Company, New York, N. Y., chairman.
R. H. Pinkley, Milwaukee, Wis., vice-chairman.
M. W. Glover, Pittsburgh, Pa.
F. C. Horner, New York, N. Y.

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H. A. Johnson, Chicago, Ill.
I. A. May, New Haven, Conn.
G. H. Scragg, New York, N. Y.

MOTOR VEHICLE INFORMATION

R. P. Stevens, president Penn-Ohio Edison Company, New York, N. Y., chairman.
J. H. Alexander, Cleveland, Ohio.
C. H. Beck, New York, N. Y.
M. R. Boylan, Newark, N. J.
L. C. Bradley, Richmond, Va.
F. G. Buffe, Kansas City, Mo.
H. B. Flowers, New Orleans, La.
M. B. Lambert, New York, N. Y.
D. W. Pontius, Los Angeles, Cal.
Harry Reid, Indianapolis, Ind.
W. B. Tuttle, San Antonio, Tex.
E. P. Waller, Schenectady, N. Y.
S. B. Way, Milwaukee, Wis.

NATIONAL RELATIONS

Harry Reid, president Interstate Public Service Company, Indianapolis, Ind., chairman.
Frank Karr, Los Angeles, Cal., vice-chairman.
R. R. Bradley, Chicago, Ill.
A. W. Brady, Anderson, Ind.
C. D. Cass, Waterloo, Iowa.
G. H. Clifford, Houston, Tex.
Thomas Finigan, Chicago, Ill.
J. H. Hanna, Washington, D. C.
G. H. Harries, Chicago, Ill.
C. L. Henry, Indianapolis, Ind.
L. R. Nash, Boston, Mass.
Frank Silliman, Jr., New York, N. Y.
D. W. Snyder, Jr., Springfield, Ill.
F. H. Wilson, Cleveland, Ohio.

POLICY

R. P. Stevens, president Penn-Ohio Edison Company, New York, N. Y., chairman.
J. P. Barnes, Louisville, Ky., vice-chairman.
H. L. Brown, Mansfield, Ohio.
C. R. Ellicott, New York, N. Y.
L. H. Palmer, New York, N. Y.
J. N. Shannahan, Newport News, Va.

PUBLICITY*

Paul Shoup, president Pacific Electric Railway, San Francisco, Cal., chairman.
Barron Collier, New York, N. Y., vice-chairman.
E. J. Dickson, Providence, R. I.
Robert Dougan, Washington, D. C.
C. S. McCalla, Youngstown, Ohio.
M. P. Rice, Schenectady, N. Y.
A. C. Watt, New York, N. Y.
E. F. Wickwire, Mansfield, Ohio.
*Personnel not complete.

PUBLIC SPEAKING

Complete personnel to be announced later.

PUBLICATIONS

J. H. Hanna, president Capital Traction Company, Washington, D. C., chairman.

Complete personnel to be announced later.

RAPID TRANSIT

G. A. Richardson, vice-president and general manager Chicago Surface Lines, Chicago, Ill., chairman.
J. H. Alexander, Cleveland, Ohio, vice-chairman.
H. L. Andrews, Schenectady, N. Y.
W. B. Bennett, St. Louis, Mo.
Edward Dana, Boston, Mass.
J. S. Doyle, New York, N. Y.
S. E. Emmons, Baltimore, Md.
H. E. Ehlers, Philadelphia, Pa.
B. J. Fallon, Chicago, Ill.
Thomas Fitzgerald, Pittsburgh, Pa.
R. F. Kelker, Jr., Chicago, Ill.
E. J. McIlraith, Chicago, Ill.
W. S. Menden, Brooklyn, N. Y.
D. W. Pontius, Los Angeles, Cal.
F. H. Shepard, New York, N. Y.
C. E. Smith, St. Louis, Mo.
D. L. Turner, New York, N. Y.
James Walker, Chicago, Ill.

REVISION OF CONSTITUTION AND BY-LAWS

C. D. Emmons, president United Railways & Electric Company, Baltimore, Md., chairman.
J. H. McGraw, New York, N. Y., vice-chairman.
J. G. Barry, Schenectady, N. Y.
H. V. Bozell, New York, N. Y.
H. L. Brown, Mansfield, Ohio.
H. C. Clark, Newark, N. J.
F. W. Doolittle, New York, N. Y.
J. E. Hutcheson, Montreal, Que.
M. B. Lambert, New York, N. Y.
E. B. Meissner, St. Louis, Mo.
L. H. Palmer, New York, N. Y.
Harry Reid, Indianapolis, Ind.
G. A. Richardson, Chicago, Ill.
Paul Shoup, San Francisco, Cal.
R. P. Stevens, New York, N. Y.

SUBJECTS AND MEETINGS

H. L. Brown, secretary the Ohio Brass Company, Mansfield, Ohio, chairman.

Complete personnel to be announced later.

TAXATION

A. T. Davison, general counsel Third Avenue Railway System, New York, N. Y., chairman.
E. W. Wakelee, Newark, N. J., vice-chairman.
C. H. Allen, Chicago, Ill.
H. L. Geisse, Wausau, Wis.
J. P. Griffin, Dallas, Tex.
W. A. Jackson, Milwaukee, Wis.
D. J. Hennessey, Pittsburgh, Pa.
H. A. Mitchell, Oakland, Cal.
L. R. Nash, Boston, Mass.
B. J. Strouse, Minneapolis, Minn.
C. L. S. Tingley, New York, N. Y.
A. C. Watt, New York, N. Y.
P. E. Wilson, Cleveland, Ohio.

Representatives of the Association on Other National Organizations

AMERICAN COMMITTEE ON INDUCTIVE CO-ORDINATION

R. P. Stevens, president Penn-Ohio Edison Company, New York, N. Y., chairman.

Complete personnel to be announced later.

NATIONAL INDUSTRIAL CONFERENCE BOARD

F. R. Coates, Henry L. Doherty & Company, New York, N. Y.
J. N. Shannahan, care of Old Dominion Land Company, Newport News, Va.

UNITED STATES CHAMBER OF COMMERCE

J. N. Shannahan, care of Old Dominion Land Company, Newport News, Va., national councillor.
J. H. Hanna, president the Capital Traction Company, Washington, D. C., substitute national councillor.

Accountants' Association

Complete personnel of all committees in this association to be announced later.

BUS ACCOUNTING

M. W. Glover, general auditor West Penn Railways, Pittsburgh, Pa., chairman.

CONVENTION PROGRAM

E. H. Reed, auditor Brooklyn City Railroad, Brooklyn, N. Y., chairman.

ENGINEERING ACCOUNTING

T. B. McRae, general auditor Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., co-chairman.

FARE COLLECTION

E. A. Tuson, general auditor Public Service Railway, Newark, N. J., chairman.

FREIGHT ACCOUNTING

O. H. Bernd, secretary Des Moines City Railway, Des Moines, Iowa, chairman.

REVIEW OF PROCEEDINGS

J. E. Heberle, secretary Capital Traction Company, Washington, D. C., chairman.

STANDARD CLASSIFICATION OF ACCOUNTS

M. W. Glover, general auditor West Penn Railways, Pittsburgh, Pa., chairman.

STORES ACCOUNTING

Claims Association

BONUS AND AWARD SYSTEM

G. T. Hellmuth, general claims attorney Chicago, North Shore & Milwaukee Railroad, Chicago, Ill., chairman.
B. D. Haskins, Chattanooga, Tenn.
A. W. Koehler, Milwaukee, Wis.

MEDICAL AND SURGICAL WORK

Personnel of this committee to be announced later.

EMPLOYMENT

Personnel of this committee to be announced later.

JOINT COMMITTEE ON TRAFFIC AND SAFETY*

H. K. Bennett, safety manager United Electric Railways, Providence, R. I., co-chairman.
Seth Baldwin, New Haven, Conn.
A. G. Jack, Wilmington, Del.
V. T. Noonan, Chicago, Ill.
E. J. Paige, Baltimore, Md.
J. J. Reynolds, Boston, Mass.
J. J. Sharkey, Rochester, N. Y.
R. A. Sears, Boston, Mass., sponsor.
*Personnel not complete.

Engineering Association

ENGINEERING SYMBOLS

Co-operate with association's representatives on the A.E.S.C. sectional committee on engineering symbols and abbreviations.

H. W. Codding, assistant engineer Public Service Production Company, Newark, N. J., chairman.
G. H. Haldeman, Newark, N. J.
J. D. Kent, New York, N. Y.
W. J. Quinn, New York, N. Y.
C. W. Squier, New York, N. Y.

PURCHASES AND STORES

1. Review existing purchases and stores sections of the Manual for revisions and corrections.
2. Continue study of and make recommendations regarding the disposal of unused inactive material.
3. Make a further study of routine methods to be followed in the purchases and

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stores departments recommending that a report be made on a uniform method of distributing materials by supply trains or trucks.

4. Recommend that a uniform practice of testing or inspecting materials be adopted by testing or inspecting materials on receipt or at factory.

J. Fleming, assistant secretary and purchasing agent the Capital Traction Company, Washington, D. C., chairman.
J. Y. Bayliss, Richmond, Va.
A. S. Duncan, East Pittsburgh, Pa.
A. L. Fischer, Cincinnati, Ohio.
B. W. Forkner, Mansfield, Ohio.
A. E. Hatton, Pittsburgh, Pa.
F. A. Jordan, Atlanta, Ga.
P. F. McCall, Highwood, Ill.
T. H. McGarry, Boston, Mass.
A. A. Ordway, Boston, Mass.
W. E. Scott, Philadelphia, Pa.
C. Thorburn, Los Angeles, Cal.
W. J. Walker, Schenectady, N. Y.
P. V. C. See, Akron, Ohio, sponsor.

POWER TRANSMISSION AND DISTRIBUTION

1. Review existing Manual sections; in particular keep in touch with the work of the A.E.S.C. sectional committees on the National Electrical Safety Code and on overhead line materials.
2. Continue the study of specifications for material for catenary construction.
3. Continue study of trolley wire wear and breaks.
4. Continue to confer with the A.S.T.M. in an effort to improve the specification for bronze trolley wire.
5. Continue the investigation of radio interference.
6. Continue the study of inductive coordination.
7. Study the proper design of the distribution layout for automatic substations.
8. Consider the advisability and possibility of establishing a standard by which various methods of operating and maintaining overhead lines may be compared.
9. Study subject of standardization of trolley wire reels.

F. McVittie, electrical engineer New York State Railways, Rochester, N. Y., chairman.
J. W. Allen, Boston, Mass.
S. H. Anderson, Los Angeles, Cal.
W. H. Bassett, Waterbury, Conn.
M. W. Cooke, Pittsburgh, Pa.
J. H. Drew, Mansfield, Ohio.
D. D. Ewing, Lafayette, Ind.
C. L. Hancock, New York, N. Y.
S. S. Hertz, New York, N. Y.
K. J. Keith, Des Moines, Iowa.
A. J. Klatte, Chicago, Ill.
John Leisenring, Springfield, Ill.
H. S. Murphy, Philadelphia, Pa.
J. F. Neild, Toronto, Ont.
W. J. Quinn, New York, N. Y.
M. B. Rosevear, Camden, N. J.
W. Schaake, East Pittsburgh, Pa.
A. Schlesinger, Indianapolis, Ind.
D. L. Smith, Chicago, Ill.
R. E. Wade, Schenectady, N. Y.
G. F. Wennagel, Baltimore, Md.
C. H. Jones, Michigan City, Ind., sponsor.

HEAVY ELECTRIC TRACTION

1. Review existing Manual sections.
2. Continue study of track and third rail bonds.
3. Bibliography of heavy electric traction and electrification data; bring up to date if publication is approved.
4. Continue study and collection of data on branch line electrification and self-propelled cars.
5. Continue study of train operation with particular reference to articulated trains.
6. Study train make-up and terminal switching with multiple-unit cars.

H. F. Brown, assistant electrical engineer New York, New Haven & Hartford Railroad, New Haven, Conn., chairman.
A. H. Armstrong, Schenectady, N. Y.
J. M. Bosenbury, Springfield, Ill., vice-chairman.
Morris Buck, New York, N. Y.
H. W. Cope, East Pittsburgh, Pa.
A. H. Daus, Chicago, Ill.
J. C. Davidson, Schenectady, N. Y.
J. H. Davis, Baltimore, Md.
J. V. B. Duer, Altoona, Pa.
J. T. Hamilton, New York, N. Y.
E. C. Johnson, Los Angeles, Cal.
J. O. Madison, New York, N. Y.
M. W. Manz, Mansfield, Ohio.
L. S. Wells, New York, N. Y.
A. H. Woollen, Chicago, Ill.
F. H. Miller, Louisville, Ky., sponsor.

ENGINEERING ACCOUNTING

Review the standard classification of accounts for electric railways and make such suggestions for changes as seem desirable to the committee on standard classification of accounts of the Accountants' Association.

E. D. Dreyfus, advisory engineer West Penn Railways, Pittsburgh, Pa., chairman.
E. J. Dickson, Providence, R. I.
C. R. Harte, New Haven, Conn.
R. B. Rifenberick, Detroit, Mich.

UNIFICATION OF CAR DESIGN

Study report of committee on essential features of modern cars and review comments on that report with the view of continuing the work of that committee.

H. H. Adams, superintendent of shops and equipment Chicago Surface Lines, Chicago, Ill., chairman.
Complete personnel of this committee to be announced later.

WOOD PRESERVATION

1. Review existing Manual sections for revision and correction.
2. Study of treatment of poles and timber in place.
3. Study actual economies obtained by operating utilities through the use of treated timbers.
4. Study methods and forms of keeping continuous records of treated timber.
5. Study wood preservatives other than creosote and zinc chloride.

C. A. Smith, superintendent of roadway, Georgia Railway & Power Company, Atlanta, Ga., chairman.
M. J. Curtin, Charlestown, Mass.
T. H. David, Indianapolis, Ind.
J. L. Fritsch, Pittsburgh, Pa.
W. H. Fulweiler, Philadelphia, Pa.
E. F. Hartmen, Kenilworth, N. J.
W. L. Harwood, Springfield, Mass.
L. P. Scanlan, Newark, N. J.
F. H. Swayze, New York, N. Y.
A. P. Way, Philadelphia, Pa.
R. H. White, Jr., Atlanta, Ga.
W. F. Graves, Indianapolis, Ind., sponsor.

POWER GENERATION AND CONVERSION

1. Review existing Manual sections.
2. Continue study of ventilation of automatic substations.
3. Continue study of mercury arc power rectifiers.
4. Economical trolley potential to be supplied for congested districts of urban systems.

W. E. Bryan, superintendent of power United Railways of St. Louis, St. Louis, Mo., chairman.
C. E. Bennett, Atlanta, Ga.
C. A. Butcher, East Pittsburgh, Pa.
H. W. Codding, Newark, N. J.
H. A. Kidder, New York, N. Y.
N. R. Love, Denver, Col.
H. W. McRobbie, Connellsville, Pa.
F. W. Peters, Schenectady, N. Y.
W. S. Richhart, Fort Wayne, Ind.
G. W. Saathoff, New York, N. Y.
L. J. Turley, Los Angeles, Cal.
R. L. Weber, Boston, Mass.
R. G. Winans, New York, N. Y.
G. I. Wright, Chicago, Ill.
L. D. Bale, Cleveland, Ohio, sponsor.

ENGINEERING MANUAL

R. H. Dalgleish, chief engineer the Capital Traction Company, Washington, D. C., chairman.
W. F. Graves, Indianapolis, Ind.
C. H. Jones, Michigan City, Ind.
F. H. Miller, Louisville, Ky.

SUBJECTS

F. H. Miller, vice-president and general manager Louisville Railway, Louisville, Ky., chairman.
Morris Buck, New York, N. Y.
W. F. Graves, Indianapolis, Ind.
C. H. Jones, Michigan City, Ind.
P. V. C. See, Akron, Ohio.

REVISION OF RULES AND PROCEDURE

A special committee on the revision of rules for the preparation of committee reports and specifications and also the procedure for the adoption of standards.

F. H. Miller, vice-president and general manager Louisville Railway, Louisville, Ky., chairman.
L. D. Bale, Cleveland, Ohio.
P. V. C. See, Akron, Ohio.
H. H. George, Newark, N. J.
A. T. Clark, Baltimore, Md.

STANDARDS

This committee will pass on standards proposed by committees other than those in the equipment division and the way and structures division, which are passed on by the standing committees on those subjects.

C. R. Harte, construction engineer the Connecticut Company, New Haven, Conn., chairman.
L. D. Bale, Cleveland, Ohio.
C. C. Beck, Mansfield, Ohio.
L. C. Datz, St. Louis, Mo.
C. M. Davis, Schenectady, N. Y.
F. C. Hanker, East Pittsburgh, Pa.
C. H. Jones, Michigan City, Ind.
C. G. Keen, New York, N. Y.
M. B. Rosevear, Camden, N. J.
J. M. Waldron, New York, N. Y.

Rolling Stock Division

STANDING COMMITTEE

A. T. Clark, superintendent rolling stock and shops United Railways & Electric Company of Baltimore, Baltimore, Md., chairman.
J. A. Brooks, Philadelphia, Pa.
W. W. Brown, Brooklyn, N. Y.
R. S. Bull, Pittsburgh, Pa., vice-chairman.
M. R. Hanna, Schenectady, N. Y.
J. M. Hipple, East Pittsburgh, Pa.
J. S. McWhirter, New York, N. Y.
A. D. McWhorter, Memphis, Tenn.
T. H. Nicholl, Anderson, Ind.
R. B. Smyth, Boston, Mass.
W. G. Stuck, Lexington, Ky.
H. S. Williams, Detroit, Mich.

1—MANUAL REVIEW

Review existing Manual sections on rolling stock for revision and correction.

C. W. Squier, associate editor ELECTRIC RAILWAY JOURNAL, New York, N. Y., chairman.
W. S. Adams, Philadelphia, Pa.
T. H. Nicholl, Anderson, Ind.
H. S. Williams, Detroit, Mich.

2—MOTOR COACHES*

1. Continue study of motor coach design and consider motor coach standardization.

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2. Investigate maintenance methods and inspection schedules in motor coach operation.

V. W. Berry, assistant general manager of railways Virginia Electric & Power Company, Richmond, Va., chairman.
H. L. Debbink, Milwaukee, Wis.
W. D. Downey, Philadelphia, Pa.
C. W. Stocks, New York, N. Y.

*Personnel not complete.

3—Car Equipment

Continue study of car equipment with special reference to appearance, comfort and convenience.

H. S. Williams, assistant superintendent of equipment Department of Street Railways, Detroit, Mich., chairman.
O. H. Basquin, Chicago, Ill.
J. A. Dewhurst, New York, N. Y.
F. J. Foote, Springfield, Ohio.
H. J. Jonas, Cincinnati, Ohio.
G. L. Kippenberger, St. Louis, Mo.
C. R. McMahon, Des Moines, Iowa.
W. R. McRae, Toronto, Ont.

4—Lighting

Continue study of car lighting.

R. W. Cost, Illumination Bureau, Westinghouse Lamp Company, New York, N. Y., chairman.
A. L. Broe, Harrison, N. J.
W. W. Brown, Brooklyn, N. Y.
H. F. Deininger, Philadelphia, Pa.
H. A. Otis, Chicago, Ill.
J. P. Staples, Charleroi, Pa.

5—Bearings*

Study results being obtained with roller bearings for journals.

W. C. Bolt, superintendent rolling stock and shops Eastern Massachusetts Street Railway, Chelsea, Mass., chairman.
V. N. DeLamater, Newark, N. J.
E. M. Lunda, Grand Rapids, Mich.
W. C. Sanders, Canton, Ohio.

*Personnel not complete.

6—Lubrication

Study methods of gear lubrication.

W. G. Stuck, superintendent of equipment Kentucky Traction & Terminal Company, Lexington, Ky., chairman.
A. A. Green, New York, N. Y.
L. W. Jacques, East St. Louis, Ill.
J. F. Lamb, New York, N. Y.
J. H. Lucas, Milwaukee, Wis.

7—Air Compressors

Investigate suction strainers for air compressors.

J. C. McCune, assistant director of engineering, Westinghouse Air Brake Company, New York, N. Y., chairman.
C. A. Ives, Erie, Pa.
A. F. Rexroth, Harrisburg, Pa.
P. J. Wood, Erie, Pa.

8—Motor Brushes

Investigate side wear on brushes of ventilated motors.

R. A. Hutchins, General Electric Company, Schenectady, N. Y., chairman.
F. T. McCann, Syracuse, N. Y.
F. W. McCloskey, East Pittsburgh, Pa.
R. D. Voshall, Washington, D. C.

9—Noise Reduction

Continue study of reduction of noise in car operation.

H. S. Williams, assistant superintendent of equipment Department of Street Railways, Detroit, Mich., chairman.
C. Bethel, East Pittsburgh, Pa.
L. J. Davis, Brooklyn, N. Y.
C. J. Ellis, Winton Place, Ohio.
M. Guynes, Schenectady, N. Y.
F. L. Hinman, Philadelphia, Pa.
T. H. Minary, Louisville, Ky.
R. M. O'Brien, New Orleans, La.
H. L. Rogers, Cincinnati, Ohio.

10—Gear

Study helical and spur gearing including long and short addendum teeth together with the entire subject of gearing.
Personnel of this committee will be announced later.

11—Current Collecting Devices

Study overhead collecting devices and recommend standards for trolley wheels.

Hugh Savage, superintendent of equipment the Brooklyn City Railroad, Brooklyn, N. Y., chairman.
W. C. Klein, Allentown, Pa.
H. S. Murphy, Philadelphia, Pa.
D. L. Smith, Chicago, Ill.

Way and Structures Division

Standing Committee

H. H. George, assistant to chief engineer Public Service Production Company, Newark, N. J., chairman.
C. A. Alden, Steelton, Pa.
E. B. Entwistle, Johnstown, Pa.
W. G. Hulbert, Easton, Pa.
J. R. McKay, Fort Wayne, Ind.
E. J. McIlraith, Chicago, Ill.
H. F. Merker, Brooklyn, N. Y.
E. M. T. Ryder, New York, N. Y., vice-chairman.
C. A. Smith, Atlanta, Ga.
A. T. Spencer, Toronto, Ont.
H. M. Steward, Boston, Mass.
W. W. Wysor, Baltimore, Md.

1—Manual Review

Review existing Manual sections on way and structures for revision and correction.

W. R. Dunham, Jr., executive engineer Department of Street Railways, Detroit, Mich., chairman.
D. J. Graham, Youngstown, Ohio.
J. S. Mahan, Chicago, Ill.
D. H. Walker, Indianapolis, Ind.
T. H. Davis, Indianapolis, Ind.

2—Switch Tongues and Hard Centers

1. Continue study of design of switch tongues and hard centers for special trackwork.
2. Co-operate with way and structures committee No. 5.

E. M. T. Ryder, way engineer Third Avenue Railway, New York, N. Y., chairman.
C. A. Alden, Steelton, Pa.
R. B. Fisher, Harvey, Ill.
H. F. Heyl, Easton, Pa.
G. A. Peabody, Cleveland, Ohio.
W. W. Wysor, Baltimore, Md.

3—Rails

Investigate relative advantages of 7-in. and 9-in. girder rails for track construction in paved streets.

H. F. Merker, chief engineer way and structures Brooklyn City Railroad, Brooklyn, N. Y., chairman.
J. U. Bragg, Baltimore, Md.
G. H. Haldeman, Newark, N. J.
R. M. Hannaford, Montreal, Que.
E. S. Meyers, New Orleans, La.
J. F. Rodgers, Philadelphia, Pa.
Oscar Williams, Pittsburgh, Pa.

4—Track Ballast and Drainage

1. Study matter of type of ballast for track construction in paved streets to determine the relative advantages of each type with special conditions of sub-soil, car loadings, etc.
2. Investigate the use of vitrified or tile pipe auxiliary drains in connection with track construction in paved streets.

S. Clay Baker, engineer maintenance of way East St. Louis & Suburban Railway, East St. Louis, Ill., chairman.
E. J. Archambault, Milwaukee, Wis.
L. T. Botto, San Antonio, Tex.
A. C. Eddy, Vancouver, B. C.
C. L. Hawkins, St. Louis, Mo.
J. H. Haylow, Memphis, Tenn.

5—Special Trackwork

1. Review specifications for castings in ironbound, hard center special trackwork, with a view to possible revision of requirements for depth of casting and general design.
2. Co-operate with way and structures committee No. 2.

E. P. Roundey, engineer way and structures New York State Railways, Utica, N. Y., chairman.
C. A. Alden, Steelton, Pa.
J. U. Bragg, Baltimore, Md.
E. B. Entwistle, Johnstown, Pa.
W. G. Hulbert, Easton, Pa.
M. M. Johnston, New Haven, Conn.
D. R. Payne, Hoboken, N. J.

6—Arc Welding

1. Study arc welding processes for repairs to rails and manganese steel.
2. Prepare welding wire specifications.

Chester F. Gailor, consulting engineer, New York, N. Y., chairman.
H. E. Bean, Syracuse, N. Y.
H. H. Dartt, Scranton, Pa.
A. L. Donnelly, New Haven, Conn.
R. B. Fehr, Cleveland, Ohio.
E. L. Lockman, Boston, Mass.
I. C. Newman, Norfolk, Va.
W. M. Raiguel, Philadelphia, Pa.
Jonathan Wolfe, Chicago, Ill.

7—Alloy Steels Other than Manganese

Investigate the possibilities from the use of other alloy steels than manganese for special trackwork purposes.

A. T. Spencer, assistant to general manager Toronto Transportation Commission, Toronto, Ont., chairman.
R. B. Fehr, Cleveland, Ohio.
F. G. Hibbard, Milwaukee, Wis.
E. F. Kenney, Bethlehem, Pa.
P. A. Kerwin, Detroit, Mich.
B. P. Legare, San Francisco, Cal.
R. H. Noderer, Johnstown, Pa.
O. C. Rehfuss, Montreal, Que.
F. B. Walker, Boston, Mass.

8—Pavement

Study the effect of the increasing use of rubber-tired vehicles on the type of pavement required for track in paved streets to meet heavy vehicular traffic conditions.

A. E. Harvey, superintendent way and structures Kansas City Public Service Company, Kansas City, Mo., chairman.
N. R. Alexander, Chicago, Ill.
C. W. Burke, Brooklyn, N. Y.
W. O. Matthews, Denver, Col.
J. M. Sundmaker, Cincinnati, Ohio.
W. L. Wilson, Des Moines, Iowa.

9—Bus Garage Design

1. Study the effect of garage design on insurance rates including such items as (a) types of heating plants; (b) design of inspection pits; (c) gas, oil and water servicing facilities for buses; (d) floor drain-

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age; (e) ventilation; (f) fire extinguishing apparatus including automatic sprinklers.
2. Study of door design.
3. Study of maximum floor grades.
4. Study of illumination, both natural and artificial.
5. Study bus washing facilities.
6. Study provisions for compressed air lines for inflating tires.

J. R. McKay, chief engineer Indiana Service Corporation, Fort Wayne, Ind., chairman.
A. J. Blackburn, Boston, Mass.
G. H. Haldeman, Newark, N. J.
Adrian Hughes, Jr., Baltimore, Md.
L. F. Parlette, Philadelphia, Pa.
W. W. Wise, New York, N. Y.

10—CARHOUSE AND SHOP CONSTRUCTION AND WIRING

Co-operate with the National Fire Protection Association if any revision of the existing rules for carhouses or the formulation of a similar set of rules for car shops is undertaken by that association.

H. E. Bachman, superintendent of distribution Public Service Railway, Newark, N. J., chairman.
E. P. Goucher, Washington, D. C.
J. D. Kent, New York, N. Y.

11—TRACK CONSTRUCTION

Co-operate with A.S.M.E. in the consideration of any changes in the track construction specifications which may be proposed by either organization.

C. L. Hawkins, engineer way and structures United Railways of St. Louis, St. Louis, Mo., chairman.
W. R. Dunham, Jr., Detroit, Mich.
H. H. George, Newark, N. J.
E. M. T. Ryder, New York, N. Y.
W. W. Wysor, Baltimore, Md.

12—RAIL CORRUGATION

Continue study of rail corrugation.

W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore, Md., chairman.
C. H. Clark, Cleveland, Ohio.
E. B. Entwistle, Johnstown, Pa.
D. D. Ewing, Lafayette, Ind.
R. B. Fehr, Cleveland, Ohio.
H. F. Flowers, Findlay, Ohio.
C. R. Kinnear, Toronto, Ont.
T. J. Lavan, Cleveland, Ohio.
E. L. Lockman, Boston, Mass.
A. M. Nardini, Philadelphia, Pa.
J. Ormondroyd, East Pittsburgh, Pa.
H. J. Tippet, New Haven, Conn.
C. L. Van Auken, Chicago, Ill.
H. S. Williams, Detroit, Mich, vice-chairman.

13—DESIGN OF JOINT RAILWAY AND BUS TERMINALS*

Study design of joint railway and bus terminals.

C. W. Gifford, general superintendent Gary Railways, Gary, Ind., chairman.
E. D. Eckroad, Akron, Ohio.
*Personnel not complete.

14—LIGHT SECTION RAIL*

Investigate need for a lighter section than the present 7-in. grooved girder rail.

C. A. Alden, chief engineer frog and switch division Bethlehem Steel Company, Bethlehem, Pa., chairman.
C. G. Keen, New York, N. Y.
*Personnel not complete.

15—TRACK GAGE

Prepare a design of gage for checking gage of track.

C. H. Clark, engineer maintenance of way the Cleveland Railway, Cleveland, Ohio, chairman.

Complete personnel of this committee to be announced later.

Transportation & Traffic Association

SERVICE BETTERMENT*

S. E. Emmons, assistant general manager United Railways & Electric Company of Baltimore, chairman.
C. D. Smith, New Brighton, Pa., vice-chairman.
F. J. Denney, Detroit, Mich.
J. A. Dewhurst, New York, N. Y.
C. H. Evenson, Chicago, Ill.
W. J. Flickinger, New Haven, Conn.
A. L. Hodges, Brooklyn, N. Y.
E. A. Palmer, East Pittsburgh, Pa.
A. E. Potter, Providence, R. I.
A. C. Spurr, Wheeling, W. Va.
J. C. Thirlwall, Schenectady, N. Y.
W. E. Thompson, New York, N. Y.
G. B. Anderson, Los Angeles, Cal., sponsor.
Edward Dana, Boston, Mass, sponsor.
*Personnel not complete.

BUS OPERATION

R. N. Graham, manager of railways the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, chairman.
E. D. Dreyfus, Pittsburgh, Pa.
B. W. Arnold, Milwaukee, Wis., vice-chairman.
C. H. Chapman, Waterbury, Conn.
D. L. Fennell, Kansas City, Mo.
S. W. Greenland, St. Louis, Mo.
M. L. Harry, Decatur, Ill.
Adrian Hughes, Jr., Baltimore, Md.
D. A. Scanlan, Akron, Ohio.
Alexander Shapiro, Washington, D. C.
A. T. Warner, Newark, N. J.
H. M. Bollum, Minneapolis, Minn.
Thomas Noonan, Pittsburgh, Pa.
J. L. Alexander, Houston, Tex.
D. W. Harvey, Toronto, Ont.
E. S. Pardoe, Washington, D. C.
A. R. Myers, Erie, Pa., sponsor.
P. E. Wilson, Cleveland, Ohio, sponsor.

JOINT COMMITTEE ON TRAFFIC AND SAFETY

Personnel of this committee to be announced later.

SUBJECTS AND PROGRAM

W. F. Weh, superintendent accident department the Cleveland Railway, Cleveland, Ohio, chairman.
H. V. Drown, Newark, N. J.
W. H. Renaud, Jr., New Orleans, La.

Revision of Constitution and By-Laws

AN ORGANIZATION meeting of the committee on revision of the constitution and by-laws of the American Electric Railway Association was held at association headquarters on Nov. 18, with the following members present: C. D. Emmons, chairman; James H. McGraw, vice-chairman; E. P. Waller, Harry Reid, Harold V. Bozell, M. B. Lambert, G. A. Richardson, H. L. Brown, L. H. Palmer and President W. H. Sawyer.

Several questions came before the committee regarding the constitution of the association. These include the rate and distribution of dues, membership of bus operating companies, membership of municipally owned properties, name of the association, titles and designations of association staff members, together with such other changes in the constitution as may be suggested by careful study of changed conditions in the industry since its last revision.

The subject of the association name was referred to a sub-committee consisting of H. V. Bozell, Harry Reid, M. B. Lambert, L. H. Palmer and G. A. Richardson. Another sub-committee including James H. McGraw, chairman; E. P. Waller, L. H. Palmer, Harlow Clark, R. P. Stevens and F. W. Doolittle was delegated to study the subject of dues with a view to making the income of the association cover all activities, including the expense of the Advisory Council, without resorting to special assessments or contributions. This work is to be carried on in co-operation with the finance committee. H. L. Brown was made chairman of a sub-committee to review carefully the entire wording of the present constitution and to suggest necessary changes. H. V. Bozell and M. B. Lambert were also named to this sub-committee.

Bus Operation

AN ORGANIZATION meeting of the committee on bus operation was held at association headquarters on Nov. 18 and various suggestions for the year's work were reviewed. Subject assignments were made to various sub-committees who are to prepare preliminary reports for presentation at the next meeting of the committee, which is to be held in Toledo, Ohio, at the time of the Central Electric Railway Association annual meeting on Feb. 3.

Subject No. 1—*Bus Operating Rules and Instructions to Personnel.* Assigned to A. Shapiro with instructions to collaborate with E. S. Pardoe and Adrian Hughes, Jr. This assignment includes the revision of the bus operating rules prepared in 1924 and revised in 1926, together with the preparation of instructions to personnel. The inspection rules prepared by the 1926 equipment committee of the Engineering Association are to be reviewed.

Subject No. 2—*Equipment.* This is to be a study of sizes and types and their application to various classes of service including equipment used in chartered coach service. The assignment was made to B. W. Arnold with instruction to collaborate with D. L. Fennell, Thomas Noonan, D. A. Scanlon, J. L. Smith and R. H. Pinkley.

Subject No. 3—*Fares and Methods of Fare Collection.* Assigned to E. D. Dreyfus with instructions to collaborate with D. A. Scanlon.

Subject No. 4—*Methods, Practices and Economics.* This study to include chartered coach and bus operation, package and express business (including mail), and cost analyses of operation.

It was agreed that the data for this year's report are to be obtained from a group of fifty predetermined companies which are to be divided among various members of the committee for the collection of data.

Those present at the meeting included the following: Sponsors Paul E. Wilson and A. R. Myers, Chairman R. N. Graham, Vice-Chairman B. W. Arnold, C. H. Chapman, E. D. Dreyfus, J. L. Smith (representing D. W. Harvey), Adrian Hughes, Jr., Thomas Noonan, E. S. Pardoe, H. B. Whitman (representing A. T. Warner).

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The News of the Industry

7 Per Cent Return Allowed

United States Supreme Court Fixes "Spot" Reproduction Cost — The Decision May Affect Tractions

The United States Supreme Court on Nov. 22 virtually held that a public utility corporation was entitled to charge rates which would permit it to earn 7 per cent on its "spot reproduction value." With Justice Brandeis dissenting, chiefly because of the difficulties of determining what the "spot reproduction value" is, the court handed down an opinion upholding an injunction restraining the Public Service Commission of Indiana from ordering a reduction of the Indianapolis Water Company rates. The injunction, issued by Federal District Judge Geiger, was based on his finding that the valuation of the company's property was too low and the rates proposed confiscatory.

In fixing the value of the water company's property the Public Service Commission arrived at a total of $16,455,000, including among the items cost of reproduction, less depreciation, on the basis of average level of labor and material prices for a ten-year period, including also material and supplies, capital additions, going value and water rights and existing working cash capital.

In its opinion, upholding the lower court, the majority of the court held that the "spot" reproduction cost of the property is "a fair measure of the value of the physical elements of the property" and "a reasonable rate of return is not less than 7 per cent."

Judge Geiger in his injunction writ accepted the arguments of various experts that the reproduction value of the company's property was approximately $17,000,000 and affirmed the addition to the value of the physical property items covering water rights, going value and cash working capital, bringing the total to approximately $19,000,000. The Supreme Court said:

> It is true that if the tendency or trend of prices is not definitely upward or downward and it does not appear probable that there will be a substantial change of prices, then the present value of land plus the present cost of construction of plant, less depreciation, if any, is a fair measure of the value of the physical elements of the property. The validity of the rates in questions depends on property value Jan. 1, 1924, and for a reasonable time following.
>
> And we are satisfied that the decree is right. A reasonable rate of return is not less than 7 per cent. In his decision the district judge plainly intimated that he was of the opinion that probable net earnings for 1924 were not sufficient to pay more than 5 per cent on $19,000,000. The amount of net earnings in 1924, as estimated by appellants, is only sufficient to pay 7 per cent on $16,022,145. The evidence requires the finding that, exclusive of items classified as non-operative, the value is much more than that amount.

Justice Brandeis, dissenting from the opinion of his colleagues, declared that "'spot' reproduction would be impossible of accomplishment without the aid of Aladdin's lamp." He held that any estimate of a "spot" reproduction would be delusive if based on "spot" prices of labor, materials and money where the plant had required years for completion.

The case was argued before the Supreme Court last April. A decision had been eagerly awaited, because the issues of law closely paralleled most of those involved in the other rate cases, notably that of the Consolidated Gas Company, New York, argued before the Supreme Court Oct. 18 and 19. Moreover, the Indianapolis case had been argued for the company by ex-Justice William L. Ransom of New York City, who was one of the counsel who argued before the Supreme Court the similar issues in the New York gas rate cases.

Politics Blamed by Mr. Insull

Draws Deadly Parallel Between Railways and Other Utilities to Show How Refinancing Has Been Blocked—Investment of New Money in Tractions Almost Nil

RESPONSIBILITY for the failure of transportation companies in Chicago to obtain adequate funds for refinancing, extensions or improvements was placed squarely on local politics on Nov. 18 by Samuel Insull in an address before the Electric Association of Chicago.

Mr. Insull declared that the electric industry in Chicago required $137,500,000 in new capital in the year ended June 30, 1926, of which $82,000,000 was for electric supply companies, $21,000,000 for telephone and telegraph companies, $20,000,000 for manufacturers and only $14,000,000, or less than 10 per cent of the total, for electric railways, although their total investment in the district is larger by $50,000,000 than that of any other group of electrical enterprises.

Mr. Insull said these figures suggested a momentary digression from the topic of his principal theme. The capital investment of the electricity supply companies in the Chicago district has been practically doubled in ten years; that of the telephone and telegraph companies a little more than doubled. The investment in electrical manufacturing is now probably about six times that of ten years ago.

During the same ten years the investment in the electric transportation of the district has been increased less than 10 per cent, and the preponderant portion of this has gone into suburban lines and the elevated lines of Chicago.

Mr. Insull said there must be a reason for this small increase in the electric railway investment. No public utility service is developed and extended without new capital investment. The need of increased public utility facilities here has not been confined to the electricity supply and telephone services. Surely there has been need of transportation development somewhat in proportion to other development. Why has it not come?

According to Mr. Insull, the correct answer is unmistakable. He said:

> Electric transportation has been the football of local politics. The electricity supply and telephone services have been under strict regulation, but have been comparatively free from local harassment. They have, therefore, been able to look ahead and to work out consistent and comprehensive development plans and put them into effect.
>
> The seat of obstruction to transportation development is revealed the more clearly when you recall that the preponderant portion of what little new capital has been put into transportation development has been applied to those transportation agencies which are least affected by local politics, namely, the suburban electric and the elevated lines.
>
> The local transportation business here is afflicted with a lot of economic absurdities as well as political agitation. Just think of making a fixed investment under a franchise grant that is subject to termination at the end of a few years, without making any provision in rates or otherwise for amortization of the investment. That is an economic absurdity.
>
> The transportation business in Chicago, apart from the elevated and suburban lines is run on the theory that you can pick up all of the property used in it after a few years—that is, at the end of the franchise term—and carry it away, with its value and usefulness unimpaired. But the rates for

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I mention this because the correction of it is in part your problem as citizens of Chicago. Men of your character—men of activity and standing in the community—must take hold of this situation and give it serious attention if it is to be corrected before the city is harmed beyond repair.—SAMUEL INSULL.

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service are based on the assumption of a continual right to use the streets for all time.

I mention this absurdity because the correction of it is in part your problem as citizens of Chicago. Men of your character—men of activity and standing in the community—must take hold of this situation and give it serious attention if it is to be corrected before the city is harmed beyond repair.

In the belief that it would serve to stave off a receivership, Mayor William E. Dever on Nov. 23 brought forward a proposal to extend the franchise of the Chicago Surface Lines for six months after their expiration next February. As a result of the Mayor's proposal, a resolution was presented to the City Council directing the transportation committee to consider the matter at once.

No Early Vote in Kansas City

The referendum petitions calling for a general vote of the public in the matter of the twelve-year extension of the local railway franchise, at Kansas City, Mo., were filed with the city clerk on Nov. 13. The petitions contained 13,213 signatures. The law required that 10 per cent of the last mayoralty vote, or 11,460 signatures, be appended to the petition to assure a referendum vote. The petition demanded that the Council call a special election, but such a procedure would entail a two-thirds vote of the City Council. The expense of the election would be borne by the Kansas City Public Service Company. Some of these facts were brought out in an item in the ELECTRIC RAILWAY JOURNAL for Nov. 20.

At the same time, minority leaders of the Council are said to have stated they would not seek an early vote in the matter pending the outcome of the current hearing which the special council committee and the Kansas City Public Service Company are holding in an effort to draft a new franchise for the railway.

No city election is to be held until April, 1930, and no general election until November, 1928. This fact would apparently assure the validity of the recently voted extension of the old franchise until such time as present negotiations for a new franchise are completed, nullifying the need for any referendum vote in the matter.

On Nov. 15 Judge McElroy ordered a check of the 13,213 names on the petition. Should the investigation disclose that not enough names, legally signed, appear on the petition, the bill providing for a twelve-year extension of the old franchise would become a law.

Seattle Contemplates Free Rides

Shoppers of Seattle, Wash., may soon enjoy free rides downtown on the Seattle Municipal Street Railway on week-day forenoons, except Saturday. A plan whereby a group of merchants will pay the street railway a lump sum daily for use of the cars during certain forenoon hours is being worked out by Grant A. Stevens, market master at the Pike Place Public Market. In a communication to the City Council, Clark R. Jackson, superintendent of public utilities, expressed the opinion that the plan would materially increase street railway revenues during off-peak hours.

Fare Case at St. Louis Closed

Missouri Commission Takes Under Advisement Plea of United Railways, Now in Receivership, to Advance Fares at Once—City a Protestant

FINAL testimony was taken on Nov. 17 by the Missouri Public Service Commission at Jefferson City, Mo., on the application of Receiver Rolla Wells of the United Railways, St. Louis, for an immediate temporary increase in fares. Neither the city nor the company will file briefs, but the matter has been left open for ten days to give the St. Louis County municipalities an opportunity to file briefs if they so desire. An order on the application probably will not issue for several weeks.

In its original application for an increase filed last June the company asked the rate on adult fares be raised from 7 cents to 8 cents or two tokens for 15 cents. Action on that was suspended pending an audit of the company's books demanded by city officials.

City Counselor Muench of St. Louis contended that the city riders should not be compelled to make up losses sustained by the company on St. Louis county business, and that greater economy could be effected by the company in its operating departments, especially the claim department. He also said that the fixed charges for depreciation reserve are too high.

At the session on Nov. 16 Col. Albert T. Perkins, general manager for Receiver Rolla Wells, testified that the company is earning less than a reasonable return upon the valuation of $51,781,348 fixed by the commission as of Jan. 1, 1919, without considering $5,014,443 spent for additions and betterments since that time. He testified that the gross income of $2,685,246 available for return in 1925 offered only 5.19 per cent return and that the income to Sept. 30, 1926, would give only a 5.26 per cent return.

BLAME FIXED FOR FALLING OFF IN BUSINESS

Col. Perkins blamed the competition of independently operated bus lines and private automobiles and service cars for the falling off in revenue, explaining that in October receipts were $30,000 behind the similar month last year. He declared that the gross income of $2,156,599 for 1926 up to Oct. 31 failed by $90,523 to pay interest, fixed charges and miscellaneous deductions included in the amount allowed for return. He brought out that great reductions in operating costs have been effected since the receivership.

Chairman Brown of the commission interrupted Col. Perkins to ask whether he thought the receivership was cheaper than private management. Col. Perkins replied that he believed it was in many ways, under this particular receivership, but that it was not true of all receiverships of property. He presented an exhibit to show that if the 8-cent base fare or two tokens for 15 cents is granted the revenues of the company would be increased $1,381,792 a year based upon the present traffic.

Gross revenue for the year ended Sept. 30, last, was $18,623,643, averaging 6.9 cents per passenger. The proposed fare would produce $20,005,435 a year, it was estimated. The average fare, considering the straight fare, tokens and 3-cents child fare, would be 7.41 cents.

City Counselor Muench sought to show that the St. Louis Public Service Company, which proposes to take over the system when it emerges from receivership, was connected with the application of Receiver Wells for higher fares. Col. Perkins declared that the new company had no direct connection with the application but had raised no objections to it. He admitted that the company had an indirect interest in the proceedings in the event that it takes over the electric railways because of the effect of a fare increase on the revenues of the properties. Receiver Wells would do anything he could to expedite the work of reorganization.

Among other things the city charged that lack of managerial foresight and failure to make extensions, which provided a fertile field for bus competition, cannot now be fairly placed on the car riders, who should not be expected to free the company from the consequences of its inefficiency.

Salt Lake & Utah Transcontinental Status

The Interstate Commerce Commission at Washington, D. C., will reopen on Dec. 3 the transcontinental rate case of the Salt Lake & Utah Railroad, Salt Lake City, Utah, for argument. The case involves the right of the local line to participate in transcontinental freight traffic, both east and westbound, a matter which is said to be of vital importance to the railroad.

Upon application of the Union Pacific system in 1924 to eliminate the Salt Lake & Utah Railroad from participation in the westbound business in connection with its lines, division three of the Interstate Commerce Commission decided against the Orem road.

The present action of the commission in reopening the case results from the petition filed by the receivers immediately after the handing down of the last-named decision. The denial of the freight agreement privilege to the Salt Lake & Utah was referred to in the ELECTRIC RAILWAY JOURNAL issue for Sept. 18, 1926, page 470.

One-Man Operation on Albany-Hudson Line

Public Service Commissioner Lunn recently heard the petition of the Eastern New York Utilities Company for the consent of the commission to the operation of one-man cars on the entire railroad line of the company, which operates between Albany and Hudson, N. Y. Testimony was offered by the railroad to show that even though certain economies of management and operation had been introduced, it was still conducting its railway line at a loss and after certain investigations of other

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lines of a similar character, it was felt that with the use of one-man cars, this deficit could be overcome. The company proposes to use a new standard type light-weight car with up-to-date electric track break equipment, "dead man's buttons" and other modern safety devices in place of its present heavy type cars. The city of Hudson has recently consented to the operation of buses by this company in place of trolley cars and these one-man cars are to be used on the suburban lines and to the terminals in Albany and Hudson. There was no opposition to the petition.

No Successor Named to Mr. Wallace

No successor has as yet been appointed to H. U. Wallace, whose resignation as general manager of the Department of Street Railways, Detroit, Mich., was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 20, page 949. Mr. Wallace's resignation was accepted at a meeting of the Street Railway Commission held on Nov. 23, and a resolution adopted expressing to Mr. Wallace the commission's appreciation of the valuable services rendered by him to the Department of Street Railways and its regret that he should find it necessary to relinquish his position.

Facts on Los Angeles Situation Laid Bare

In its application for a new rate structure, referred to in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 20, page 940, the Los Angeles Railway, Los Angeles, Cal., states that it is giving the city the best possible transportation service at or below the lowest possible cost, and that it is its intention to continue the finest possible service in the future. H. E. Huntington, the principal owner in the company, had always made it his policy to put back into the property the earnings of the system. The necessity for increased service, particularly the extension of bus lines, had resulted in a steady increase in operating costs and this increase had gone forward faster than the increase in traffic.

The company states that it is now faced with additional capital expenditures of more than $6,000,000 during the next three years, and with additional increased operating costs, resulting from such capital increases, the taxes of the company were also increasing, amounting to $850,000 in 1925. The company is seeking to establish a rate structure based on the 7-cent single fare with four tickets or tokens for 25 cents, including free transfer.

The petition refers to the value of its railway used in the service of the public, which is at the lowest estimate $45,000,000, and that under the rates asked the company would earn, after operating expenses, less than 7 per cent on the value of its property. The company is asking the commission, the city of Los Angeles and the other communities to co-operate so the commission may arrive at an early decision.

George J. Kuhrts, the general manager of the company, stated that the railway was alive to the importance of providing an adequate railway transportation system and that the inability to give such a service under the present 5-cent fare was one of the principal reasons for making the application. An increase in fare, such as had been in effect in all other large cities in the United States, would have been justified to the Los Angeles Railway several years ago, and it was only because of the unusual policy pursued by Mr. Huntington that the city of Los Angeles has been able to enjoy the benefit of this exceptionally low fare.

New Transit Plan Advanced in New York

Pooling of Present and New Subways Proposed Under Plan Suggested by Transit Commissioner Delaney—Adequate Return Admitted Necessary with City Participation in Private Company

JOHN H. DELANEY, chairman of the Board of Transportation of New York, speaking with authority for the Mayor, made public on Nov. 24 the outstanding features of a reorganization scheme for transit which is still in the formative stage.

Chairman Delaney would create a quasi-public corporation, with earnings limited probably to 6 per cent, to take over not only the existing subways but also the new system now under construction. On the board of directors of the new corporation the city and the private transit interests would be represented, with the city maintaining at least 50 per cent control. The financing scheme would involve a gradual amortization of the private interests so that at the end of perhaps 40 years the public corporation, with the private interests eliminated, would have complete ownership of the properties.

This reorganization would involve the ditching of the dual contracts, so called, under which the subways are now operated, and the making of new contracts in which the 5-cent fare, according to Chairman Delaney, would not be a primary consideration.

The administration has firmly in mind the fact that the new subways are being constructed at a cost greatly in excess of the cost of the existing lines. It also has in mind the fact that the municipal subways, under the terms of the law permitting the city to borrow money for their construction, must be self-sustaining. This situation seemingly makes a continuance of the 5-cent fare on the new subways impossible.

But, says Chairman Delaney, the question of whether or not the 5-cent fare can be continued depends entirely on the method of financing, and he is by no means willing to admit that under the proposed reorganization scheme the fare will necessarily be raised. So far as possible he would refrain from borrowing to pay the cost of construction. The new subway will increase the value of the property along the route and consequently should greatly increase assessments. The increased revenues in realty created by the new subway, he argues, will reduce the amount of money which the city must borrow and on which it must pay interest. On the matter of finance he said:

> The manner in which the city finances the subways will determine what the rate of fare will be. The Board of Transportation declared in May, 1924, that under municipal operation the fare would be 8 to 10 cents unless the subways were financed in a manner to reduce the burden of interest on the 50-year bonds. The present cost of operating the existing subways is 3 cents a passenger. The present cost of interest on the money is 3 cents a passenger. It is not fair to the rider to charge him 3 cents for his ride and 5 to 7 cents additional as the cost of an extravagant financial policy.

The question therefore of whether the 5-cent fare can be continued after the unification of the system and the formation of the quasi-public corporation will depend upon the ability of the roads to earn the proposed maximum of 6 per cent. If the roads can not do so it will be necessary to increase the fare to a point at which they can.

He said further:

> The prospects of a 5-cent fare are better under this scheme than they would be under municipal operation. The existing contracts under which the old subways are operated provide for a 5-cent fare. They will endure for 40 years. But the law provides that the new subway must pay for the cost of operation and interest on the borrowed money and of amortization.

There is no hope of maintaining a reasonably low fare on the new subways, supporters of the administration declare, unless the old subways and the new subways are in some way pooled. To pool them the dual contracts must be abrogated and new contracts entered into with the transit companies. That is what the proposed reorganization is largely about. Mr. Delaney said:

> I believe the people will approve the right kind of reorganization that will make the subway self-sustaining, protect the city and the private investors, eliminate any profits over 6 per cent on private capital, and will insure that the city will control, that service will be increased and that new subways will be constructed as fast as the plans are prepared.

The reorganization plan was conceived, Mr. Delaney said, during a conference between him, Dwight W. Morrow of the J. P. Morgan firm, James L. Quackenbush of the Interborough line and other officials of the transit lines, called to consider the financing of lengthening of station platforms. At this time it was suggested that the private investment in the transit corporations be evaluated in order to provide eventually for the retirement of the private securities and the formation of the quasi public corporation.

The B.-M. T corporation is "always ready to co-operate in full measure with the municipal authorities in any constructive movement for more subways and other rapid transit facilities; to bring about unification plans for improvement of transit conditions," according to that company.

On Nov. 25 Mr. Delaney was quoted to the effect that there was one error in the previous report. He was reported to have said that the quasi-public corporation should include surface trolley lines and buses, as well as all subway and elevated lines. That, he declared, was a misunderstanding. What he meant to say was that, while some persons thought such a consolidation ought to include street cars and buses, he was opposed to such inclusion.

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Boston Bandits Must Die

The last hope of the young carhouse holdup men of escaping their sentences of electrocution for the murder of James H. Ferneau during the Waltham carhouse holdup was lost on Nov. 10 by a decision from the full bench of the Supreme Court. The court found there was no error in the denial of new trial and that the executive council of the Governor could not be forced to take action on a petition for respite of sentences. John J. Levereaux, John J. McLaughlin and Edward J. Heinlein were convicted of murdering the aged watchman after robbing the carhouse of $1,300.

How Much Does Your Automobile Cost You?

An automobile expense card with 31 rulings for daily total expenditures has been printed by the Beaver Valley Traction Company, New Brighton, Pa. The speedometer readings for the first day, last day and total mileage for the month are to be noted at the top of the card. For the information of the owner, he is told that liability, fire, theft and collision insurance cost should be listed monthly at 1/12 of insurance cost; finance charges should be listed monthly at 1/12 of cost; depreciation should be listed monthly at 1/36 of price paid. The card is so ruled that at a glance one can see the expenses for tires, gas, oil, parts, labor, tubes, parking and washing. In size, 9x4 in., the card can be hung conveniently by means of the cord attached. A year's supply of these cards will be furnished upon request and should prove of great value to an owner who is interested in seeing just how much of his income goes to the upkeep of his automobile.

Tokens in Indianapolis

Metal tokens will replace tickets on the Indianapolis Street Railway, Indianapolis, Ind., early in January. The company has signed a contract for 370 registering fare boxes and 1,000,000 of the metal tokens to put the new system into effect. The boxes will be placed on the rear platforms of the two-man cars and at the front door of the one-man cars. The metal disk adopted for Indianapolis has a design of the Soldiers' and Sailors' Monument, with the large letter I on one side and the name of the company and a facsimile of President Todd's signature on the other. Conductors will sell the tokens on the cars as tickets now are sold.

"Open House" Week in Milwaukee

Through the medium of "open-house week," the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., showed its patrons how its electric and transportation services are supplied. During the week of Nov. 8 to 13 more than 65,000 people inspected the seventeen different operating properties of the company. There was a central exhibit consisting of all manner of electric power and railway equipment, from insulators to street cars, showing how the company has kept pace with the rapid development of both industries. An added feature of the show was the daily exhibition of the five-reel movie entitled "Where Jimmie Works," a romance of the transportation business filmed on the company's properties.

New High Record for Chicago Surface Lines

The steady increase in riding on the Chicago Surface Lines during the year reached a climax in October with more rides than during any previous month in the history of the system. Total rides for the month were 135,878,579, an increase of 3,363,261 over the corresponding month last year.

The highest previous month in the history of the system was December, 1925. The October figures exceeded this by 2,929,063. As the peak of the year always comes in December, due to Christmas riding, Surface Lines officials are anticipating a phenomenal business during the coming December.

During December a year ago 99.8 per cent of all equipment—all but seven cars—was in daily service. One hundred new cars have been added to the service since that time and the maintenance schedule has been so arranged as to provide for the use of practically all cars during the coming season.

New Public Service Department in New York Jan. 1

In preparation for the consolidation of state departments, which goes into effect in New York on Jan. 1, the legislative budget committee has started a series of meetings and the legislative reorganization commission will meet soon.

A new Public Service Department is created to be headed by the chairman of the present Public Service Commission. It is to take over the public service and transit commissions.

Atlanta Company Scores Free Rides

A cessation of the free ride is urged by the Georgia Railway & Power Company, Atlanta, Ga., in its publication, *Two Bells*, as follows:

When you come driving to town in the morning in your automobile you see little groups of people congregated at street intersections where are located car stop signs. They aren't gathered there by accident. You know they are waiting for the street car. You pick up one or two or maybe three of them. You do it, of course, in a friendly spirit. You aren't deliberately trying to take 7, 14 or 21 cents away from the railway, or to save that money for the people you pick up.

Yet when you do this friendly act you unconsciously harm not only the railway, but the riders themselves. You take away from the company the only thing that it has to sell. The railway hasn't anything to sell but street car rides. When these rides aren't bought the revenue decreases, and as a consequence the railway suffers. Unless its rides are bought it cannot continue to build more lines, buy more cars and operate them more rapidly. The rides you present to persons waiting for the street car mean little or nothing to them. They do not count the 7 cents saved and the chances are that they get to the office ahead of their schedule because they planned their arrival by the street car.

It may be a friendly act on your part to pick up persons waiting for the street car. But it is also an act of unfair competition with the railway.

A New Visitor Appears in Westchester

There's a new face at the door in Westchester County, New York, in the person of "Aunty J. Walker," the foreboding policewoman whose warnings to "jaywalkers" are well known in New York City. Her visit was ushered in on announcement cards which appeared Nov. 10 on the highways and byways, in shop windows and on street corners.

It is because the records of Westchester County show that its proportion of deaths and injuries resulting from street accidents is far greater than that of either the State of New York or the entire United States that Barron Collier, president of Barron G. Collier, Inc., was urged to accept the chairmanship of the Westchester Public Safety Bureau. Col. Carl F. Hartmann, the Public Safety Bureau Director, will assist in the crusade for saving human lives. His efforts will be spent in educating the people in the matter of individual personal safety. Four specific groups will be concentrated upon, namely, the pedestrian, the automobilist, the parent and the child. According to his plan, the mayors, the chiefs of police and the superintendents and teachers in public and parochial schools will have active constructive parts in Westchester's safety campaign.

"Aunty J. Walker" was created by Barron Collier at the time he served as organizer and director of the Bureau of Public Safety of the New York Police Department. In that campaign, through her constructive criticisms and her cautions, a decided drop was noted in the number of street accidents in New York City.

Would Link City and Interurban System in Cincinnati

Entrance to the heart of Cincinnati, Ohio, with its interurban cars through utilization of the rapid transit loop is sought by the Cincinnati, Hamilton & Dayton Traction Company in an application which has been filed with the City Council. Samuel I. Lipp, attorney for the interurban company, who filed the application, explained that his company was co-operating with the Cincinnati Street Railway in the matter of third rails on Hamilton Avenue and that he could see no reason why the same spirit could not be extended to the use of the subway. The Cincinnati terminal of the interurban company is located on Spring Grove Avenue, about 6 miles from the heart of the city. The equipment of the interurban company is of standard gage and would link up with that operated by the Cincinnati Street Railway. Mr. Lipp said that he felt confident his company could reach an agreement with the Cincinnati Street Railway for utilization of the subway from Cumminsville to the heart of Cincinnati, because it was anticipated that the latter company would be lessee of the rapid transit system when completed. The application of the Cincinnati, Hamilton & Dayton Traction Company has been referred to the transportation committee of the Council for consideration.

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News Notes

Eighth Route for One-Man Cars Opened.—One-man car service was introduced on another line in Milwaukee, Wis., on Nov. 14 by the Milwaukee Electric Railway & Light Company. This service was substituted on the Oakland-Delaware line, running through a densely populated residence section into the downtown section. Addition of this line marks the eighth route on which the company is now supplying one-man car service.

Dead Line on Track Repairs Set.—Unless the International Railway, Buffalo, N. Y., repairs pavement between its tracks on various streets in the city of Buffalo before Dec. 15, the City Council has threatened to revoke the company's franchise. The franchise in Grant Street from Forest Avenue to Military Road already has been revoked, but the company continues to operate cars on the line at a speed not in excess of 5 m.p.h. The ultimatum of the municipal authorities was served on the traction company when the International filed its equity action in United States District Court seeking to restrain the city and the New York Public Service Commission from interfering with the collection of the proposed new tariff of fares.

Date of One-Man Car Hearing Fixed. — The Ontario Railway and Municipal Board has fixed Dec. 13 as the date on which it will hear the city's application for an investigation of the one-man car as operated on the lines of the Toronto Municipal Railway. The application is the result of a resolution presented by Comptroller MacGregor and passed by the Board of Control.

Popular Cars Put Back on Line.—The Monongahela West Penn Public Service Company has re-established its local interurbans between Fairmont and Clarksburg, W. Va., following a request made to Manager R. W. Spofford. When the limited runs made by the "West Virginia" were started it was the general opinion that there would be little demand for the half-hour cars that operated from Fairmont at practically the same time as the limited. However, it was soon realized that patrons were being inconvenienced, especially students and teachers.

Resolution Condemns One-Man Cars.—A movement to abolish the one-man street cars now being installed by the Georgia Railway & Power Company has just been launched by the Fifth Ward Civic League, which has passed a resolution condemning the present one-man system. In addition to the resolution the league is preparing and will circulate petitions throughout the ward to be signed by leading citizens and presented to the Public Service Commission in the near future. It is charged in the resolution and in the petitions to be circulated that the one-man street cars are "inefficient and dangerous to traffic." Practically all of the new cars secured by the company are of the one-man type.

New Line Opened.—The Miami Beach Railway, Miami Beach, Fla., has opened up its newest railway extension, the North West Seventh Avenue lines, with operation from Fifth Street to 38th Street. The extension was completed some time ago but paving and other operations had to be completed before service could be started. The original plan of the city was to run the line only as far as 36th Street, but petitions by property owners brought a two-block extension. The extension will serve a heavily populated section of the city.

Dr. Hyland on the Mend.—Dr. Robert F. Hyland, chief surgeon in charge of the medical department, Employees' Mutual Benefit Association, United Railways, St. Louis, Mo., broke his right leg recently when he was run down and hit by a taxicab. He has been confined in St. John's Hospital for some time, but it is expected he will be back at his desk soon.

Would Reduce Children's Tickets.—The Santa Barbara & Suburban Railway, Santa Barbara, Cal., has applied to the Railroad Commission for authority to place in effect reduced school children's commutation tickets of 40 rides for $2, applicable to children up to eighteen years of age. The present tickets call for 40 rides for $1, applicable to school children up to twelve years of age.

Short Subway for Pittsburgh.—The Council of Pittsburgh has affirmed an ordinance authorizing a subway intended for street cars under Fifth Avenue and Sixth Street from Chatham Street to Duquesne Way. The ordinance was sponsored by the City Transit Commission. It is designed to effect the first step in a proposal pending since 1919 when the people authorized $6,000,000 for a subway in the First and Second Wards. There would be two stations connected with the proposed subway, one running from William Penn Place to Wylie Avenue and the other running from Liberty Avenue to Penn Avenue. The Pittsburgh Railways would presumably operate its cars in the subway.

Council Against One-Man Cars in Montreal.—By a unanimous vote the City Council of Montreal, Que., has registered its opposition to the use of the one-man car in Montreal. An amendment that action on the motion be deferred for a while, so as to give the Montreal Tramways further opportunity of testing the utility of these cars, was defeated by a vote of 27 to 6, after which the main motion was accepted without opposition. Among the arguments set forth in support of the motion was that a car in Montreal should be supplied with a conductor, not only for the collection of tickets, but also to aid, when necessary, women and children to enter and alight.

Discuss Operation at Round Table.—A weekly luncheon for officials and department heads of the Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, has been started as a round-table discussion. Subjects will be submitted by department heads looking toward a more efficient and economical operation of cars and interurban trains. The conference plan was instituted by C. M. Cheney, president.

Foreign News

Delegation Returns to Berlin

A committee from Berlin which has been studying electric railway and bus operation in this country returned on the *Deutschland* on Nov. 10. The committee consisted of Dr. Friedrich Lademann, director of the Berlin Street Railways and Herman Amberg and Friedrich Lange, members of the advisory board of the transit system. In speaking of its plans before leaving New York Dr. Lademann said:

> The committee was formed to study outstanding traffic problems in London, Paris and the American cities visited, particularly as they related to the operation of cars and buses. There has been some agitation by a city official in Berlin for the substitution of buses for street cars in the downtown section.
>
> Our investigations here and abroad have convinced us that such a substitution is not feasible. The principal objections to it are that the cost of carrying passengers is higher on buses and the vehicles also occupy more street space a passenger than the surface car. In Berlin we seek both to make transportation service profitable and to conserve street space. There is no doubt that the surface car accomplishes these results better than the bus.
>
> One feature of American operation which has impressed us greatly is the tremendous accident cost to which your transportation lines are subjected. We have found that some companies are paying as much as 10 per cent of their gross in accident claims. Our accident payments are much lower than this, due in part, no doubt, to the fact that we have fewer automobiles.

Service Speeded Up for Cricket Match.—Three hundred and ninety cars of the London County Council Tramways, with a seating capacity of 28,000, passed the cricket grounds in an hour's time during the final match held recently at Kensington Oval, London.

Tramway Pageant in Manchester.—Birth and growth of Manchester's Tramway Department was recently exemplified in the tramway pageant, a feature of the civic festival, which lasted for seven days during the early part of October. Nearly 1,000,000 passengers are carried each day on these cars. Models of the first electric car as contrasted with the type used now were demonstrated in the procession, which was led by an original one-horse car and followed by a three-horse bus and a motor bus.

Third Rail to Replace Trolley on Southern Railway System in England.—Gradual abolition of the overhead trolley and adoption of the third rail is occurring on the lines of the Southern Railway in England. Together with the extension of the electrification on 105 single track miles, this program will cost almost $19,000,000. The annual number of train miles of the present service which will be affected is 4,416,529, of which 2,038,556 train miles is now steam operated and 2,377,973 train miles operated by overhead electric trolley. About 800 additional coaches will be needed, and these, too, will be converted from the old steam equipment. It is said that completion of the changes in the existing system will probably take until the latter part of 1928.

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Recent Bus Developments

New South Side Bus Route in Chicago

As a result of a recent order from the Illinois Commerce Commission, in which a petition of the Chicago Motor Coach Company was sanctioned, a new bus service was started on South Park Avenue as far south as 79th Street, Chicago, on Nov. 21.

The new route will serve a portion of the city where transportation facilities have been inadequate for some time. The petition was filed at the instance of a number of south side civic organizations. These organizations are now urging the Chicago Plan Commission to recommend that South Park Avenue be widened to 200 ft. from 55th Street south to 130th Street.

Another Minneapolis Bus Line

The Twin City Rapid Transit Company, Minneapolis, Minn., will begin operation at once of an extra service bus line from the heart of the city out Nicollet, La Salle and Hennepin Avenues to 36th Street. This line is made possible for extension later by permit of the Park Board, which has decided to allow bus lines to utilize park highways under certain restrictions and license fees. The fare will be 10 cents and will serve a district off the car lines. The next move is to establish a bus line around Cedar Lake over parkways. The Hennepin Avenue line will utilize new gas-electric buses.

Commission Refuses to Reconsider Pasadena Matter

The Railroad Commission of California has denied petitions of the city of Pasadena for a rehearing of the application of the Pacific Electric Railway for an increase of fares on its motor coach lines in that city and of the Pacific Electric Railway to operate motor coach lines in Pasadena and the commission's investigation into the entire subject of motor coach operation in Pasadena.

Santa Cruz Operation Too Costly

The Union Traction Company, operating buses from Santa Cruz and Capitola, Santa Cruz and Twin Lakes and intermediate points, has applied to the California Railroad Commission for authority to assign its certificate for such operation to the Auto Transit Company, and the latter company has requested permission to operate the same. The Union Traction Company sets forth in its application that it has sustained a loss through the operation of said bus lines ever since it was authorized to operate them in lieu of certain street railway operations heretofore conducted; further, that the Auto Transit Company can operate the bus lines to much better advantage in connection with its present operations, extending from San Francisco to Monterey, Hollister and Salinas by way of Santa Cruz and Watsonville. It has been agreed to retain the transfer privileges between Santa Cruz-Capitola and Santa Cruz-Twin Lakes lines, and the west side lines of the Union Traction Company shall as long as they are operated continue as heretofore, and the apportionment of fares shall be fixed by the Railroad Commission.

Independent May Operate

The Pennsylvania Public Service Commission has decided that John Collins, the holder of a certificate of public convenience to supply bus service, did not violate his contract as complained by the Lehigh Traction Company, Hazleton, Pa. Mr. Collins was granted a certificate to operate buses as a common carrier between the city of Hazleton and Mountain Scenery Hotel, Luzerne County, through the villages of Milnesville and Hollywood; from Mountain Scenery Hotel to Lattimer No. 2 and Scotch Hill; also between Hazleton House, in the city of Hazleton, and the State Hospital in said city. In May, 1924, a complaint was filed by the Lehigh Traction Company contending that when the respondent was authorized to operate he did not aver any intentions of supplying service to the villages through which he passed, and thereby had no such right. The commission decided that this construction of the certificate granted was entirely too narrow and not in accord with the general understanding of the language of the certificate. It ordered that the respondent was in no way violating the terms of his certificate and therefore refused the prayer of the complainant for revocation of his certificate or for a restraining order.

More Omaha Lines Opened

The Omaha & Council Bluffs Street Railway, Omaha, Neb., has put two more bus lines into service. The new routes are from 32d Avenue and Arbor Street west to 40th and Marinda and from 50th Street and Underwood Avenue to 52d and Franklin Streets. Fifteen-minute service is maintained. Other routes are from 24th and Kansas north, from 42d and Leavenworth to 45th and Center, from 36th and Q Street south on 36th to Harrison and from 33d and Parker west to 40th and Maple.

Developments in Seattle Bus Territory

Because of the growth of the bus business in the southwestern district of the Puget Sound Power & Light Company, Seattle, Wash., a new department has been set up to manage all motor coach transportation. This department is in charge of Col. M. D. Mills, with the title of general superintendent of motor transportation.

The new department will manage the Park Auto Transportation Company, whose name has been changed to North Coast Transportation Company; the stages of the Puget Sound Electric Railway from Tacoma to Olympia, the City Transportation Company, which operates suburban service around Tacoma, and the Portland-Seattle Stage Company, which operates the through parlor car line from Seattle to Portland. These lines will be called the North Coast Lines.

A new terminal is being constructed at Auburn, arrangements have been made for a new terminal at Kent, improvements are being planned in terminal facilities in Tacoma, Olympia, Chehalis, Kelso and Longview. The plan is to have a considerable amount of new equipment on these runs early next year.

When the North Coast Transportation Company began operations in October it was desirable to have a trademark or emblem to be used on coaches, stationery and caps of motor coach operators. A contest was put on among all of the employees of the southwestern district for the best design for this purpose. More than 200 designs were submitted. The prize was a trip to Portland and $25 in cash.

School Service Increased.—A second bus line to serve students in the Girls' High School, Atlanta, Ga., was put in operation on Nov. 1 by the Georgia Railway & Power Company. The service, which is similar to that put in operation at the opening of the school term between Morningside and the Girls' High School, is being installed to serve patrons in the west end section of the city. Double-deck coaches similar in structure and design to those used on the Morningside line have been installed. The line is being advertised by the company as the "New Beauty Special." This special bus service to and from Girls' High School has in a large measure overcome the difficulties encountered in the isolated location of this school.

Will Apply for Bus Permit. — The East St. Louis & Suburban Railway has filed notice with the Madison County Board of Supervisors at Edwardsville, Ill., that an application will be made to the Illinois Commerce Commission for a permit of convenience and necessity to operate a bus line between Glen Carbon and Edwardsville, Ill. Recently the railway company obtained an injunction which forced F. W. Herzog, Edwardsville, Ill., to suspend a bus line run by him for several years. Mr. Herzog operated without a state permit.

Bus Service Authorized in Binghamton.—The Public Service Commission on Nov. 16 granted the petition of the Binghamton Railway Bus Lines, Inc., Binghamton, N. Y., for a certificate permitting the operation of bus lines in that city. The Binghamton Railway Bus Lines, Inc., is a subsidiary company of the Birmingham Railway. The certificates cover the Seminary Avenue and Riverside Drive lines and are subject to the franchise by the city of Binghamton. The petition of the company looking forward to bus operation was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 2, page 592.

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Financial and Corporate

Massachusetts Deal Approved

Cities and Towns in Which Worcester and Springfield Lines Operate Consent to New Haven Control

The acquisition of the Worcester Consolidated Street Railway, Worcester, Mass., and the Springfield Street Railway, Springfield, Mass., has actually been accomplished by the New York, New Haven & Hartford Railroad. Three-quarters of the cities and towns served by the electric railways have approved the control by the New Haven to make it an established fact.

Senator George D. Chamberlain, representing the interests of the city of Springfield, has assured those interested that the voice of the city has not been taken away and despite the fact Springfield and Worcester did not approve the agreement entirely the Public Utilities Commission is pledged to protect their interests. The commission finds that the Worcester-Springfield opposition does not prevent the New Haven from taking over the ownership of the railways. As to its own jurisdiction in requiring the fulfillment of promises to Springfield and Worcester by the New Haven, it had no explanation to offer. The fact remains that enacted Legislation makes the two cities dependent on informal agreements in spite of the fact that 80-90 per cent of the railway business is carried on in Worcester and Springfield.

The bill as originally drawn provided for acceptance by the two principal cities. Changes were proposed by Governor Fuller and in two places, respectively, where the wording was: "The City Council of the city of Worcester" and "the City Council of the city of Springfield"; it was reworded to read "the City Councils of the cities and the selectmen of the towns in which the Worcester Consolidated (Springfield) Street Railway operates."

Clark V. Wood, president of the Worcester and Springfield companies, in reviewing the situation said:

> Personally I am confident that none of our citizens need be disturbed over the New Haven's plan of taking control of the trolleys under Chapter 371 of the Acts and Resolves of 1926, as I am sure their interests will be properly safeguarded.
>
> While it may be a fact that the acceptance of the act by three-fourths of the cities and towns in which the Springfield and Worcester systems operates would technically constitute authority for exercising the privilege of control, E. G. Buckland, vice-president of the New Haven Railroad, has stated positively, both in public and privately, that even though this condition exists, he would not act without the assent of Springfield and Worcester.

A statement from Mr. Buckland to Mr. Wood regarding the matter is worded as follows:

> Above all things do away with any idea that, even if we should get the assents of the outside towns, we would endeavor to act under the law without the assents of Springfield and Worcester. We must start with the cordial help of the two cities based upon the idea that only by working together can a railway system be made satisfactory to the people and profitable to ourselves.

A letter is expected from Mr. Buckland to directors of the New Haven road in which all conditions of the ownership, which will include rehabilitation plans in Springfield and Worcester, will be set forth for approval. The contents of this missive will constitute a contract to the cities involved.

Letter to Chicago Bondholders

Bankers Warn Owners of Securities of Chicago Railways of Impending Traction Receivership

A definite assertion that the Chicago Surface Lines will be forced into receivership at the expiration of the franchises next February is made in a letter sent to the 10,000 first mortgage bondholders of the Chicago Railways by executives of seven large Loop banks, who compose the bondholders' protective committee.

The committee first intimated the probability of a foreclosure early last summer. It declares that foreclosure of the first mortgage will be necessary, and legal proceedings to that end may be started shortly after Feb. 1.

Heretofore it had been thought by the committee that the City Council might reach a settlement in time to forestall a receivership, but apparently the members of the committee now hold out faint hope for this and are preparing to go into the courts. It is stated:

> We believe that none of the $94,634,437 of outstanding Chicago Railways bonds will be paid at maturity. Prompt and united action by the holders of the first mortgage bonds is the only efficient means by which their rights can be protected. This requires organized action through a committee working in the interests of all the bondholders.

The letter also outlines the negotiations now pending with city officials for a new unified transportation ordinance and describes the various legislative enactments necessary to the adoption of such a franchise. It warns that no plan is practical, however, without the co-operation of the security holders and urges that all bonds be deposited with the committee at once.

Publication of the bankers' letter provoked much interest in City Council circles, where it was felt that the appointment of a receiver for the Surface Lines next February would mean the end of city control in local transportation matters. There seems to be no doubt in the minds of the Aldermen that the Illinois Commerce Commission will immediately issue a certificate of convenience and necessity that would permit the lines to continue operation despite the expiration of their franchises. With uninterrupted operation thus assured and relieved of the obligation to expend moneys for improvements and extensions, they believe that the Surface Lines would be in a position to force the city to accept practically any compromise.

Members of the staff of the corporation counsel contended, however, that although extensive litigation might ensue, and in spite of the granting of a permit from the state commission, the constitutional provision that no street railway can be operated without the permission of the city would be ample protection for the city. This permission, granted in the 1907 ordinance, they point out, will expire on Jan. 31. 1927.

Warrant Basis in Seattle

The Seattle Municipal Street Railway, Seattle, Wash., will go on a warrant basis on Dec. 10 and the Seattle Clearing House Association has been asked to have its banks cash the warrants. The railway, the city comptroller's figures show, must make payments totaling $1,150,865 by March 1. The principal items are an $833,000 payment on the railway purchase bonds and $275,875 interest on the balance due. The railway will be unable to make these payments without going on a warrant basis. In past instances where the line has gone on warrants the city has always been able to redeem its warrants.

Puget Sound Property Must Use Railway Fund

The United States Circuit Court of Appeals at San Francisco has rendered an opinion to the effect that the 1919 tax on the railway properties of Seattle, Wash., must be paid by the city, but cannot be collected from the general fund. In effect, this means that the Puget Sound Power & Light Company, which sold the city the railway system, must look to the city railway fund for payment of the major portion of the tax for the year when the transfer was made. The tax, with penalties and interest, amounts to $545,370, and city officials are agreed that the city will pay this sum in railway utility warrants, as there are no funds available to make payment in cash. Corporation Counsel T. J. L. Kennedy characterized the decision as a "substantial victory" for the city on the ground that the court held payment could not be made from the city's general fund. He stated that the city will contest any appeal by the company.

United Railways to Dissolve

The directors of the United Railways Investment Company, New York. at a special meeting of stockholders called for Nov. 23, voted on a proposal to dissolve the company. United Railways Investment Company formerly was the holding organization which controlled Philadelphia Company and allied organizations, including Duquesne Light, but its holdings of common stock were subsequently acquired by the Pittsburgh Utilities Corporation.

Standard Gas & Electric Company having acquired control of United, an offer to minority shareholders of the latter was made, providing for the exchange of United for Standard Gas.

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In excess of 97 per cent of the total outstanding common and preferred stock of the United Company has already been exchanged for Standard Gas stock. Practically the only source of income of United Railways this year has been dividends received on stock owned in Pittsburgh Utilities.

The United Railways directors have declared a dividend of 15 per cent on the preferred stock, payable on Nov. 22 to stock of record the same date.

Hears Abandonment Petitions for New York State

Public Service Commissioner George R. Lunn held three public hearings on Nov. 23 on applications of the United Traction Company for abandonment of certain portions of its lines in the cities of Albany and Rensselaer, N. Y. The first application asked for the approval of a declaration of abandonment of the South Ferry Street line from the corner of South Pearl Street to Broadway, Albany. This line has not been in use for several years, with the consent of the city.

The two other petitions related to the lines in the city of Rensselaer, one known as the Aiken Avenue line and the other the Third Street line. The former has not been operated since the substitution of bus service in 1924 by the Capitol City Transportation Company, Inc., whose buses are being operated over practically the same territory as the old car line.

Testimony was offered by the traction company to show that the Third Avenue line is being operated at a loss with street cars and that it is proposed to substitute a bus line therefor with better results in earnings and service to be rendered and to abandon the use of the street railroad.

Norwich Property Sold

P. Leroy Harwood, a member of a bondholders' committee of the Groton & Stonington Traction Company, Norwich, Conn., on Nov. 22 purchased the Groton & Stonington Street Railway and all its accoutrements for $50,000. He was acting as agent of the committee at an auction sale of the property. The sale followed a foreclosure action brought by the bondholders' committee, which secured a judgment in Superior Court. The Groton & Stonington Traction Company, which runs cars from the ferry line in Groton across the Thames River drawbridge to New London, practically controlled the Groton & Stonington Street Railway. The latter's line extended from the ferry line to Westerly. The status of both the Groton & Stonington Street Railway and the Groton & Stonington Traction Company was explained in the ELECTRIC RAILWAY JOURNAL, issue of March 13, 1926, page 464.

Charleston Properties to Pass to Southeastern

The merging of the companies controlling the railway, lighting and gas facilities at Charleston, S. C., was agreed upon at a meeting of the directors of the companies on Nov. 16. The four companies, merged into one, will be known as the South Carolina Power Company. The purpose is to clear the way for the Southeastern Power & Light Company to take over the properties. A meeting of the stockholders of the four companies has been called for Dec. 17, when the sale of the properties will be ratified.

At the meeting on Nov. 16 Philip H. Gadsden, president of the four companies, resigned. Stuart Cooper was elected president of the Charleston Consolidated Railway & Light Company. B. A. Hagood was elected president of the three other companies. They are the Charleston Consolidated Railway, Gas & Electric Company, the Charleston Gas Light Company founded in 1846, and the Charleston-Edison Light & Power Company.

Preferred Claim by J. J. Heim Against Kaw Valley Disallowed

An end appears to have been put to the litigation between Harry C. Jobes, receiver of the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., and Joseph J. Heim. The action was brought against Mr. Heim to set aside a contract entered into between the company and him, under which $224,000 of first mortgage bonds were delivered to Mr. Heim in exchange for $212,000 of second mortgage bonds and $47,565 of defaulted second mortgage interest coupons, and for the recovery of $6,720 of interest paid to Mr. Heim on such first mortgage bonds.

In its decree the United States Circuit Court of Appeals sustained the finding of the lower court ordering Mr. Heim to return to the treasury of the company the $224,000 in principal amount of the first mortgage bonds issued to him shortly before the appointment of a receiver for the company in 1924. A petition for rehearing has been denied, and the protective committee for the bonds announces that counsel for the defendant has signified that nothing further will be done, thus definitely settling the matter. With the return of the $224,000 of bonds to the company treasury, the outstanding amount has been reduced to $846,000, of which $812,600 has been deposited with the bondholders' protective committee.

Holland Line Abandoned

Service on the Grand Rapids, Holland & Chicago Railway, a 43-mile line extending between Grand Rapids and Saugatuck, Mich., was abandoned on Nov. 15. The line, which constitutes the northwestern division of the Michigan Electric Railway, was in operation for the past quarter century. It is said that many residents in the vicinity are unable to believe that some measures will not be adopted looking toward its preservation. Heavy inroads by the motor truck and passenger bus into this once important artery in transportation have been partly responsible for the shutting down of the railway. One year ago the company established one-man car operation, but still the cost of service far exceeded the revenues.

The Consumers Power Company purchased the right-of-way of the line recently from the Heyman-Michael Company, Chicago, which obtained it at the foreclosure sale in federal court.

Conspectus of Indexes for November, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War High	Since War Low
Street Railway Fares* 1913 = 4.84	Nov. 1926 **7.42**	Oct. 1926 **7.40**	Nov. 1925 **7.30**	Nov. 1926 **7.42**	May 1923 **6.88**
Electric Railway Materials* 1913 = 100	Nov. 1926 **156.6**	Oct. 1926 **155.4**	Nov. 1925 **152.0**	Sept. 1920 **247.5**	Oct. 1924 **148.5**
Electric Railway Wages* 1913 = 100	Nov. 1926 **226.3**	Oct. 1926 **226.2**	Nov. 1925 **222.8**	Sept. 1920 **232**	Mar. 1923 **206.8**
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	Nov. 1926 **203.7**	Oct. 1926 **202.9**	Nov. 1925 **202.4**	July 1920 **256.4**	May 1922 **167.4**
Eng. News-Record Construction Cost (General) 1913 = 100	Nov. 1926 **210.8**	Oct. 1926 **209.8**	Nov. 1925 **206.0**	June 1920 **273.8**	Mar. 1922 **162.0**
U. S. Bur. Lab. Stat. Wholesale Commodities 1913 = 100	Oct. 1926 **149.7**	Sept. 1926 **150.5**	Oct. 1925 **157.6**	May 1920 **246.7**	Jan. 1922 **138.3**
Bradstreet Wholesale Commodities 1913 = 9.21	Nov. 1 1926 **12.74**	Oct. 1 1926 **12.79**	Nov. 1 1925 **14.32**	Feb. 1 1920 **20.87**	June 1 1921 **10.62**
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	Oct. 1926 **160.0**	Sept. 1926 **158 5**	Oct. 1925 **161.6**	July 1920 **219.2**	Mar. 1922 **138.7**
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	Oct. 1926 **167 2**	Sept. 1926 **166.8**	Oct. 1925 **169.7**	July 1920 **204.5**	Aug. 1922 **154.5**
Steel Unfilled Orders (Million Tons) 1913 = 5.91	Oct. 31 1926 **3.684**	Sept. 30 1926 **3 594**	Oct. 31 1925 **4 109**	July 31 1920 **11.118**	July 31 1924 **3.187**
Bank Clearings Outside N. Y. City (Billions)	Oct. 1926 **19.75**	Sept. 1926 **17.97**	Oct. 1925 **20.47**	Oct. 1925 **20.47**	Feb. 1922 **10.65**
Business Failures Number	Oct. 1926 **1420**	Sept. 1926 **1360**	Oct. 1925 **1407**	Jan. 1924 **2231**	Aug. 1925 **1353**
Liabilities (Millions)	**39.59**	**34.38**	**35.00**	**122.95**	**27.22**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads.

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Included in the foreclosure sale were ten passenger and four freight cars. The equipment, it is expected, will be sold piecemeal. The financial affairs of the company were reviewed in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 30, page 825.

Slight Gains Shown by Detroit Municipal Railway

The balance for October, 1926, reported by the Detroit Municipal Railway, Detroit, Mich., was $48,663, compared with $47,871 for the similar month in 1925. For the year ended Oct. 31, 1926, the balance was $635,119, compared with $548,227 for the year ended Oct. 31, 1925. The statement of earnings covering the periods mentioned is contained in the accompanying tabular presentation.

INCOME AND STATISTICAL STATEMENT OF THE DEPARTMENT OF STREET RAILWAYS, CITY OF DETROIT

Income	Month of October, 1926	Month of October, 1925	Year Ended Oct. 31, 1926	Year Ended Oct. 31, 1925
Operating Revenue:				
Railway operating revenue	$1,849,526	$1,977,316	$22,936,219	$21,983,553
Coach operating revenue	247,308	99,532	1,890,462	594,556
Total operating revenue	$2,096,835	$2,076,849	$24,826,681	$22,578,109
Non-operating income	24,084	19,018	261,436	180,418
Total revenue from all sources	$2,120,919	$2,095,867	$25,088,118	$22,758,528
Operating Expenses:				
Railway operating expenses	$1,398,224	$1,502,578	$17,302,438	$16,100,047
Coach operating expenses	225,656	93,971	1,852,673	577,149
Total operating expenses	$1,623,881	$1,596,549	$19,155,112	$16,677,196
Net revenue from all sources	$497,038	$499,318	$5,933,005	$6,081,331
Deduct:				
Taxes assignable to operation	$62,888	$58,213	$715,545	$708,944
Other deductions	.....	.....	.....	935
Interest on funded debt:				
On purchase bonds	12,518	12,998	150,673	156,325
On construction bonds	66,745	66,745	785,875	785,875
On additions and betterments bonds	18,727	15,945	231,129	111,887
On purchase contract (D. U. R.)	66,654	71,750	804,690	864,776
Total interest	$164,645	$167,439	$1,977,367	$1,918,364
Total deductions	$227,533	$225,652	$2,687,913	$2,628,243
Net income	$269,505	$273,665	$3,245,092	$3,453,087
Disposition of Net Income:				
Sinking Funds:				
For purchase bonds	$11,295	$11,295	$133,000	$133,000
For construction bonds	44,139	48,525	528,340	571,351
For additions and betterments bonds	13,589	14,155	161,114	412,990
For purchase contract (D. U. R.)	151,816	151,816	1,787,518	1,787,518
Total sinking funds	$220,841	$225,793	$2,609,972	$2,904,859
Balance for the period	$48,663	$47,871	$635,119	$548,227
Statistics:				
Railway revenue car-miles	4,212,281	4,752,077	54,331,172	51,278,694
Coach revenue coach-miles	997,242	450,642	8,050,588	2,494,030
Railway revenue car-hours	424,384	506,737	5,660,527	5,544,026
Coach revenue coach-hours	96,528	47,126	806,030	260,814
Railway revenue passengers	29,345,502	31,658,874	365,691,174	350,529,071
Railway transfer passengers	10,260,133	10,858,997	127,343,566	120,773,485
Railway total passengers	39,605,635	42,517,871	493,034,740	471,302,556
Coach revenue passengers	2,749,754	1,217,449	22,526,916	7,844,683
Coach transfer passengers	239,964	72,074	1,742,702	189,125
Coach total passengers	2,989,718	1,289,523	24,269,618	8,033,808
Total revenue and transfer passengers	42,595,353	43,807,394	517,304,358	479,336,364
Railway operating revenue per car-mile, cents	43.90	41.61	42.22	42.85
Coach operating revenue per coach-mile, cents	24.80	22.08	23.48	23.84
Railway operating expenses per car-mile, cents	33.27	31.62	31.85	31.39
Coach operating expenses per coach-mile, cents	22.63	20.85	23.01	23.14
Railway operating revenue per car-hour	$4.36	$3.90	$4.05	$3.96
Coach operating revenue per coach-hour	$2.56	$2.11	$2.35	$2.28
Railway operating expenses per car-hour	$3.29	$2.97	$3.05	$2.90
Coach operating expenses per coach-hour	$2.34	$1.99	$2.30	$2.21
Ratio of transfer passengers to revenue passengers, railway, per cent	34.96	34.30	34.82	34.45
Ratio of transfer passengers to revenue passengers, coach, per cent	8.73	5.92	7.74	.....
Railway revenue passengers per car-mile operated	6.97	6.66	6.73	6.83
Railway transfer passengers per car-mile operated	2.43	2.29	2.34	2.36
Total railway passengers per car-mile operated	9.40	8.95	9.07	9.19
Coach revenue passengers per coach-mile operated	2.76	2.70	2.80	3.15
Coach transfer passengers per coach-mile operated	0.24	0.16	0.21	.....
Total coach passengers per coach-mile operated	3.00	2.86	3.01	3.22
Ratio of railway operating expenses to railway operating revenue, per cent	75.60	75.99	75.44	73.24
Ratio of coach operating expenses to coach operating revenue, per cent	91.25	94.41	98.00	97.07

Tennessee Companies Protest Separate Valuation

The East Tennessee Electric Company and the Johnson City Traction Company recently filed a petition before the State Railroad and Public Utilities Commission protesting the commission's order of Sept. 23 which permitted an increase in Johnson City, Tenn., fares from 5 to 7 cents but also refused to consider the value of the companies as one unit.

The petition, called attention to the statement of the commission in the certiorari case pending in the Circuit Court of Davidson County in which it was stated that the combined value of the property had not been fixed: the two petitioners being separate and distinct corporations, the value of the Tennessee Eastern Electric Company being $2,500,000 and the value of the property of the Johnson City Traction company being $225,000. Another statement says the value will be considered separately.

The attorneys said the company has not availed itself of the opportunity to increase rates because it feels that great injury has been done in the same order which refused to consider the value of the companies together.

Special Master Considers Denver & Interurban Case

When the case of the Denver & Interurban Railroad, electric subsidiary of the Colorado & Southern Railroad, came before Judge J. Foster Symes in the Federal District Court at Denver recently he appointed John H. Gabriel, a Denver attorney, special master in chancery to confer with William H. Edmunds, the receiver, and report his findings.

The road operates between Denver and Boulder and the court informed representatives of the intermediate cities that it would permit them to renew their pleas of intervention, but that none of the cities, with the exception of Boulder, had any contract with the company which guaranteed service to them by the railroad.

The Guaranty Trust Company, New York, trustee under the mortgage securing an issue of $1,079,663 of first mortgage 6 per cent gold bonds, is seeking to foreclose that lien.

New Directors Elected. — Two new directors were elected at a recent meeting of the Key System Transit Company, Oakland, Cal. The new men are F. Bruce Maiden, Oakland real estate operator, and Herbert E. Clayburg of J. Barth & Company, bond house of San Francisco. Mr. Maiden replaces Joseph F. Carlston and Mr. Clayburg takes the place of Miles Standish.

Line Earns $19,000.—The net earnings of the Municipal Railway of South Jacksonville, Fla., for the fiscal year 1925-1926 were $19,000. An announcement to this effect was made recently by City Clerk Holsonback upon receipt of the report of September the final period of the year. The earnings for the year are nearly three times the total of the fiscal year previous. It is said that the success of the South Jacksonville project has led to the discussion of plans for its further extension and installation of a bus system.

Cincinnati Reports Surplus.—After deducting operating expenses and all fixed charges for the month of October, the Cincinnati Street Railway, Cincinnati, Ohio, accrued a surplus of $6,987 in a report submitted to Edgar Dow Gilman, Director of Street Railroads and Motor Buses. The surplus for October with that for September, which amounted to $6,093, will be allotted to the fare surplus fund. In a statement accompanying the report Mr. Draper said that the report for October would compare more favorably with that for September except for the fact that a further increase in the rate of pay of the company's employees became effective Oct. 1, thus adding $10,-

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000 to the operating expenses for the month. Losses from motor buses during October were $13,913, which is approximately $1,500 less than the loss in September. The loss would have been smaller were it not for an increase in pay to motor coach operators, effective on Oct. 1.

Would Abandon Service. — With operating expenses of its passenger department for the past two years $2,000 in excess of revenues, the Chicago, Harvard & Geneva Lake Railway, operating for the past 28 years between Harvard, Ill., and Lake Geneva, Wis., has asked the Wisconsin Railroad Commission and Illinois Commerce Commission for permission to abandon service because of lack of patronage. Freight service, however, would be continued, according to the company's petition. The line extends 13 miles.

No Action on Brooklyn Proposal.— Action by the Brooklyn City Railroad, Brooklyn, N. Y., toward authorizing the changes in capital structure to which reference was made in the JOURNAL for Nov. 20 was put over until Dec. 7.

Messrs. Hadley, Winthrop and Fletcher on Engineers Board. — Dr. Arthur T. Hadley, president emeritus of Yale University; Beekman Winthrop, of Robert Winthrop & Company, and Andrew Fletcher, Jr., of W. & A. Fletcher Company, have been elected to the board of the Engineers' Public Service Company, thus filling the vacancy caused by the death of C. Chauncey Stillman and increasing the board's membership from thirteen to fifteen. This company was sponsored by Stone & Webster and controls among other properties the Virginia Electric & Power Company, Key West Electric Company, Eastern Texas Electric Company, El Paso Electric Company, Savannah Electric & Power Company, and the Baton Rouge Electric Company.

Service Ceases.—The Coal Belt Electric Railway, operating from Marion to Herrin and Carterville, Ill., as a passenger and freight line, quit business at midnight on Nov. 15. The Illinois Commerce Commission had approved the cessation. The Coal Belt is a 14-mile line.

Greater Deficit on I. R. T.—For the three months ended Sept. 30, 1926, the total revenue from all sources of the Interborough Rapid Transit Company, New York, N. Y., was $13,345,856, a decrease of $875,675 over the corresponding period of last year. Expenditures for operating and maintaining the property increased $540,507. Taxes payable to the city, state and the United States increased $91,191.34. Rentals and other income deductions increased $31,553. The net result for the three months was a deficit of $2,212,658. This is $1,538,928 greater than the deficit for the corresponding period of last year. The comparison with last year is influenced by the strike during the month of July of this year, as well as the fact that in July of last year there was a lump sum payment of $770,000 on account of the new advertising contract, against which there was no similar payment this year.

Personal Items

J. F. Shaughnessy Heads Commissioners

Chairman of Nevada Body Elected at Asheville to Be the President of National Regulatory Body

John F. Shaughnessy, an active participant in the work of the National Association of Railroad and Utilities Commissioners and chairman of the committee on railway rates of that association from 1920 to 1924, was elected president of that body at the meeting in Asheville, N. C., Nov. 9-12. He was formerly first vice-president of the association and before that, at the meeting in Phoenix, Ariz., in 1924, was made second vice-president of that body.

Mr. Shaughnessy is chairman of the Public Service Commission of Nevada. He has been a strong proponent of state jurisdiction on the principle that it is beneficial to the utility to keep regulation close to the community served. He appreciates the limitations imposed on busy operating officials and the difficulties encountered in considering state lines, but has consistently maintained that, in the formation of general policies, executives and attorneys of operating companies must consider the problems of the individual states served and must recognize state lines to the extent of so forming general policies as to take into consideration the interests and problems of the individual states served.

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J. F. Shaughnessy

Mr. Shaughnessy was born in Oshkosh, Wis., in 1874. He attended public and high schools at Poynett, Wis. He entered railway service as brakeman on the Chicago, Milwaukee & St. Paul Railway on the La Crosse Division in 1891, continued as a brakeman in the train service 1½ years and then went to Santa Fé in train service between Chicago and Fort Madison, Iowa. In 1894 he left the Santa Fé to go to Fort Worth, Tex., with the Fort Worth & Texas Railrcad. There he served as brakeman, conductor, trainmaster and division superintendent, respectively. For a while he was responsible for construction work on his division, in charge of more than 450 miles of the railroad between Fort Worth and Texline. He continued in this capacity until 1903, when he went to the Southern Pacific as assistant superintendent on the division from Ogden, Utah, to Sparks, Nev. There he remained for three years. In March, 1907, he was appointed to be Public Service Commissioner of the state and since 1918 has served as chairman of that commission.

F. W. Funk Chief Electrical Engineer at Youngstown

Frank W. Funk has been appointed chief electrical engineer of the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, to fill the vacancy caused by the resignation of George A. Iler. The office now assumed by Mr. Funk is in addition to his duties as assistant to General Manager McCalla.

Mr. Funk became connected with the company at Youngstown as electrical engineer early in 1914 and continued in that capacity for three years, when he was appointed resident engineer for the Republic Engineers, Inc. Two years later, with C. I. Crippen, he formed the firm of Crippen & Funk, consulting engineers, and continued in that work till his return to Youngstown a year ago.

He was graduated from Ohio State University in 1908 and joined the engineering forces of the West Penn Power Company at Connellsville and later the development staff of the Westinghouse Electric & Manufacturing Company. After many interesting engineering jobs with Westinghouse, Mr. Funk in 1912 returned to the utility field as assistant electrical engineer of the Northern Ohio Traction & Light Company, where he participated in the design and construction of the Gorge power station. He continued with the N.O.T., as the Akron property is known, till he went to Youngstown in 1914.

Personnel of Puget Sound Bus Companies

Col. M. D. Mills has been placed in charge of the motor coach lines in the southwestern district affiliated with the Puget Sound Power & Light Company, Seattle, Wash., with the title of general superintendent of motor transportation. He had charge of motor transport work in the A. E. F. The new superintendent became connected with the Puget Sound companies in 1923. Since that time he has been with the Yellow Manufacturing Salaes Corporation of Chicago.

The operation has been divided into two divisions—a southern division, in charge of H. R. Leigh, and a northern division, in charge of Joseph H. Lyons.

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The maintenance of the stages will be operated by a third division of this department in charge of B. H. Steeg, who will be superintendent of equipment, with headquarters at Tacoma, and who will have charge of the shops and garages. Mr. Steeg is a newcomer, having previously been with the White and Yellow Coach Companies. William L. McCredie, formerly engineer for the Puget Sound Electric Railway and Tacoma Railway & Power Company, has been made assistant to the general superintendent of motor transportation.

Mr. Gadsden Withdraws from Charleston Company

Philip H. Gadsden has resigned as president of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., as part of a plan under which control of the company there will pass to the Southeastern Power & Light Company. Mr. Gadsden is vice-president of the United Gas Improvement Company and former president of the American Electric Railway Association. He was born at Charleston in 1867, was admitted to the bar in 1890 and practiced law in that city for more than fifteen years before he entered the public utility field. The United Gas Improvement Company, to the affairs of which Mr. Gadsden has lately been giving much of his time, was a large holder of stock of the company at Charleston.

L. F. Loree Awarded Holland Society Medal

L. F. Loree, president of the Delaware & Hudson Company, the United Traction Company, Albany, N. Y.; the Hudson Valley Railway, Glens Falls, N. Y.; the Troy & New England Railroad and a director and officer of many other corporations, is the recipient of the 1926 medal of the Holland Society of New York, awarded annually to the person who, in the estimation of the society, has done most to promote the welfare of mankind in his own particular field.

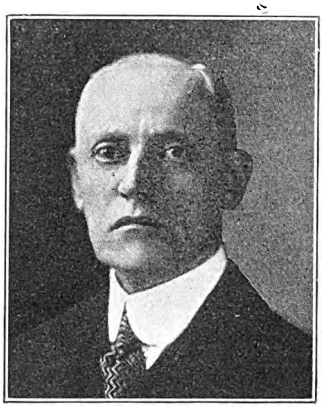
S. M. Cooper New Charleston Head

Stuart M. Cooper has been elected president of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., to succeed Philip H. Gadsden under a plan by which ownership of the property at Charleston will pass to the Southeastern Power & Light Company. He has been first vice-president at Charleston. Mr. Cooper was graduated from Syracuse University as an electrical engineer. Early in his professional career he served as assistant engineer of the Syracuse Lighting Company. Later he was in turn assistant construction engineer, statistician and distribution engineer of the New York & Queens Electric Light & Power Company, operating on Long Island. He next became engineer of distribution of the Counties Gas & Electric Company, Norristown, Pa., and later assistant to the electrical engineer of the United Gas Improvement Company.

J. J. Coleman Honored Again

Another honor has been conferred upon Jilson J. Coleman, vice-president and general manager of the Scranton Railway, Scranton, Pa., and one of the oldest living executives in point of service in the street railway systems of the United States. At the Nov. 19 meeting of the executive committee of the Pennsylvania Street Railway Association, held at Philadelphia, Mr. Coleman was unanimously elected president to succeed Frank Phillips, resigned.

Prior to 1920 Mr. Coleman's activities in the railway field escaped fairly well the limelight, but in that year he became the general manager at Scranton, and then his long and varied career was flashed as if in kaleidoscopic view before the railway world. The new general manager had just spent two years as district engineer of the passenger transportation division of the United



J. J. Coleman

States Shipping Board, Emergency Fleet Corporation, under A. Merritt Taylor, former traffic commissioner of Philadelphia. In this position he was responsible for providing adequate transportation for shipworkers in the territory extending from Boston to Houston.

Forty-four years ago, when horse cars and mule cars were the order of the day, a young man became railway clerk in Louisville, Ky., in the Central Passenger Railway. With the fire in him to succeed, he worked his way up to chief clerk and then managed the lines in New Albany, Ind. When he later moved to Cleveland, Ohio, the stage was set for his association with Tom L. Johnson, a romantic figure of that city, whom he assisted in the electrifying of the horse car lines there. Mr. Coleman later, with the co-operation of some of his own clan and that of the Johnsons, built the lines from Allentown to South Bethlehem and from Allentown to Catasauqua, now included in the system of the Lehigh Valley Transit Company. The company at Allentown, which was financed by R. T. Wilson & Company, purchased the lines from Allentown to Bethlehem and consolidated the two companies. They next rehabilitated the Yonkers system, and in 1895 started the Nassau Electric Railroad, Brooklyn, N. Y., now included in the Brooklyn-Manhattan Transit System.

Such activity might have sufficed for the output of ordinary men, but Mr. Coleman had never really been a member of that class. He next managed the consolidation of the St. Louis and Washington systems for Brown Brothers, bankers of New York, and then constructed the line of the New Jersey & Pennsylvania Traction Company between Trenton and Princeton, which had been started by Albert L. Johnson. In addition he investigated the railway properties of Pittsburgh, St. Louis, Washington, San Francisco, Indianapolis and Baltimore.

Something of the appreciation felt for Mr. Coleman was noted in the spring of last year, when he was promoted to the position of operating vice-president by A. E. Fitkin, who, under the General Engineering & Management Corporation, purchased the Scranton Railway. Mr. Coleman at that time was retained to continue his duties as general manager. In this post he has charge of a system of railway lines 83 miles in extent and a co-ordinated bus system operating in the heart of the hard coal district of Pennsylvania.

E. B. Williams Advanced

E. Bryan Williams has been appointed associate superintendent of transportation of the first division of the United Railways, St. Louis, Mo., with headquarters at Newstead Station. This appointment brought to light the short but ambitious career of a young man from a Missouri village who made his own way through Washington University, was recommended for a trip to the laboratories at Schenectady, engaged in research work for the Union Electric Company, St. Louis, and later became affiliated with the United Railways in the auditing and accounting department. He has also worked in the power and transportation departments.

W. O. Haymond has been made manager of the Muncie district of the Indiana Service Company, supplying electric light, power and railway service to that city. He succeeds Roy L. Thurman, resigned. Mr. Haymond has been in the service of the Indiana company 23 years.

John W. Campbell is to be appointed by Gov. Sam A. Baker of Missouri secretary of the State Public Service Commission to succeed State Senator Larry Brunk, Aurora, who has been nemed secretary of the newly formed Workmen's Compensation Commission for Missouri. Mr. Campbell will assume his new duties on Jan. 1, but until that time will be employed by the commission in some other capacity.

B. H. Kroger, banker and chain store merchant, has been nominated by Mayor Seasongood of Cincinnati to be a member of the Cincinnati Rapid Transit Commission. It was understood that the Mayor had consulted the members of Council privately before announcing the appointment. Mr. Kroger will take the place of E. H. Dornette, whose term has expired. Mr. Kroger will be the first member of the commission to serve under the law without receiving a salary.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Self-Regulation of Business Object of Chicago Meeting

Plans for carrying out the national program for the elimination of costly trade abuses and unethical business practices, which has for its object the eventual complete self-regulation of American business, will be outlined at a meeting of the National Trade Relations Committee of the United States Chamber of Commerce to be held in Chicago on Dec. 3.

Encouraged by the progress reported at a meeting held a few weeks ago, attended by representatives of 29 trade associations, the committee is preparing to extend its activities by working out a specific course of action. To this end, a detailed plan of procedure will be submitted by A. Lincoln Filene, Boston, the chairman of the committee.

The plan proposes practical methods for the formation within the various trades of joint trade relations committees composed of manufacturers, wholesalers and retailers.

Conditions which suggest the need for such trade relations committees to take the lead in adjusting controversies in the individual trades and in establishing business standards will be discussed by members of the national committee with representatives of trade associations with headquarters in the central states.

As a further step toward organizing its activities, a resolution defining the scope of its program has been prepared as a guide for the work of the committee. The resolution emphasizes particularly that "the purposes and efforts of the National Trade Relations Committee and Joint Trade Relations Committee shall be confined to the abatement of such unethical practices as are not contemplated by the Federal Trade Commission and as are not generally regarded as illegal."

New Rectifier Substation Opened by Gary Railways

As a result of an exhaustive study of its performance on other light-load interurban lines, the Gary Railways, Gary, Ind., recently installed a mercury arc rectifier in its new 500-kw. automatic substation at Woodville Junction, Ind. The machine was built by the American Brown Boveri Company, Camden, N. J.

The new substation represents an investment of approximately $33,000. It is the principal power distributing center on a 25-mile interurban line running between Gary and Valparaiso and replaces a portable substation that has been carrying the load on this line ever since the company's old rotary converter substation at Goodrum was burned last year. The rectifier is the first device of its kind ever to be employed on the Gary Railways and will supply energy to the Valparaiso division only, over which light-weight, one-man cars are operated on a two-hour headway.

On account of the relatively light load, it is expected that the mercury arc rectifier will bring about a considerable improvement in operating conditions and will tend to cut down operating and maintenance costs.

Record Made by Oldest Roller Bearing Car

Car No. 201 of the Peoples Railway, Dayton, Ohio, equipped with Rollway journal bearings, was placed in service March 31, 1912, and made 90,000 miles during the first two years without any attention. These bearings were replaced in November, 1914, with bearings of an improved design, and these have been in operation ever since. The operating men like this car and it is reported as being in almost continuous service. It is believed that this is the oldest roller-bearing rail car that is still in regular operation.

Replacement Business in Tires Good

Solicitation of spring dating orders from tire dealers, which started on Nov. 15, is expected to stimulate manufacturing schedules during the normally dull winter months. During the past month production of tires has been gradually diminishing, owing to a slowing up in the retail field, as well as in orders from the automobile, bus and truck manufacturers for original equipment. Dealers have continued to place good sized orders for bus tires, but the bus manufacturers have not been buying as heavily as formerly.

More talk is heard in the tire industry about the so-called evil of selling tires to bus operators on a mileage basis, but those opposed to it seem to be making little progress toward correcting the practice. Some manufacturers are even guaranteeing their tires to give as high as 30,000 to 40,000 miles service. Some years ago tires sold to the general public had a mileage guarantee, but the policy was abandoned because of its impracticability and patent injustice to the manufacturer and dealer. Many authorities say the same situation seems to have arisen in the bus tire field.

Radical changes in the future manufacturing process of tires and inner tubes are seen in a new development in compounding, milling and vulcanizing rubber. Engineers are said to have demonstrated that tubes made by the process wear longer than others, although less crude rubber is used in their composition. As yet no practical way has been found for adapting the process to the manufacture of casings, but experiments are being continued along this line.

Graham Brothers' Nine Months Record

Sales of Graham Brothers' motor coaches and trucks during the first nine months of this year were 78.4 per cent greater than the record for the first nine months of last year. Total sales for the first nine months were 29,336 units.

From the very beginning, according to a statement by the manufacturer, sales of Graham Brothers' truck and motor coaches have shown steady increases. In a statement made by them Graham Brothers say a total of 1,086 units in 1921 marked their initial sale. Sales in 1922 of 3,401 units was an increase of 213 per cent over the first year, while a total of 6,971 units in 1923 was an increase of 105 per cent over the previous year. Sales in 1924 of 10,791 showed another gain of 55 per cent over the year before, while in 1925 this record was again shattered with a total sale of 24,056 units, an increase of 123 per cent over 1924.

A.C.F. Small Bus Coming

With the number of *News Regarding Transportation* for November, the American Car & Foundry Company started another valuable service and from time to time hereafter will discuss some particular phase of transportation which is vital to modern economic life. In addition, a summary of the most important railway developments will be presented in clear, understandable manner.

One of the things the company does is to explain why the company entered the motor field. It says that the first practical result from the formation of the American Car & Foundry Motors Company was the winning of a contract to furnish 50 buses for the service operated by the city of Detroit. The company's program now contemplates the production of a small bus such as an eighteen-passenger parlor car or 21-passenger street car, and also a line of four or five truck models. Details of these are now being worked out at the company's Detroit plant.

It is explained that the first step taken by the company toward establishing the new bus activity was to look about for an existing motor bus and satisfactory engine. It found the bus in the Fageol safety coach and discovered also that one of the principal factors in Fageol efficiency was the engine—the Hall-Scott motor. So these two companies were acquired by the American Car & Foundry Company through the formation of the American Car & Foundry Motors Company, the stock of which was exchanged for that of Fageol and of Hall-Scott Motors. During these preliminary negotiations, it became apparent that the J. G. Brill Company, Philadelphia, was also in search of an efficient motor bus and engine which it could supply to its customers. The American Car & Foundry Company and the J. G. Brill

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Company were in no sense competitors, but it chanced that about the same time they were both seeking the opportunity to furnish the same sort of service to their respective patrons. So it was that they joined forces, and the combination was effected by the formation of the Brill Corporation, whose stock was issued in exchange for that of the American Car & Foundry Motors Company and the J. G. Brill Company, the control of the Brill Corporation stock resting with the American Car & Foundry Company.

Rolling Stock

Pennsylvania Railroad, Philadelphia, Pa., is reported to be contemplating the purchase of 60 multiple-unit cars, presumably for service in connection with the Philadelphia - West Chester - Wilmington electrification upon which the company is now engaged.

Jacksonville Traction Company, Jacksonville, Fla., contemplates, as part of its plan for extending and improving that property under a new franchise now under negotiation, purchasing fifteen new double-truck cars at an estimated cost of $225,000 and seven buses at a probable cost of $46,000.

Lincoln Traction Company, Lincoln, Neb., has purchased twelve 25-passenger Mack coaches and two 21-passenger Studebaker coaches. The two Studebakers and six of the Macks have already been received and operation has been started on the South Fourteenth Street and penitentiary and the agricultural college and University Place lines.

Portland Electric Power Company, Portland, Ore., will purchase eight buses before Feb. 15 for use on the Ross Island bridge line, now almost completed. The new service will cover southeastern Portland, a district heretofore not adequately provided with public transportation.

Youngstown Municipal Railway, Youngstown, Ohio, will negotiate for the immediate purchase of five new buses. Traction Commissioner Engle stated recently that peak service required 50 buses, that it controlled 51 vehicles, but that at present it was without any excess capacity in vehicles.

Metal, Coal and Material Prices

Metals—New York	Nov. 23, 1926
Copper, electrolytic, cents per lb.	13.475
Copper wire, cents per lb.	16.00
Lead, cents per lb.	8.00
Zinc, cents per lb.	7.52
Tin, Straits, cents per lb.	72.375
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$8.125
Somerset mine run, Boston, net tons	2.625
Pittsburgh mine run, Pittsburgh, net tons	2.425
Franklin, Ill., screenings, Chicago, net tons	1.875
Central, Ill., screenings, Chicago, net tons	1.525
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, N.Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.2
White lead in oil (100-lb. keg), N. Y., cents per lb.	14.75
Turpentine (bbl. lots), N. Y., per gal.	$0.89

Municipal Railway, San Francisco, Cal., contemplates purchasing fifteen more cars. Track of the matter was for a time almost lost in the byways of officialdom. Several weeks ago the necessary appropriation was held up by Chairman James B. McSheehy of the finance body due to a bonus clause in the contracts, but it has since been decided to let the contracts and permit cars to be built as soon as possible. City Attorney John J. O'Toole advised the committee that new contracts would have to be awarded if the offending clause was stricken out. Moreover, the finance committee of the Board of Supervisors has approved an appropriation of $100,000 to purchase motors for the new rolling stock.

Trade Notes

American Brown Boveri Electric Corporation, New York, N. Y., has announced that W. R. Foster, formerly sales engineer with the Bridgeport Brass Company, Bridgeport, Conn., has joined its staff to engage in sales promotion activities. He will be located at 165 Broadway, New York City. He is a graduate of Columbia University in engineering.

Ohio Brass Company, Mansfield, Ohio, has established new quarters for its San Francisco and Los Angeles branch offices. The new address of the San Francisco office is Room 531-532-533 Matson Building, 215 Market Street, telephone Davenport 9383. The Los Angeles office location is Room 508 Subway Terminal Building, 417 South Hill Street, telephone Mutual 3506. In both of these cities the company will continue to carry ample stocks of its various products for the convenience of the Western trade.

George T. Marchmont has been appointed Southern district manager of the Graybar Electric Company, New York, N. Y. Mr. Marchmont's headquarters will be at Atlanta, Ga. Until the announcement of his present appointment was made he was manager of the branch office at Richmond, Va. Mr. Marchmont succeeds Howard Hall, who has been promoted to the staff of Frank A. Ketcham, executive vice-president of the company, with headquarters in New York.

New Advertising Literature

American Brown Boveri Electric Corporation, New York, N. Y., has issued descriptive circular No. 301 on mercury arc power rectifiers for manual or automatic control.

Cummings Car & Coach Company, Chicago, Ill., has published a booklet which contains photographs and principal specifications of some of the recent modern rolling stock built by the company for city, suburban and interurban service.

Economy Electric Devices Company, Chicago, Ill., has issued a reprint from the Sept. 18, 1926, issue of the ELECTRIC RAILWAY JOURNAL entitled "Many Variables Affect Energy Consumption by Electric Railways," by J. T. Lake. The company has also reprinted its "ad" from the ELECTRIC RAILWAY JOURNAL of Sept. 25, 1926, called "Cleveland Saves Power."

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has published a rearranged and revised circular on supervisory control and its equipment. This publication first deals with a general discussion of supervisory control beginning at the first successful installation of the property of the Cleveland Railway. The publication then takes up synchronous visual type of equipment, the code visual type and audible type and finishes with a discussion of the supervisory control protective equipment. Illustrations assist in clarifying the discussion.

Interflash Signal Corporation, New York, N. Y., has prepared specifications and drawings as well as descriptive matter showing Interflash traffic signals and signs for use at highway intersections, railway crossings and at other points where traffic warning or direction is essential. These signals comply with the standards adopted by the American Association of State Highway Officials and approved for use on all federal aid highways by the United States Department of Public Roads.

Botfield Refractories Company, Philadelphia, Pa., recently appointed the following concerns as distributors for its product, adamant fire brick cement: The Curtis Supply Company, Inc., Washington Street at Perry, Buffalo, N. Y.; The Waldredh Supply Company. 707-711 Cherry Street, Des Moines, Iowa; South Side Foundry & Machine Works, Charleston, W. Va., and the Empire Machinery & Supply Corporation, 409-411 Water Street, Norfolk, Va.

Timken Roller Bearing Company, Canton, Ohio, has issued a two-page folder descriptive of the positive roll alignment which is a late advance in the design of roller bearings. In this design the rib of the cone is undercut so that the large end of each roller makes contact at separate areas. The rollers are thus kept at right angles to the shoulder of the cone.

Reo Motor Car Company, Lansing, Mich., has issued a circular letter giving complete operating costs on a fleet of ten Reo model W pay-enter buses in service by the Southwest Missouri Railroad Company in Joplin, Mo., over a total of 417,214 miles in the course of one year's operation. Detailed figures on the various items of operating expense are included. Cost per mile for operation is stated by the Reo company to be less than 8 cents per mile.

Bethlehem Steel Company, Bethlehem, Pa., has published a booklet in which are set forth the several advantages of Bethlehem stainless steel and stainless iron. It is pointed out that the total yearly loss of metal due to corrosion is more than 25 per cent of the new metal produced in the world each year, and the increased use of stainless steel and stainless iron would materially reduce this deterioration and loss. Various technical data are contained in the booklet to show the physical characteristics of these two products.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, December 4, 1926 *Number* 23

Plan Early for the Cleveland Convention

EACH year the advantages of fixing the location for the annual convention early in order that adequate plans can be made have been apparent to the industry. Each year, however, matters have been held back by necessary negotiations, and the time available for staging so extensive a show has always been far too short.

Thus the industry will welcome the action of the executive committee in deciding at this early date to go back to Cleveland. This gives to manufacturers and other exhibitors an opportunity such as has seldom been available before. There is now ample time to lay out plans far in advance and to undertake developments to be introduced at the convention.

Some manufacturers have questioned the advisability of the heavy expense incurred in exhibiting standard apparatus with which most of the industry is already familiar. In some cases such a question seems to be justified, although there are always younger men coming up in the operating companies to whom even such an exhibit is educational and valuable. But the fundamental object of an exhibit is to show new devices and developments. The introduction of anything new is always attended with a certain resistance on the part of conservative operators. A convention exhibit gives such men an opportunity of seeing first hand the new things that have been brought out. If the exhibit shows the apparatus in operation, so much the better.

Today there is a rare opportunity offered to electric railway manufacturers. Railway men are in search of new developments and improvements. Competition of other forms of transportation has brought about a keen demand for any product that will help to improve the character of railway service or to reduce the costs of operation. For that reason the traditional conservatism and resistance to new things have been replaced by an awakened interest.

In no class of equipment is this interest stronger than in the electric railway car itself. The industry is alert to the advantages of car improvement. New and better cars have proved to be an effective means of winning public friendship, employee co-operation, increased patronage and reducing operating costs. The industry is looking for such cars. It is ready to investigate any practical improvements which the builders have to offer.

But in this opportunity there is also a responsibility for the car builders. The time has come for them definitely to take the initiative. It will no longer suffice merely to stand in readiness to work out the customer's ideas. The price of recognized leadership is initiative and courage. The idea that railways will not buy cars worked out in detail and developed by the builder as a complete product is being rapidly dissipated. The builder who maintains the status of a contractor and refuses to take the lead in stimulating design improvement may expect to lag behind in the march of progress. During the last year at least one car order was placed as the result of a comparison of sample cars submitted by several builders to demonstrate what they could offer in the way of improvement. The car exhibit at the next Cleveland convention will be a striking illustration of what the various builders have been doing during the year. Many car orders may be expected to be placed on the basis of what is shown there. Now is the time to work out new ideas. The Cleveland convention will be the place to show them. The nature of that exhibit will clearly indicate whether the industry has been moving forward or standing still during the year. Now is the time to plan for the next convention.

Valuable Ideas Developed Through Trainmen's Co-operation

SUCCESSFUL organizations fall into two classes, those in which one master mind dominates through will power and an amazing grasp of detail and those in which the management represents the collective brains of the personnel. The one-man organization corresponds to that type of government called a benevolent despotism. It is never attained; it just happens. When the despot dies, it is found that no one was trained to fill his shoes. The collective organization, on the contrary, is the fruit of careful upbuilding. It is not that kind of organization defined as "but the lengthened shadow of a man."

So much has been heard about one-man organizations that it is a relief to turn to one that has achieved success through the policy of bringing out every worker's individuality to the limit—where the ideal is to operate with the collective intelligence of all the staff instead of only a few at the top. This truly co-operative management is being sought by the Pittsburgh Railways by various means, of which the most important is probably the monthly meeting of its trainmen with the operating officials and department heads.

Staff meetings of foremen and department chiefs are not new. They have done much good. Their limitations are twofold, however: First, a small group of men soon runs out of live subjects; second, they do not touch bottom by bringing in the rank and file—the men on the platform who are in the first line of contact with the public. In the case of Pittsburgh, the company took the unusual step last February of securing this rank and file co-operation directly through the union representatives at the various car stations, and it has worked.

The union's spokesmen have found in this co-operation an enlarged importance for themselves and an enhanced appreciation of the part that the united intelligence of the trainmen can play in the operation of the property. As the recording secretary said at the

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October meeting: "These sessions dispose of more troubles in a month than a business agent could settle in a year through the old channels."

The *modus operandi* is simplicity itself. Through their agents the men submit any suggestions which they believe will produce better conditions for themselves and for the riding public. These suggestions are assigned to the appropriate department head or joint committees, and at the following monthly meeting they submit their findings.

The October meeting, for example, disclosed that quite a number of suggestions made a month or two before were already in effect, and that others depended in a measure on the co-operation of municipal interests. The many complaints on hazards caused by parking, narrow streets and the like led to the formation of a committee of trainmen which will present traffic conditions as the motorman sees them to the Better Traffic Committee of Pittsburgh. The vivid interest displayed in safety questions led to the sending of a representative from each carhouse to a national safety convention.

That the trainmen also think of ride-selling and finance is shown by the suggestions concerning transfers, passes, splashing switches, hard-riding cars, additional shelters, better-located stops and so on. Unquestionably, the monthly statements of the company earnings, mileage output, usefulness in transportation and current state of the pocketbook have helped to increase this interest. These figures, read and elucidated by Vice-President Fitzgerald, go a long way toward making the men feel that they have a real stake in the property. The assumption that men do understand helps them to appreciate their work beyond the mere manipulation of the controller and ringing of the register.

A Concrete Example of Railway Starvation

WHILE much has been said and written regarding the ill effects of competition in transportation, it is usually in generalities. Seldom has there been a concrete case where the situation is brought out so clearly as in Canton, Ohio. The facts were presented to the municipal authorities of that city by the Beeler Organization in a report which is abstracted in this issue. In this report it is shown that the street railway system, which had a franchise to furnish transportation in the city, and which was required to furnish its service subject to stringent regulations of the City Council, had been given no protection against individuals who wanted to exploit the railway by providing competing bus service. It was of no avail that the company was willing to provide, and did provide, supplementary bus service where the rail service was deemed inadequate. The competing buses have been allowed to encroach in all parts of the city until they carry about 40 per cent of the riders.

As a result of the failure of the city to live up to its bargain, it is faced with complete failure of the railway company. For the last several years operating expenses have not been met. The service has deteriorated, the cars and the tracks have been allowed to fall into disrepair, principally because the owners of the system have no assurance whatever that further investment will be protected any better than in the past. If, as the report shows, the management of the property has failed to be aggressive, such a condition can be understood.

That complete withdrawal of rail service and the substitution of buses would be uneconomical is shown in the report. It is estimated that the operating expenses of an all-bus system would be $116,505 more each year than for the co-ordinated car and bus system which the company can give if permitted to do so. What the total cost of service would be in the two cases cannot be determined with accuracy, as it involves a valuation of the railway, for which figures are not available. It is estimated, however, that the city will save between $1,500,000 and $2,000,000 in the life of a 25-year franchise if the co-ordinated system is adopted, besides having superior service the while.

City and company representatives will do well to ponder this report. There are many cities of moderate size where conditions are not dissimilar to those in Canton, and where threats have been made against the existing transportation companies. In not a few competition has been allowed to flourish, with the inevitable decline in quality of service. Undoubtedly the consequences will be similar to those reached in Canton. By allowing the established system to develop, the transportation rendered will be superior to that where the starvation process ends in abandonment of service by the carrier best fitted to furnish it to the community.

Bus Membership Discretion May Well Rest in Executive Committee

A COMMITTEE has been appointed this year by President Sawyer to study the American Electric Railway Association constitution with a view to suggesting any changes which in the light of developments in the industry may seem desirable. The question of membership of independent bus operating companies is one of the specific matters under consideration.

At the present time the constitution permits membership of bus manufacturers but limits bus operating membership to subsidiaries of railway or railroad companies. Two years ago a similar question of broadening the membership requirements and changing the name of the association was under consideration, but was rejected. At that time the industry was hardly ready for the change. This was even more true when the subject was considered on the floor of the convention in 1921. Today, however, the number of electric railways which are operating buses is larger than those which do not do so, and the number of such buses and bus lines is constantly growing. In addition the situation has become complicated by the admission of bus manufacturers to membership, some of whom are bus operators as well as manufacturers. As the result of ownership of operating company financial paper, a number of those manufacturers who are not operators directly are indirectly, at least, very much involved in the operating side of the industry.

Under the present constitutional provisions membership is open to bus operating subsidiaries of steam railroads as well as of electric railways. Although such a situation would be deplorable and would not be in the best interest of sound transportation development, there are indications that competition may in some instances develop between such steam subsidiaries and electric railway bus operations on a scale which would prove every bit as destructive as has any

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of that independent competition which grew up during the absence of regulation. The present constitution also permits retention of membership by bus operators who were at one time electric railway members, but who have since entirely substituted buses for their rail lines.

A peculiar situation exists in the case of the Fifth Avenue Coach Company in New York, which is not at present eligible to membership as an operating organization. Before this property was sold to its present owners by the Interborough Rapid Transit Company it would have been eligible to membership under the present constitution. Such a membership could probably have been retained even after the bus line was sold. Now, however, this company, not eligible to membership, has reversed the usual situation by entering into a contract to buy an actively operating electric railway member company; i.e., the New York Railways. In this case the bus company, instead of being the subsidiary, would become the parent company. Under the present wording of the constitution there is a question as to whether the parent company would be eligible to membership despite the fact that its subsidiary is an active member.

All this is merely by way of showing the need for careful study of the question of bus membership in the association. The present committee's work on the constitution is intended to suggest enabling changes. These would be so worded as to put into the hands of the executive committee the power to decide whether an independent bus applicant should or should not be admitted, instead of retaining a rigid constitutional bar to such consideration by the executive committee. It is obvious that the transportation industry is going through a critical period of readjustment. For that reason it seems wise to provide a certain degree of flexibility regarding membership requirements in the constitution, placing discretionary power in the hands of the executive committee.

It seems only reasonable, from the standpoint of fostering sound development of local transportation and of bringing about constructive co-operation, that unfortunate situations of the past and prejudices growing out of them be not permitted to stand in the way of expanding the association's activity in keeping with the needs of the times.

New York's Comptroller Insists Subway Policy Be Stated

COMPTROLLER BERRY of New York City is a recalcitrant, not just for the sake of recalcitrancy but to a good end. He can't quite see where New York is headed on its present subway policy—if its attitude may be so dignified—and he wants to know from his colleagues in the city administration just what it is all about.

Tammany, of course, slid Mr. Walker into the office of Mayor after it had pinned the responsibility for delay in subway relief measures upon former Mayor Hylan. Mr. Berry, who went into office at the same time as did Mr. Walker, is an independent—extremely independent. He can't see any great difference between the Hylan and the Walker subway policies except that Hylan bragged about his inaction while Walker, who welcomes queens and prizefighters felicitously and passes over to them the keys of the city, has done nothing more about subways than to promise to confide in the public at some time later on.

On the other hand Mr. Berry has sat down with the problem and determined that the system now under construction in New York may cost $1,000,000,000 instead of $500,000,000 or $600,000,000. That sum may be a song or even a waltz to Walker, but it is something entirely different to Mr. Berry. And he wants to know. He insists upon knowing. In the eyes of Mayor Walker Mr. Berry may appear as a replica of the Bull of Bashan, but to the public of New York City he may prove their subway savior. Among other things, Mr. Berry wants to know: How is the great undertaking to be paid for? Is the plan adopted "the best for the entire city?" How is the system to be operated? These are questions that cannot be answered in strains of a waltz step, expertly negotiated, or by an aphorism. Mr. Berry realizes it, but Mayor Walker has given no evidence that he does. Shadow boxing doesn't qualify men to tackle problems like this one. There seems little need to express the wish that Mr. Berry will persist in his pursuit that something tangible be done.

Federal Judges' Salary Bill Deserves Support of the Industry

PRESENT salaries of district judges, $7,500, and of circuit judges, $8,500, are so inadequate, particularly in the larger cities, that there is general dissatisfaction among the incumbents, not to mention a feeling of injustice. A number of the judges have resigned, and not a few are merely holding on until they determine whether the situation will be bettered.

In order to relieve the situation, a bill increasing the salaries of district judges to $10,000 and of circuit judges to $12,500, with corresponding increases for other federal judges, was introduced in and has passed the Senate. It is definitely set for a vote in the House of Representatives on Dec. 9. The American Engineering Council and its constituent engineering societies have been vigorously supporting the bill in both houses of Congress, and have been represented before a number of congressional committee meetings. The passage of the bill deeply concerns not only the welfare of the country in general, but it is of special import to those industries, such as the electric railways, which frequently have technical problems like valuations and franchise matters before the federal courts. Much unnecessary litigation has resulted from failure of the courts to interpret correctly matters of this sort, and any lowering of the standard of the judiciary will make the danger of this still greater.

As to the justice of the proposal for increasing salaries there can be no argument. It is grossly unfair to have invited capable lawyers to give up profitable practice and take appointments to one or another of the federal courts in days past, when the salary afforded a comfortable and dignified living, and then, when the cost of living goes up, not to increase the salaries at least proportionately. It is poor business, because the judges cannot do their best work when they have difficulty in making both ends meet and maintain the standard which the dignity of the position demands.

The bill should be passed if the quality of the federal judiciary is to be maintained.

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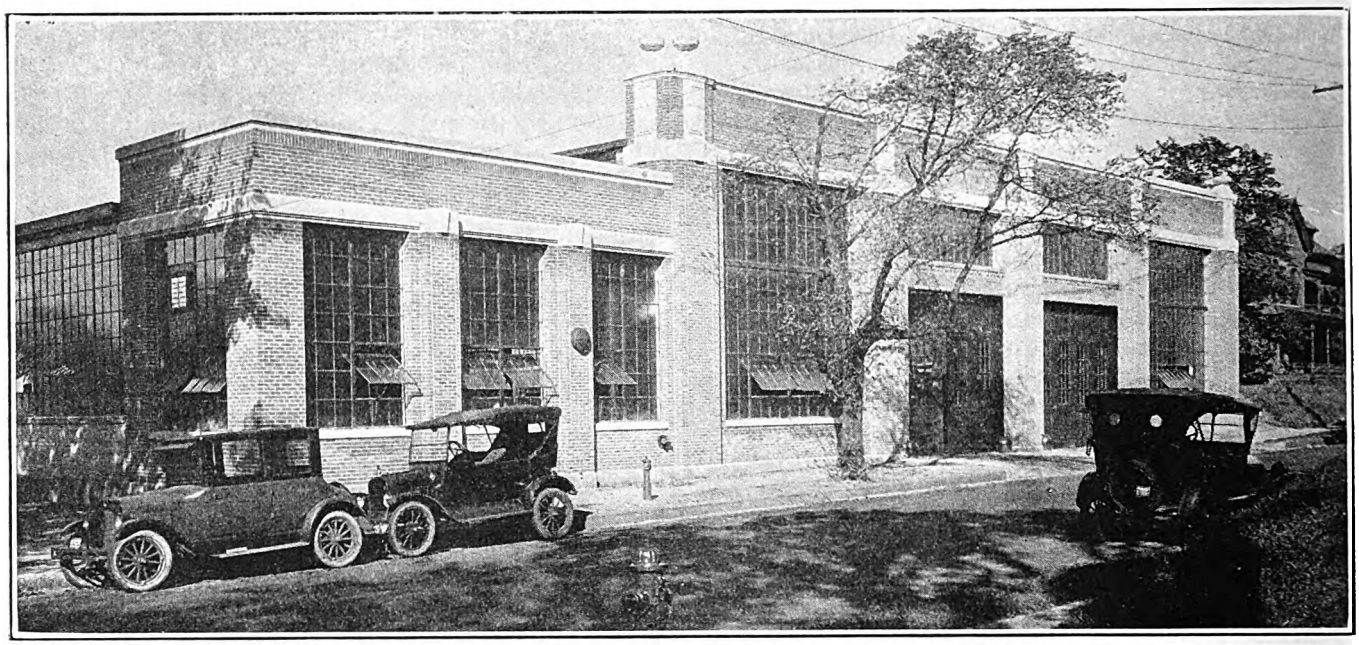
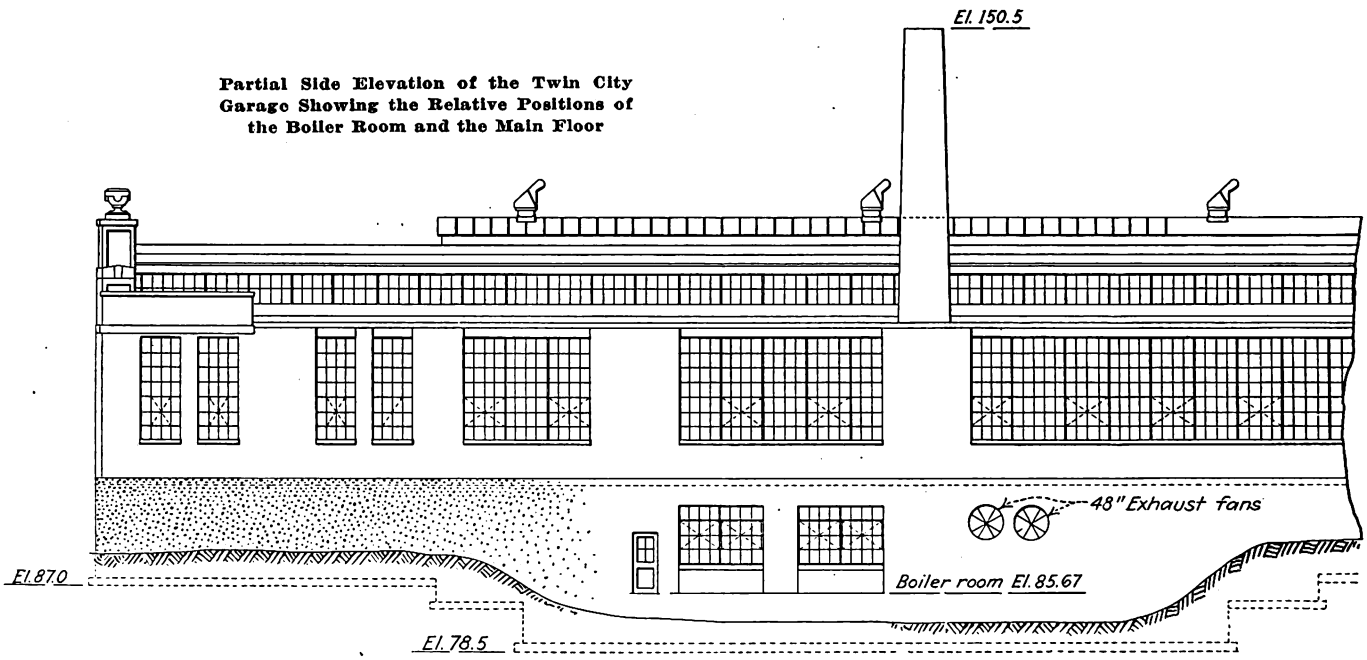
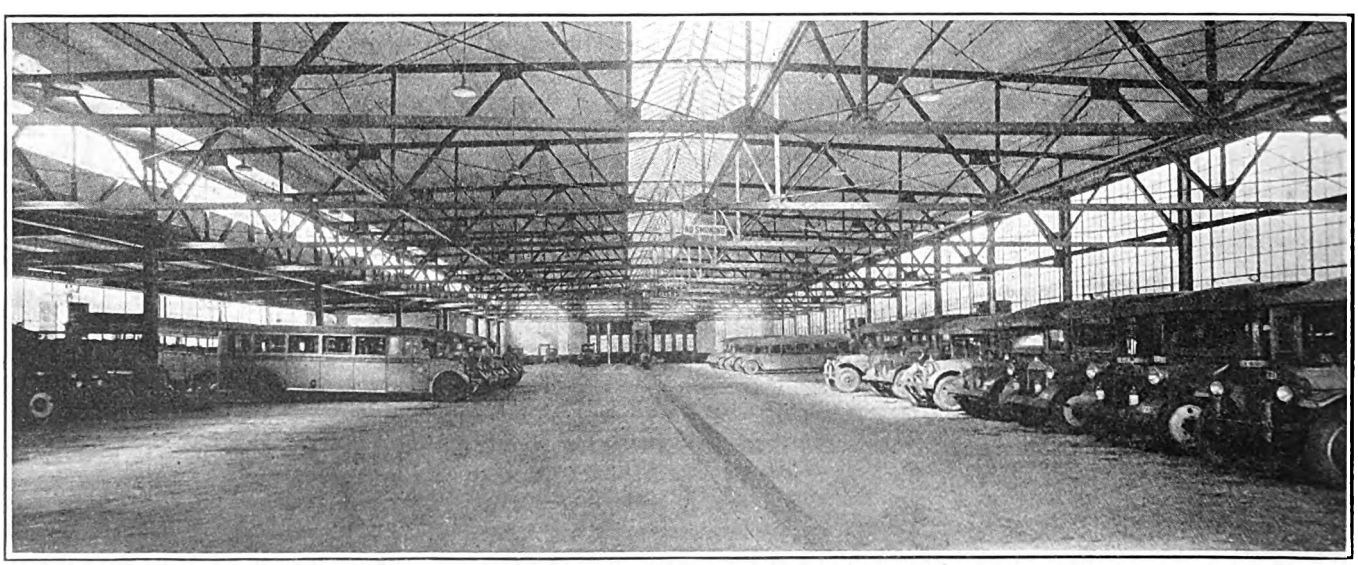


Architectural Details of the Twin City Rapid Transit Garage Combine to Make a Pleasing Appearance. The Building Frontage Is 135 Ft.

Partial Side Elevation of the Twin City Garage Showing the Relative Positions of the Boiler Room and the Main Floor





A Clear Area of 100 Ft. x 300 Ft., the Main Part of the Garage, Is Free of Supporting Columns. Extending Lengthwise Down the Floor Is a Grating Under Which Is a 6 x 6-Ft. Ventilating Duct Connected with Two Exhaust Fans

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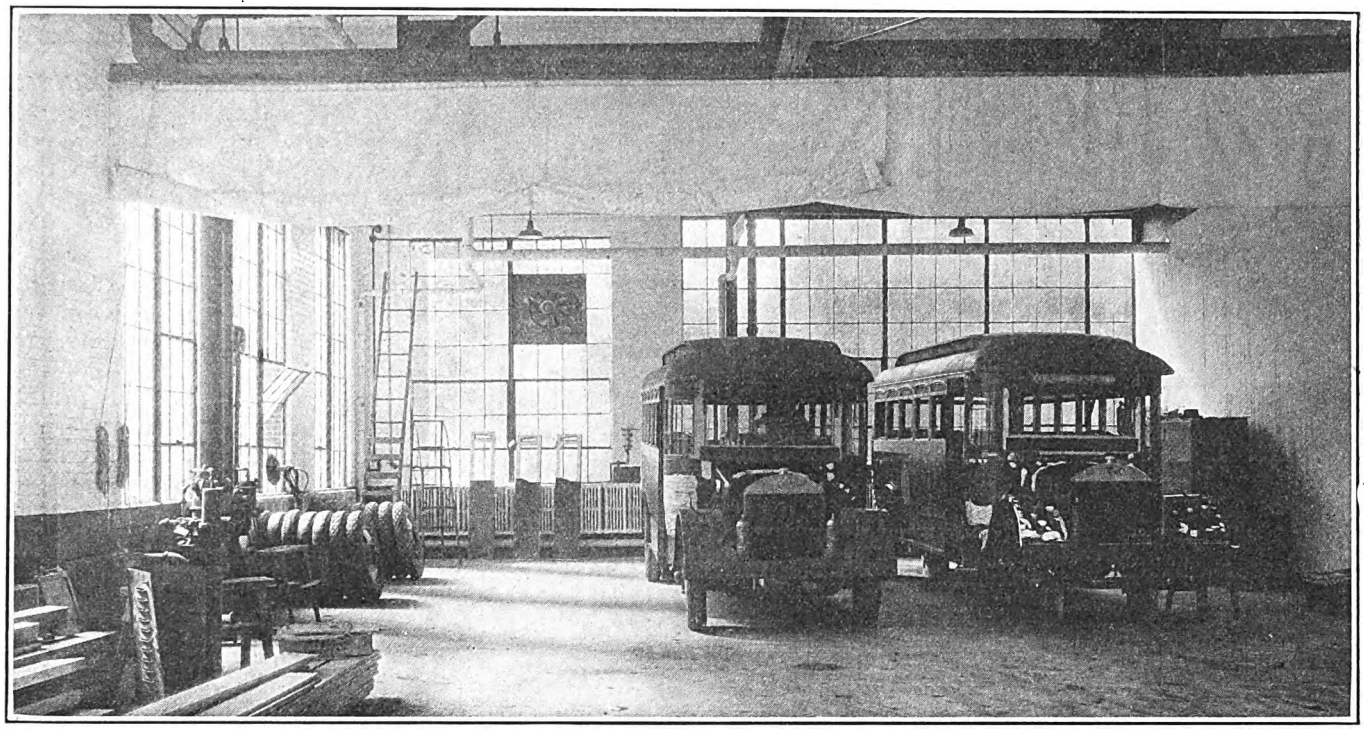

One Corner of the Main Garage, Shut Off by Heavy Canvas Curtains, Has Been Set Aside as a Paint Shop. This Room Is Heated by the Steam Radiators Seen Against the Back Wall and Is Equipped with an Exhaust Fan Mounted in One of the Window Sashes

Well-Equipped Garage

Added to the Twin City Rapid Transit System

New Structure at Minneapolis to House 100 Buses Is an Operating Unit as Well as a Repair Shop and Storage Room—Particular Attention Has Been Given to Heating and Ventilating—New Machine Tool Equipment Has Been Installed—Building Was Designed and Constructed by the Austin Company of Cleveland, Ohio

BUILT new from the ground up along modern lines is the new garage for housing and maintaining bus equipment of the Twin City Rapid Transit Company of Minneapolis and St. Paul, Minn. The building, constructed of steel and concrete, is finished in a pleasing manner with pressed brick facing and stone trim. It has a depth of 300 ft. and a total width of street frontage of 135 ft., being sufficient in size to house 100 buses and still leave room for the ordinary servicing and repair of the equipment.

Besides building a centralized bus repair shop it was the intention to create an operating division for the bus men comparable with the six well-equipped car stations which are located in the Twin Cities. Included are a locker room, bus men's quarters, cashier booth, office and similar facilities that are necessary to an operating station.

In this construction, and the accompanying establishment of bus service on the same high plane on which electric cars have been operated for years in the Twin Cities, is seen one of the important steps that generally mark the operation of such vehicles by established carriers rather than independents. The bus operations recently taken over by the electric railway interests comprise virtually all the intercity service between St. Paul and Minneapolis. For about ten years this service had been operated by independents. In addition several local lines are being established in the city of Minneapolis.

The garage is located but a short distance from the downtown center of Minneapolis, yet on a street so situated that it will not likely be congested with automobile or trucking traffic. The property on which the building is located is also adjacent to a switching spur, so that supplies in carload lots can be received. After the company officials decided upon the general location, type and general specifications of the bus station, the Austin Company of Cleveland, Ohio, was chosen to plan the detailed layout and construct the building.

Height clearances of 15 ft. are maintained over the entire operating floor. The main portion of the building, having a width of 100 ft., is spanned with steel roof trusses, leaving the area below free of columns. To one side of the building is a 35-ft. bay that is used for shops and storage, except at one end, which is partitioned off for a store room, office, bus men's quarters, etc.

The roof deck consists of 2-in. x 6-in. yellow pine sheathing over purlins with a four-ply built up tar and gravel roof. The floor consists of a 6-in. reinforced concrete slab trowel finished, the surface of which has been treated with three coats of Lapidolith hardener.

Because of the severe cold of Minnesota winters, particular attention was given to heating and ventilat-

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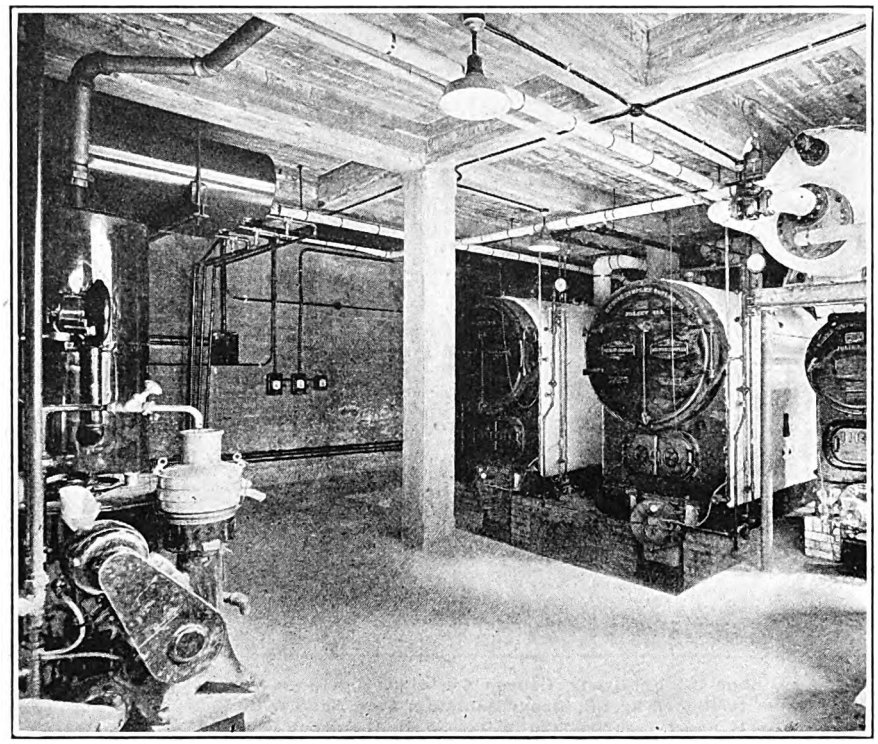


Below the Main Garage Floor Is the Boiler Room. Two Low-Pressure Steam Boilers in the Center Are for Heating the Building

The boiler partially showing at the right supplies hot water to the building and for washing automobiles and buses. All are oil fired. At the left is the oil reclaiming equipment with a De Laval separator in front and the dirty oil and reclaimed oil storage tanks behind and against the roof.

and dirt that find their way into the central duct.

Repair pits are separately ventilated with a No. 2 Sirocco utility fan. Arrangements for heating and supplying fresh air to the repair pits have also been made.

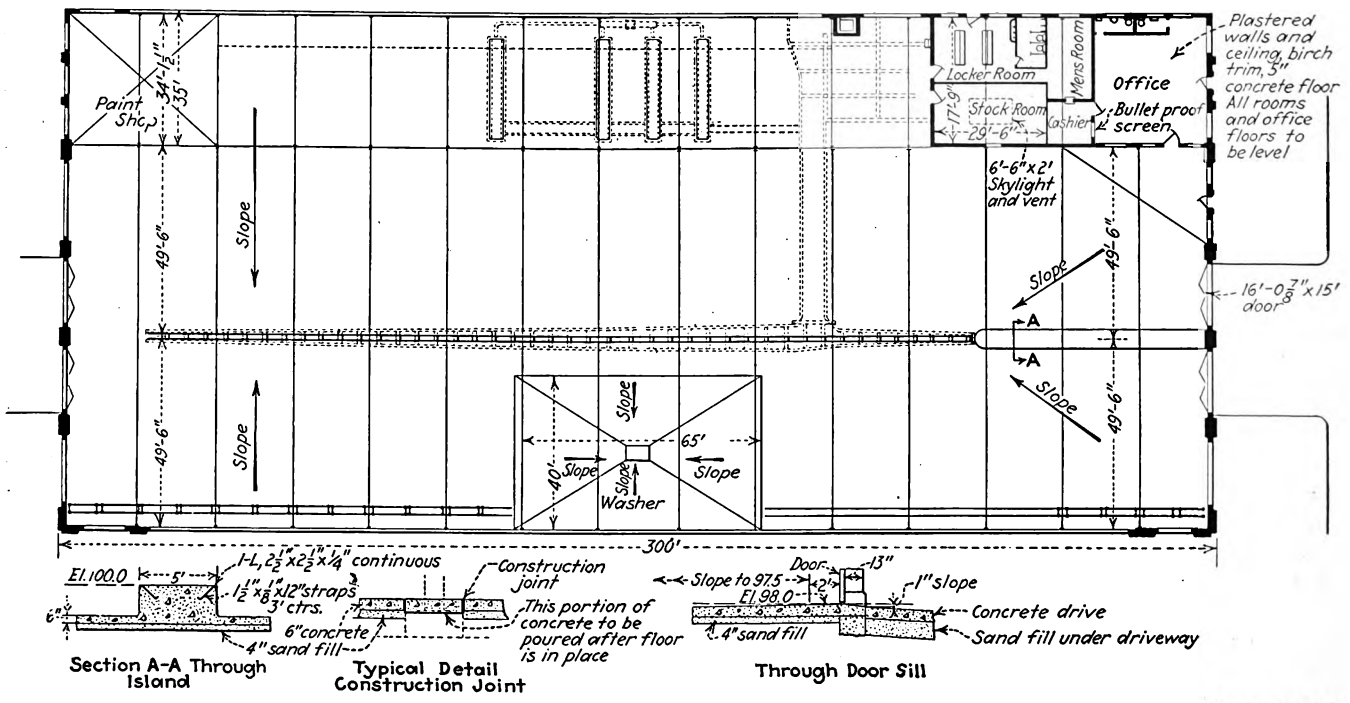
Two low-pressure boilers, fired by fuel oil, are located in the basement and supply heat for the building. In the garage section four Venturafin unit heaters warm the air in the room through recirculating boxes heated by steam. With this system the air is heated by a recirculating process, drawing a variable amount of fresh air from the outside as desired. Heating capacity is available to maintain the interior of the garage at 45 deg. F. by recirculation when the outside temperature is 25 deg. below zero.

Inclosed rooms, such as the office, bus men's room, etc., are heated by direct steam radiation and are designed for maintaining 65 deg. under the above minimum outside temperature. A third boiler, which is also fired by oil, is arranged to supply hot water to the building and also for washing the buses.

ing. The floor has a slope from each side of the building toward the center of 6 in. Through the center of the building runs a 6-ft. x 6-ft. duct for ventilation and drainage. This is covered over the top with subway gratings. This duct leads to a foul air chamber near the boiler room, in which are installed two 48-in. Ventura type disk ventilating fans, each having a free air delivery of 16,000 cu.ft. per minute. Foul air and exhaust gases are thus drawn off the floor and to the outside through this duct, as are also waste water, dust

The entire heating plant is placed below the level of the floor, as shown in the partial side elevation of the building, thus making possible gravity return for the condensed water. Fuel oil for furnace use is received in carload lots. It is pumped from the tank cars to a 17,000-gal. tank buried below the floor of the building near the boiler room.

A steam pipe is run inside of the fuel oil pipe for heating the oil in cold weather and for supplying steam necessary in unloading the fuel oil tank cars in winter.



Floor Plan of the Twin City Rapid Transit Company's New Garage in Minneapolis. A Space 100 Ft. in Width by 300 Ft. in Length Is Clear of Supporting Columns. In Addition a 35-Ft. Wing the Full Length of the Building Is Used for Storage and Repairs

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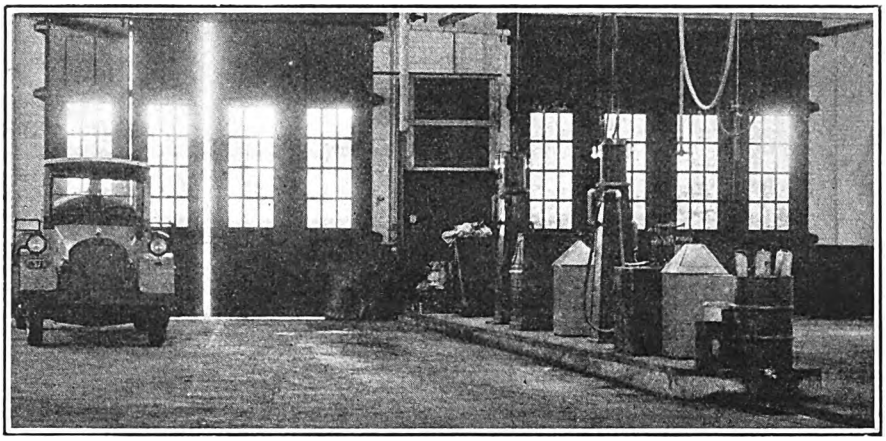
The entire building is protected against fire by a standard sprinkler installation, the construction of which can be noted in a number of the interior views.

Illumination is provided by 200-watt lamps mounted in white enameled reflectors suspended from the roof at the level of the bottom chords of the roof trusses. These units are spaced 20 ft. apart one way by 25 ft. the other.

Space is provided for washing four buses at one time on the area of the main floor designed as a wash rack. The concrete floor in this section has a slope of 8 in. from all sides toward the center drain. A U. S. four-gun washer equipment has been installed.



At the Rear of the Main Room of the Twin City Rapid Transit Garage Is a Raised Platform on Which Are Mounted Two Gasoline Filling Pumps, Engine Oil Containers, Waste Cans, etc.

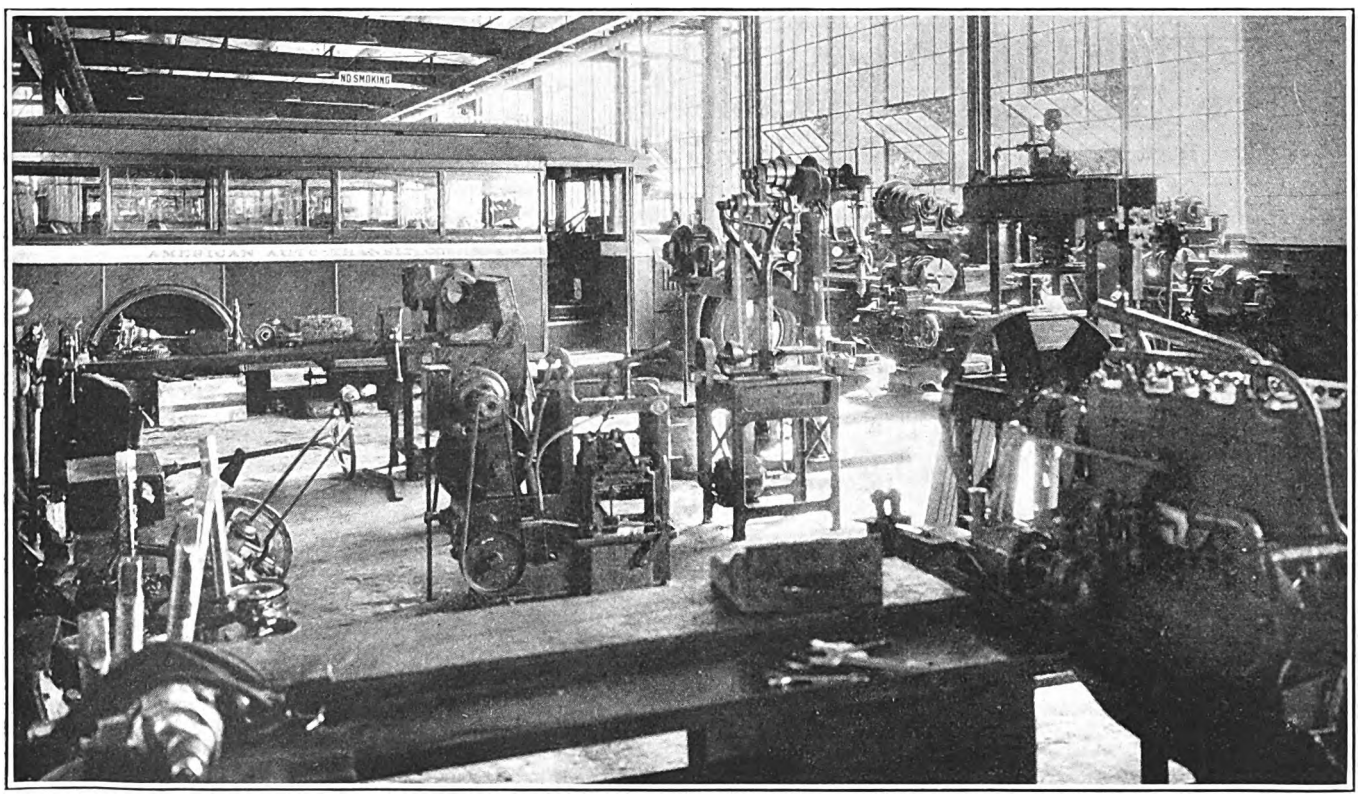
The buses leave the garage through the rear doorway, receiving a supply of gas and oil as they pass by this station

A portion of the garage building, 40 ft. x 35 ft., as shown in one of the illustrations, is closed off by heavy canvas drop curtains to form a paint shop. In this room steam radiators are installed for additional heat in winter and a ventilating fan mounted in one of the sash carries off the paint fumes.

Gasoline, purchased in carload lots, is stored in two 17,000-gal. tanks, which are buried 4 ft. underground immediately adjacent to the railroad siding. Both the siding and tanks are considerably below the floor level of the garage and the gasoline, after being unloaded into the storage tanks, either by gravity or by pumping from the dome of the tank car, is again pumped to the garage floor as actually used. The pump house for handling gasoline and fuel oil is located adjacent to the railroad spur and contains two gasoline and one fuel oil pumps.

Inside the main garage building is a raised concrete platform 8 in. high, 5 ft. wide and 60 ft. long, on which are mounted two gasoline-filling units, lubricating oil containers and radiator water fillers. The gasoline fillers have spring valves, which, when held against a spring button, automatically start up the gasoline pumps, allowing the bus tanks to be filled. When the handle is turned off the valve is closed and the pump is shut down, permitting the gasoline in the filling hose and pipe to run back into the main storage tank. This latter was a requirement on the part of the city of Minneapolis.

Arrangements have been made for reclaiming lubricating oil used in engine crankcases by means of a DeLaval oil reclaiming set, illustrated in one of the views, which is installed in the boiler room. When the buses are drained the dirty oil is run into one of the three compartments in the dirty oil storage tank, depending on the kind of oil that had been supplied to the bus. The oil is then drawn by a pump through the reclaiming



A Corner in the Repair Shop Showing the Machine Tools and Testing Equipment

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Machine Shop Well Equipped with Individual Drive Tools

1 Manley hydraulic press.
1 No. 901 Manley tire changer.
1 Manley combination brake relining machine.
1 36-in. Crescent motor-driven band saw.
1 No. 388-C 15-in. x 6-ft. bed South Bend engine lathe.
1 No. 398 24-in. x 8-ft. bed South Bend quick change gear gap engine lathe.
1 10-in. Stecher high-speed drilling machine.
1 6 x 6 Pearless Universal sawing machine.
1 Black & Decker electric valve refacer.
1 3-hp. Black & Decker electric grinder, equipped with two 12 x 12-in. grinding wheels.
1 No. 2-A, 4,000-lb. Detroit type H electric hoist, 3½-hp. motor, 15-ft. lift.
1 21-in. Cincinnati Bickford upright drilling machine.
1 Model 55 constant potential battery charger, 100 amp., 7.5 volts, manufactured by Weidenhoff Company, with test bench, lathe with bench attachments; armature Test-O-Meter, undercutter with lathe attachments; Bull Dog magnet recharger.
1 5½ x 5-in. water-cooled air compressor.
1 U. S. Model AW-4 four-gun electric car washer.
1 Grayco high-pressure (4,000 lb.) grease outfit.
1 Tokehim portable pneumatic oil transfer (12-gal. tank) with pump and hose (for changing oil at grease pits).
1 Boe model two-barrel grease pump, with hose and barrel truck.
3 Boe model 80 lubricator units, each with 60-gal. tank, drip accumulator.
1 Barrel truck and hand barrel pump with hose.
1 Toledo trip scale.
5 Super-Weld portable benches.
1 International time recorder (daily dial).

set, whence it is pumped into one of three 100-gal. storage tanks fastened to the ceiling of the boiler room. The reclaimed oil is then pumped directly to a filling hose located over the lubricating oil storage tank on the platform in the bus garage. In this way oil is drained from the buses, reclaimed and put back into lubricating oil tanks without handling in buckets or drums.

It is planned to handle all inspection and maintenance work in the machine shop section. This shop is well provided with individual drive machine tools, as shown in an accompanying view and the list of equipment tabulated elsewhere.

It is thus seen that the garage is well equipped not only to handle the buses of the company from an operating standpoint but to maintain them in excellent condition.

Bank Finds Chicago Electric Railways' Progress Remarkable

Northern Trust Company Recommends that Any Doubters About Essentiality of Electric Railways Should Study Local Roads

THE growth of electric railways in the Greater Chicago district in the face of tremendous increases in the use of private automobiles and buses and higher costs of operation is regarded as "little short of miraculous" by one of the largest banking houses in the great midland financial center.

A recent issue of "Bond Briefs," a bulletin published weekly by the bond department of the Northern Trust Company of Chicago, makes the following pointed observations:

The progress of the electric railways of the Chicago district in this typical period is little short of miraculous. In 1915 the three electric interurban railroads which enter the Chicago Loop (the Chicago, North Shore & Milwaukee, Chicago, Aurora & Elgin and Chicago, South Shore & South Bend Railroads) carried 13,004,588 revenue passengers. By 1925 this number had grown to 26,474,522, or an increase of more than 100 per cent, a rate of growth considerably in excess of the rate of increase in the population of the Chicago territory.

The comparison of the 15 per cent national growth with the 100 per cent increase in Chicago naturally leads to the question, "Why is the rate of increase in the Chicago district so far ahead of the rest of the country?"

The answer, of course, lies partly in the tremendous development of the Chicago suburban districts, which has increased correspondingly the number of potential customers, but much of this demand might have been lost to bus lines or other competitors if it had not been for the progressive policy of the electric railways of this territory. This policy has been expressed by one of these companies, as follows: "It is our obligation to provide the kind of transportation the public wants, regardless of what the variety may be, and not merely to give service of a character which may be the easiest way."

Tangible evidences of this policy may be noted in the introduction of limited as well as express and local trains, the operation of dining and observation cars, the use of monthly commutation tickets, the operation of bus services co-ordinating with the electric services, the connections with the elevated trains in the Loop and freight, merchandise dispatch and the newly introduced refrigerator car service.

The bulletin remarks favorably on the practice of the North Shore Line of consulting with riders on various matters of service, calling particular attention to the contest held last summer for the selection of names for the nine new stations on the Skokie Valley line. The custom of the Chicago, Aurora & Elgin line of sending personal letters of welcome to all people purchasing commutation tickets who had not purchased such tickets in the preceding month was also highly praised by the bank.

The bulletin then proceeds to discuss the matter of expenditure made in improving the physical properties. Thus it says:

The electric railways of the district have also spent substantial sums in improving their properties. The North Shore Line, for example, had a valuation of $12,251,977 in 1916. Since then, to the end of 1925, more than $22,000,000 was spent on right-of-way, track improvement, stations, cars and other equipment, bringing the value of the road above $34,000,000. The Aurora & Elgin and the South Shore Line have invested extensively in a rehabilitation program, including rock-ballasting, renewal of ties and rails, installation of wigwag and flash signals at crossings (necessitated by the great increase in automobile traffic) and a modern comprehensive system of block signal control.

Another interesting step on the part of the electric railways serving this territory, says the bulletin, has been their success in creating traffic by stimulating the upbuilding of the territory which is adjacent to their lines. In conclusion, the bulletin adds:

The success which these three electric railways have enjoyed under progressive management is an indication of the possibilities of electric railways. The series of failures which followed the first great era of traction development from 1897 to 1907 has given a wrong impression that this type of transportation is not economically sound. These early failures, however, were due to three causes:

1. The construction of roads not justified by traffic demands.
2. Extravagance and waste in construction, often for the benefit of the promoter, and usually resulting in overcapitalization.
3. Poor management.

From its own study of the situation which affects such properties the bank is led to conclude that the future of the interurban railway, intensively run, is secure. It says:

Experience in the Chicago district has shown that a well-constructed electric railway operating between two centers, or from an important city to its suburbs, if progressively managed, can provide excellent service to its passengers and a fair profit to its owners. Any one who has doubts as to the future of the interurban railroad business need only study the situation in Chicago to see what great possibilities lie in this field.

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Co-ordinated Service Recommended for Canton, Ohio

In Report to City Committee on Public Utilities the Beeler Organization Recommends a Single City-wide System Including Cars and Buses—Elimination of Competing Bus Lines Is Urged in Order to Permit Improvement of Service to All Sections of the City at Reasonable Cost

CO-ORDINATION of all rail and bus lines in a single system to be operated by the present railway company is the outstanding feature of a report on transportation facilities in Canton, Ohio, recently made to the committee on public utilities of the City Council by the Beeler Organization, engineers and consultants, New York City. The unsatisfactory results and excessive cost of the present dual service are pointed out and detailed plans for the co-ordinated service are given. The report proposes the retention of the greater part of the street railway trackage, but in the interests of economy and improved service, consolidation of many of the bus routes is considered desirable.

Following is a brief abstract of the report, which consists of 94 pages of text and 123 pages of exhibits.

Until 1923 all of the service in Canton was furnished by the electric street railway. During that year rail service was supplemented by buses. This system, a division of the Northern Ohio Power & Light Company, operates four car lines and five bus lines. The rate of fare is 6 cents cash or six tokens for 35 cents. There is a universal free transfer privilege between all its cars and buses. In all the railway has 29.85 miles of track in the city, of which 22.2 is in active city operation. The railway owns 74 passenger cars, 47 being in fair condition and more than adequate for the present maximum week-day requirements of 33 cars. The company operates fifteen buses in city service. The equipment consists of six Reos and three Whites, which probably will not give more than another year of service, and six Six-Wheel buses, which have just been placed in operation.

A complete field survey was made of the local transportation lines, including all-day passenger counts at or near points of peak load for each car line and bus line, counts of parked cars, a study of the routing of interurban cars and buses, and inspection of shops, carhouses, garage and other facilities.

Canton, the county seat of Stark County, has had a steady growth, but its expansion has been greatest in the present century, since the automotive industry began, which consumes a large number of Canton's products. The population in 1920 was 87,091 and in 1925 it had increased to 106,260, a 22 per cent growth. At the present rate of increase there will be a population of about 115,000 by Jan. 1, 1927.

Canton has an extensive business or retail shopping district. The city has a wide range of industries, manufacturing nationally-known products. Excellent transportation facilities are available for bringing in raw materials and the distribution of the finished product. Nine leading plants employ some 11,000 workers. Plans are under way which would require 1,700 additional workers.

Canton's streets are uniformly level and well paved. Roadways vary in width and average about 40 ft. Street cars and buses in passing occupy about 20 ft., or 50 per cent of the roadway of transportation arteries. This leaves 10 ft. clearance on each side of the transportation lane for vehicular traffic. Ample street space is available for the fast, free movement of all classes of vehicles when the progress of traffic is not interfered with by the parking of automobiles.

Most of Canton's streets were constructed before the extensive use of the automobile. At that time it was not intended that any part of the public thoroughfare would be used for storage purposes. During the days of horse-drawn traffic ordinances prohibited hitching of horses in city streets. Horse-drawn vehicles have been superseded by the automobile and hitching yards have disappeared. Storing of automobiles absorbs a large part of the street and slowing down of traffic has resulted in congestion.

Widening the roadways is suggested as a remedy to relieve the ever increasing congestion. In order to bring this about, very often the width of the sidewalk is reduced. Diminishing the sidewalk space that has been dedicated for ages for the sole use of pedestrians will add to the confusion.

It has long been a misdemeanor to use sidewalks for storage purposes. City authorities prohibit their use for display stands or other obstructions that will in

Four Principles of Co-ordination

1. Electric street railway transportation will provide the most economical, adequate, reliable and satisfactory service through congested districts where the density of traffic is the controlling factor and demands the use of equipment with large carrying capacity per vehicle.

2. Buses will care for traffic where the demands for transportation are moderate and without violent fluctuations.

3. Such a co-ordinated system will enable the patron to complete a journey from any point in the city to any other point on the payment of one fare.

4. With a system under one responsible management, the city of Canton will be in the position of enforcing all just and reasonable requirements as to present and future needs and of securing service.

—JOHN A. BEELER.

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any way interfere with free movement of the pedestrian. Any attempt to change this practice no doubt would bring a storm of protest from pedestrians and merchants. If the reasons advanced for prohibiting interference of sidewalk traffic are sound, then the interference with street traffic should be considered in much the same light.

Use of the family automobile has educated not only the owner of the vehicle but also the traveling public to view the local city service in the same light as the individual service offered by the private auto. Prospective customers become impatient if compelled to wait for several minutes on the city service. Failure to provide a seat for each patron irritates the customer. If the vehicle is poorly ventilated, badly lighted and dirty, the customer's impression of the service is anything but complimentary. Recognition of the private automobile as a keen competitor is no secret. Decreased revenue has resulted from its extensive use, not only through the loss of patronage of the owners, but also through the owner's generosity in picking up prospective customers.

The average fare charged per trip for local city service is less than the cost of private service. Ordinarily cost will influence patronage, but cost in this case is not treated seriously. Desire of the public to ride on rubber is advanced to explain shrinkage of rail traffic. The real causes are the individuality and time-saving of the automobile. There is every reason to believe that its use will grow. The point of saturation is in the far distance. Automobiles will continue to offer keen competition to the city system, regardless of the character of equipment used in its operation or the personnel.

There is no city registration, but figures for Stark County, together with an allocation for the city of Canton on the basis of the United States census population of 1920, should give a fair indication of the number of motor vehicles in use. These figures for the years 1917 to 1925 follow:

Year	Passenger Vehicles, City of Canton
1917	5,170
1918	6,790
1919	8,350
1920	8,460
1921	9,990
1922	12,010
1923	14,730
1924	18,220
1925	19,850

This tabulation shows that there are four times as many vehicles in use as there were eight years ago, or their use has doubled every four years until in 1925 there was a passenger automobile for every 5.35 persons. Probably 23,000 cars will be in use in Canton with the coming of the year 1927.

Counts show that some 3,000 cars are parked daily in the downtown district and in the vicinity of the principal industrial plants. Checks made indicate that each vehicle carries an average of about two passengers. This would be some 12,000 rides daily or about 3,600,000 for a 300-day year. These are passengers that otherwise would be car or bus riders.

Rail Service and Revenue Have Fallen Off

All four rail lines are operated on ten-minute base headways, with additional service on two of them during the rush hours. This service requires 24 cars during the normal hours and 33 during the evening rush.

TABLE I—SERVICE AND REVENUE, CANTON CITY STREET CAR LINES OF NORTHERN OHIO POWER & LIGHT COMPANY

Year	Car-Miles	Car-Hours	Passengers—Revenue	Passengers—Transfer	Passenger Revenue
1923	2,311,160	287,219	12,652,855	2,232,188	$754,495
1924	2,119,992	264,702	11,273,039	1,828,477	674,158
1925	1,758,956	224,874	9,917,301	1,653,620	593,112
1926*	1,611,896	211,061	7,172,939	1,075,547	429,419

* Last six months estimated.

Table I shows that the service and revenue have fallen off in the past four years. This is true of all lines, being especially marked this year because of the strike of street car operators between May 2 and 22. At that time considerable car riding was lost which has not been regained.

One great handicap to the railway service is its low speed of 7.75 car-miles per car-hour. The speed between terminals is only 8.51 m.p.h. Such speed encourages the use of automobiles, and of buses that make 11 m.p.h. The factors that bring about this low speed are waiting at turnouts on single track, making passenger stops on a single-track section where there is a car waiting on double track a few hundred feet away, the use of single-track connecting curves so that the operator must go to the curb to switch a signal light, waiting for change with a fare rate that requires the use of odd cents, and the poor condition of much of the track. Such delays in a city with wide streets, and where vehicle congestion is not serious, not only annoy patrons but also are very expensive. The lines operating over single track are losing an average of from six to seven minutes per round trip in waiting on sidings. If the time in slowing down for sidings is considered, it can be seen that it is taking an extra car on each of these lines to care for the loss in time resulting from the use of single track.

There is a great excess of seats supplied over the demand during most of the day. The industrial lines have marked peaks, which the street cars with their large capacity care for very well, so that little additional service is needed. The opening and closing hours of some of the larger plants are staggered for the various shifts, which makes it somewhat easier to supply them with transportation.

Buses Operated Under Yearly Permits

The bus routes of the company are not operated under its rail franchise, but under yearly permits, as are the independent bus lines. The bus-miles, bus-hours, pasengers carried and passenger revenue are shown in Table II. There has been a steady improvement in all but one line this year. The exception is doubtless due to direct competition by independent buses over a considerable portion of its route.

The principal difficulty with the bus operation is that too much time is spent at the terminals. These buses are making but 8.64 bus-miles per bus-hour while the average speed actually made between terminals is 11.16 m.p.h. This would indicate that about 30 per cent of

TABLE II—SERVICE AND REVENUE, CANTON CITY BUS LINES OF NORTHERN OHIO POWER & LIGHT COMPANY

Year	Bus-Miles	Bus-Hours	Passengers—Revenue	Passengers—Transfer	Passenger Revenue
1923	129,659	15,136	320,573	90,553	$18,949
1924	252,137	29,816	697,477	180,161	41,260
1925	293,543	39,298	859,951	197,599	51,298
1926*	456,762	58,669	1,232,758	226,206	73,635

* Last six months estimated.

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the drivers' pay is for time when they are not working. It can be remedied by through routing.

The first bus operation in Canton of any consequence was by independent lines, beginning about 1921 with four buses. The number of independent buses in use has gradually increased until at present there are 36 registered. The average seating capacity of these is 24 passengers. There are eight operating companies or individuals, operating twelve lines. The routes are shown on one of the maps. The older buses are uncomfortable and unattractive and many of the newer ones were second-hand when placed in service. Licenses are issued by the Mayor for the period of one year, a fee of $30 being paid for each bus. Individual surety bonds or accident insurance policies must be filed and buses are required to conform to routes and terminals designated by the Mayor. The ordinance provides no effective control. The rate of fare charged is 5 cents, with transfers issued to other independent bus lines for 1 cent. The map shows that in many cases these lines operate directly over or encroach upon the car lines. There are some places, however, where the independent buses are supplying sections without needed service.

Six routes are operating on a ten-minute headway, three on fifteen minutes, two on twenty minutes and one about every 35 minutes. During the normal hours 27 buses are in operation. Additional service is given on a few lines in the rush, bringing the maximum number operated daily up to 32 buses. The schedule gives about 4,542 bus-miles and 494 bus-hours. The speed is 9.19 bus-miles per bus-hour, with an actual speed of 11.06 m.p.h.

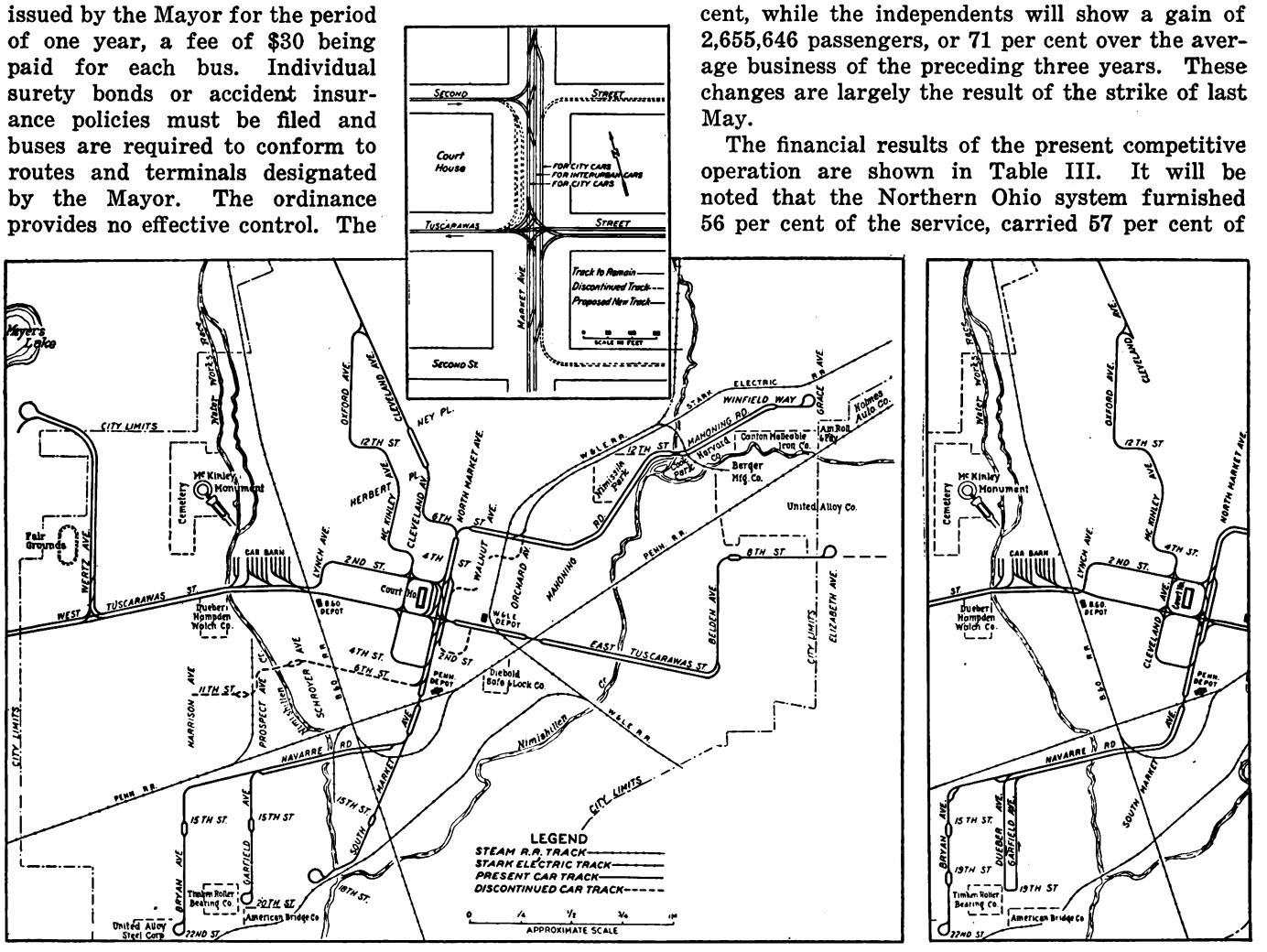
There are some 7,724,018 passengers carried annually, of whom 6,372,312 or 82.5 per cent are revenue passengers. The passenger revenue, including the 1-cent transfer charge, is $332,133, or 5.21 cents per revenue passenger. This is a revenue of 20.7 cents per bus-mile.

Total Traffic Decreasing in Canton

Traffic carried by the combined transportation systems reached a peak with the year 1923, when 15,983,428 revenue passengers were carried. Since then there has been a recession each year. It is estimated that for 1926 the Northern Ohio city lines will show a decrease of 3,501,368 passengers from last year, or 29 per cent, while the independents will show a gain of 2,655,646 passengers, or 71 per cent over the average business of the preceding three years. These changes are largely the result of the strike of last May.

The financial results of the present competitive operation are shown in Table III. It will be noted that the Northern Ohio system furnished 56 per cent of the service, carried 57 per cent of the passengers, and collected 60 per cent of the revenue. Independent buses in the same period provided 44 per cent of the service, carried 43 per cent of the passengers, collected 40 per cent of the revenue.

In the transportation business competition usually brings duplication. Breaking down of service usually



At Left, Present Track Layout of N. O. P. & L. Lines in Canton. At Right, Proposed Track Layout in Part of City, Showing All Recommended Changes. The Small Inset at Top Indicates Proposed Track Changes in City Hall Square

TABLE III—FINANCIAL RESULTS OF ALL TRANSPORTATION SYSTEMS IN THE CITY OF CANTON, OHIO, 1926

	Northern Ohio Cars and Buses	Independent Bus Operation	Total
Miles operated	2,068,658	1,603,326	3,671,984
Hours in service	269,730	174,246	443,976
Revenue passengers	8,406,697	6,372,312	14,778,009
Operating revenue	$505,754	$332,133	$837,887
Operating expenses, including taxes	$659,781	$272,565	$932,346
Net available for renewals, retirements and return	D$154,027	$59,568	D$94,459

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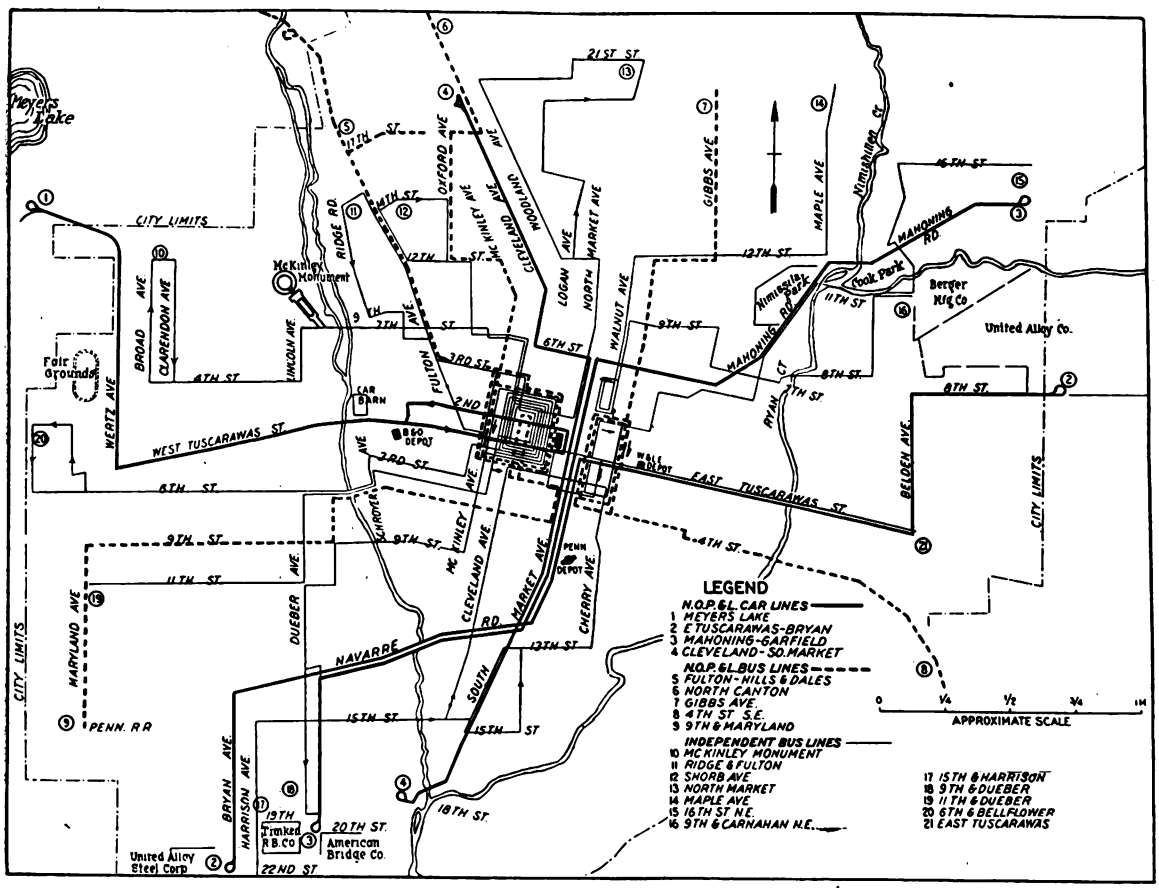
follows duplication, and the effort to meet competition finally forces abandonment of service. Business succeeds only when it pays. The city system in question is no exception to the rule. During the last few years the financial return from operating Canton's local city service has rapidly declined. There is constantly increasing loss through deterioration of the physical property. A portion of the track is not in a good state of repair, and reconstruction under the best standards is an imperative economic necessity. Much of the expenditure now being made for track maintenance is a total loss. Only replacement or retirement will end this expense. The effort to cope with the financial reverses has resulted in abandonment of both service and tracks. The wisdom of this decision can be determined only by the future.



Canton Is Given Local Service at Present by Four Street Car Lines, Four Railway Bus Lines and Twelve Independent Bus Lines

The city's transportation system is virtually part of the city government. One difference is that the transportation system is financed through private capital, while city departments are financed principally through taxation or the sale of bonds. Another difference is that the transportation agency operates under municipal control without municipal responsibility to provide for the cost of operation. On the other hand municipal authorities are charged with the responsibility of providing service by city departments and they are also obligated to collect the full cost of service by taxation or otherwise. This is the true service-at-cost principle.

When independent bus operation was established in Canton six years ago it was not for the sole purpose of furnishing the community with additional transportation facilities but to compete with the old-established rail lines. The new service was inaugurated at a time when the city system increased its rates of fare, and these bus operations were confined to profitable territory. Whenever service has been provided to a community for years and competition is established without a corresponding increase in the volume of traffic serious consequences follow. For a time at least the public may enjoy more service than the traffic demands, even at rates below cost. Such a condition is temporary and not for the best interest of the community. More efficient use of the original facilities would have been to its best advantage. A municipality's responsibility to protect the transportation agency contracted with to furnish transportation service must go hand in hand with its right to control the service.

Under the present franchises the municipality has control over the construction, maintenance and operation of the street car system and also the fixing of rates. During the year 1920 its approval was given to an increase of fare. Shortly afterward the municipality issued permits and sanctioned bus operation in competition with the transportation system. If there had been a genuine demand for additional service at that time the municipality was in a position to secure it from the street car system, for it had contracted with its transportation agency to furnish service under terms dictated by itself. Competitive bus service did not bring constructive development. On the contrary it is now apparent that such operation has been destructive, as the city system is on the verge of collapse.

With the present dual operation, service is given where the traffic is heavy without thought of demand or best interests of the city at large. The city's traffic growth has been absorbed by the competitive bus

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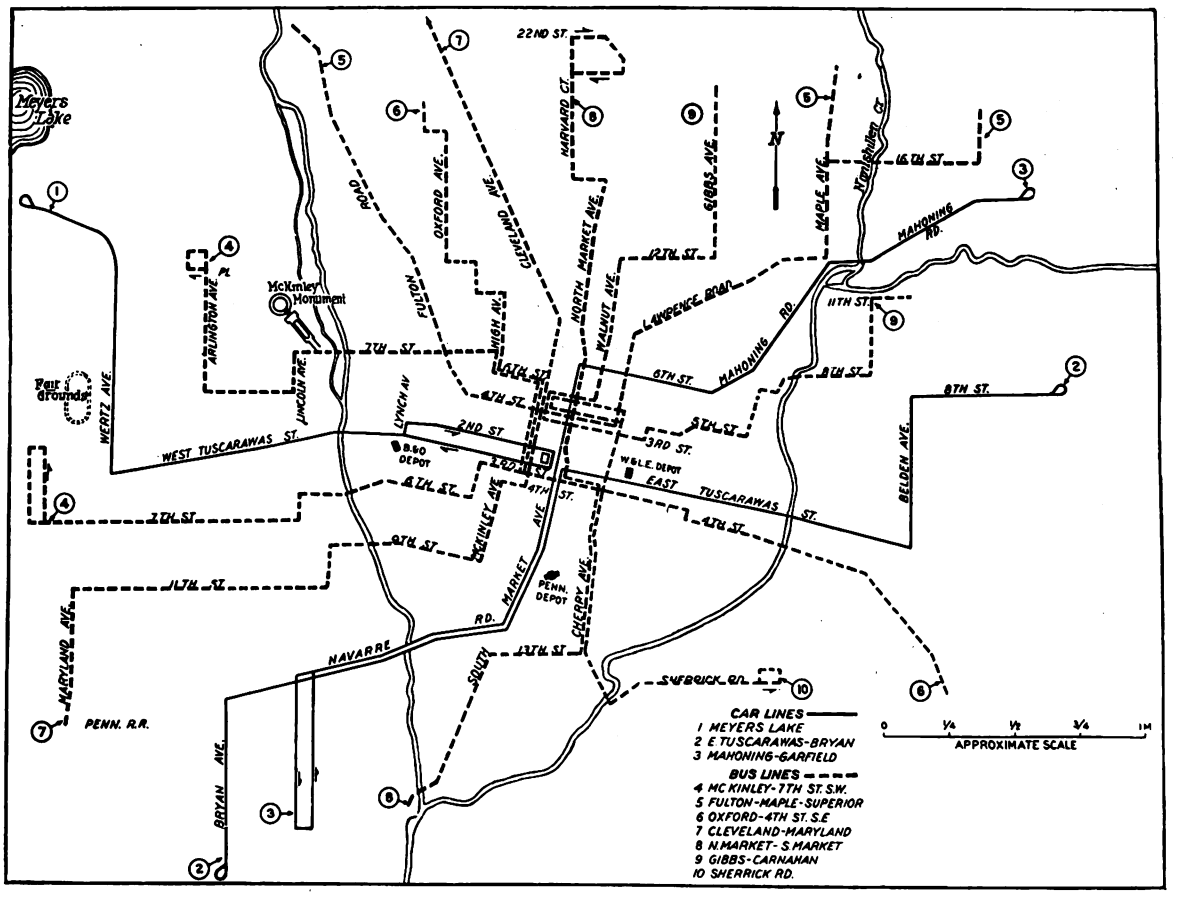
service. Independent bus service did not extend except in proved profitable territory. About 80 per cent of the total population is within 300 yards of the Northern Ohio's lines. Further abandonment of the system's facilities will deprive outlying sections of service they now enjoy. Forcing the system out of the transportation field will place complete control of service with the independent operators. The inability of the city to regulate service without responsible management is obvious, and it is quite evident from past experience that a continuation of the present dual plan will not improve the situation.

Collapse of the railway's system is not due to speculative elements but is the outcome of the present dual operation. During the period 1923-1926 revenue has been insufficient to pay operating expenses, and has not permitted the accumulation of reserves to be used for rehabilitation now necessary. Since the income was insufficient to pay operating expenses it has been necessary to pass up the payment of any return on capital invested in property used and useful in furnishing the service. If the property is to continue to furnish service now, conditions must be created that will make it self-sustaining in order to attract new money necessary for rehabilitation and improvements. If this is not done increasing rates of fare or savings brought about through curtailments of service will but temporarily postpone the final complete collapse of the city system.



It Is Proposed to Give Improved Service in Canton with Three Street Car Lines and Seven Bus Lines All Under One Management

Bus lines are capable of furnishing satisfactory service to some parts of Canton, particularly where the demand for transportation is nominal. The principal value of the bus is the ability to provide facilities to new sections of the city not fully developed and to sparsely settled districts where service requirements are moderate and no great capacity per vehicle is needed, particularly where routing may be changed or extensions desired.

In the industrial sections and active amusement centers, where demands are made to move large volumes of traffic in a short period of time, the ability of the rail service to absorb heavy loads without confusion or street congestion does provide more economical service than the bus. Transportation schedules are arranged to meet normal traffic conditions. Traffic exceeding normal business will naturally result in delays and congestion unless the flexibility of the service or capacity of the equipment provides accommodations for normal and reasonable surprise traffic.

A first-class bus system would require the investment

Building a City-wide Bus System

Results with the independent buses, which gave net earnings of $59,568 available for payments on equipment and interest, are from operation in well-populated territory that has been built up largely through long established service heretofore given by the Northern Ohio system. City-wide bus operation would require the furnishing of adequate service to the city at large, service that would care for the sparsely settled districts as well as the built-up territory. It would also have to care for the heavy rush-hour traffic now cared for by the street railway. Under such conditions the financial result would be entirely different from the present free-lance method of operation, because the lean would have to be taken along with the fat. In other words, they could not continue to skim the cream off the transportation business and leave the skim milk for the street railway that is gradually being starved out.

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of not less than $925,000. The service would require 45 buses during the normal hours of the day and 65 during the rush hour. Allowing for spares, 75 buses in all would be required. Operating expenses based on 3,766,070 miles per annum would amount to $723,085, or 4.9 cents per revenue passenger. The cost of taxes, renewals and retirements and a 7 per cent return on the investment brings the cost of service to $999,210, or 6.77 cents per revenue passenger for the 14,778,009 passengers estimated to be carried.

Co-ordinated Service Best for Canton

A co-ordinated system would require nineteen street cars and 32 buses in daily operation, making 1,162,160 car-miles and 1,907,855 bus-miles annually. The annual operating expenses before taxes, renewals and a return on the investment would be $606,580, or $116,505 less than for city-wide bus service. Based on the same traffic this is 4.1 cents per revenue passenger.

Comparing results for the period of a 25-year franchise, with a co-ordinated system the portion of the investment in tracks, land and buildings can be expected to give service during the entire time. The investment in street cars at the most would have to be earned and returned twice, while the investment in buses must be earned and returned six times. Under a city-wide bus system a small portion of the investment, that in land and buildings, could be expected to last the entire period, but the major part, or 80 per cent of the investment, must be earned and returned six times. During the 25 years it is estimated that the difference between the two methods will equal a saving of $1,500,000 to $2,000,000 to the riders under the co-ordinated system.

With these facts in mind it can be seen that a co-ordinated system under one management with street cars and buses, each type of service being employed where it is best adapted to the local requirements, will give, under proper regulation, the most satisfactory and efficient service.

The routing for such a co-ordinated system recommended for Canton is shown on one of the maps. Comparison of this with the map of present routes illustrates the contrast between competition and duplication on the one hand and the service best adapted to the requirements of each section of the city on the other hand.

Three Rail and Seven Bus Routes Would Serve the City

Under the proposed plan three railway routes and seven bus routes would be operated. It would be possible to raise the schedule speed of the cars from 7.75 m.p.h. to 9.92 m.p.h. with a certain amount of double tracking and by putting all track in good operating condition. Improvements planned in the track layout in the Public Square are shown in the inset map. The present carhouse is in an advantageous position near the center of the city. It is so arranged that serious delays are occasioned in switching cars in and out. This condition should be remedied and the appearance of the carhouse improved. Present overcrowding of the carhouse would be avoided, as the number of passenger cars needed would be reduced from the present 74 to 26. Under the proposed plan 36 buses would be needed, and suitable garage facilities can be provided by remodeling the unused power station adjoining the carhouse.

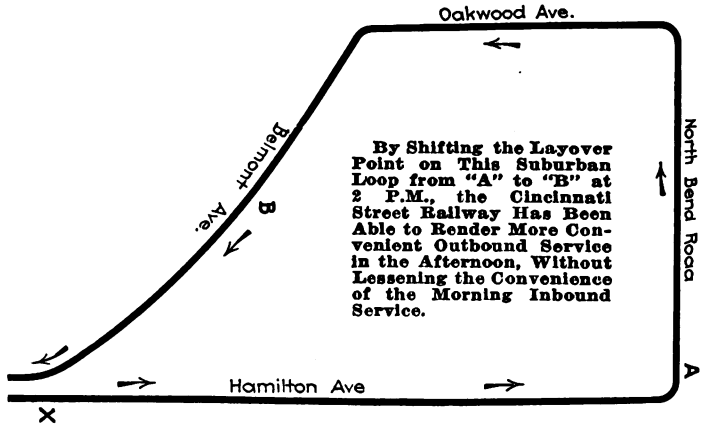
Improving Service on Long Suburban Loops

BY CHANGING the layover points on two suburban lines having long loops at their outer ends the Cincinnati Street Railway effected a substantial improvement in service. The Westwood and College Hill lines, after a run of about 8 miles from the downtown section, terminate in long loops through their respective residential sections. Each loop is nearly 2 miles in circumference. The two suburbs served by these lines are on isolated hilltops and no other parallel lines are available to the residents.

From time immemorial the layover point on each of these loops was, at all times of the day, at the outermost point of the loop, as indicated on the accompanying sketch by the letter *A*. With this condition, persons living along the outbound half of the loop, *AX*, had good service to their homes on outbound trips. However, when they desired to go to town in a hurry they had to walk to the junction point, *X*, or ride completely around the loop with transfer at *A*. One waiting car did not leave the layover point, *A*, until the car behind arrived and it could be learned whether any city-bound passengers, picked up along Hamilton Avenue, wished to transfer.

Just the reverse was true for persons living in the side streets on the other side of the suburb. On the inbound trip these residents had direct service along Belmont and Oakwood avenues. But, returning from town, they had to take the circuitous ride around the loop, with transfer at the end of the line, *A*. Otherwise, a walk across the suburb from the outbound track was necessary.

With a view to relieving this situation a new method of operation was adopted. Until 2 p.m. the layover point remains at *A*; after 2 p.m. cars and crews rest at *B*, well in on Belmont Avenue. This shifting resulted



from a traffic count, which showed that until 2 p.m. more persons were riding into town from College Hill or Westwood, while after that hour the greater number of passengers were outbound. Waiting at *A*, the car covers most of the suburb and proceeds directly to town. After 2 p.m., by proceeding around the loop to *B* before laying over, cars carry most passengers as directly as possible to their homes. Very little transferring to the car ahead is necessary on this system. The same principles are used to guide layovers on the Westwood loop.

Residents of the two suburbs, when interrogated by Hudson Biery, director of public relations Cincinnati Street Railway, expressed approval of the new system.

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"Collective Management" Works Well at Pittsburgh

Representatives of Trainmen Make Suggestions at Joint Monthly Meetings with Operating Officials—Disposition Is Reported at Next Meeting — A Summary Is Given of October Proceedings

JOINT meetings of operating officials of the Pittsburgh Railways and representatives of the trainmen's organization have been held monthly beginning in February, 1926. These meetings were inaugurated as a way of showing the trainmen that their co-operation is desired, not merely as obeyers of orders but also as originators of improvements in operation, whether for the good of the employees themselves, the patrons or the company.

At these meetings the accredited officials and other representatives of the union make suggestions. Each is given an "item number" and assigned by the management to the appropriate operating official or committee for consideration and reply at following meetings. How the plan works can best be understood from the following digest of the proceedings on Oct. 26.

The first order of business was the statement by Vice-President Thomas Fitzgerald giving comparisons of 1926 operations to date with the same period of 1925. These statistics, presented in standard form at every meeting, cover revenue for the year to date and for the preceding month, motormen's and conductors' wages, passenger car-miles operated, total passengers carried and status of the balance sheet for the year to date after operating expenses, taxes, payments to the communities, etc. Any one of the 150 or more attendants is welcome to ask questions on points not elucidated in the presentation of the figures.

Suggestions Concerning Employee Welfare

Disposition of some of the suggestions brought up by the trainmen's representatives at earlier meetings was reported by W. T. Rossell, general manager. For example:

Shower baths for a certain carhouse. Suggested June and August; baths completed Sept. 17.

New schedule for Route 75. Suggested July 28. Ready for picking by end of October.

Paper drinking cups for several locations. Suggested July. In use.

Toilet facilities at end of a given line. Suggested July. In use.

Layovers on certain lines. Suggested August. To be considered in making up new schedules.

Tripping hazard caused at a carhouse yard from water-pipe connections for car-washing stand extending to the ground. Suggested August. Reported that these pipes had been lowered and inclosed in a receptacle.

New sand cars for Herron Hill. Suggested August. Now under construction.

Electric lights for crews' room. Suggested August. Completed.

Automobiles fail to stop at crew-change point in front of carhouse. Suggested August. Steps taken to remedy this.

Certain type cars reported to leak at roof in rain. Suggested August. Several of this type already attended to.

Seats for conductors on certain type car. Suggested July. Sample seat installed on one car and approved as satisfactory by transportation department.

Register rods too high on certain type car. Suggested July. Shops prepared to lower rods after further conference between interested parties.

Changing curtains on left-hand side of motorman on certain type cars. Suggested July. This called for changes in longitudinal seats and seat panel. Remodeled car submitted to original reporter, who declared it satisfactory.

Heat for motorman in certain type car. Suggested July. Reported that fabrication of all material necessary for relocation of the operator's heater had been issued and that job would be done in about one month.

Water in certain drinking fountain not cold. Reported August. Suitable coil installed.

Raise motorman's part of platform 1½ in. to keep his feet dry in certain types of cars. Suggested August. Cork mat approved by original suggester with the amendment that the corners be rounded on the side nearest the entrance to prevent passengers from tripping.

Schedule on one suburban route too fast while track remained in present shape, as this led to abuse of the car. Details of worst locations were given. Reported August. Further inspection and necessary repairs were promised.

Hot-water line extension desired from shower baths to wash basin in dispatcher's office at certain carhouse. Done.

Draft reported back of the conductor's position on certain type cars. New weather stripping has been installed.

Suitable covering desired for steel benches in crews' quarters at certain carhouse. Done.

Shower baths at one carhouse reported out of order. Repaired.

Larger quarters requested for a blind ex-motorman who runs a store in one of the carhouses. Suggested June. These quarters were enlarged as desired.

Suggestions for Better Track, Signal and Other Traffic Conditions Along the Road

Drainage of electric switches and splashing. Several trouble spots were reported. A statement was presented showing how each case had been remedied or would be in the near future. In one instance, a drain pipe was being built to a new sewer, and, in another, negotiations were up with the borough to permit street opening for the purpose. In a third case, the needed sewer was "discovered" after a first failure.

Sign for dangerous car turn desired at certain intersection. Suggested July. Reported installed.

Street light wanted at certain corner. Suggested August. Reported as cared for.

Varous suggestions made concerning right-of-way for cars over automobiles on certain narrow highways, parking rules, etc. These suggestions were taken up with the traffic department of the city of Pittsburgh and relief obtained in several instances.

Street lights turned out too early. Suggested August. This led to a conference with lighting company officials, who explained how the turn-off times throughout the year were ascertained and the schedule approved by the municipalities concerned. No change was contemplated at present.

Cut door in a suburban post office building to avoid blocking of track by mail trucks. August suggestion. Inquiry developed the fact that the post office property was leased, so that the change was not financially practicable; also, that the delays were not serious.

Two suggestions were to the effect that the interval allotted by automatic traffic signals at certain intersections be increased. Both suggestions were carried out.

Complaint made that certain concerns operating trucks

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in the dark hours of early morning do not carry tail-lights. Arrangement was made by the management to get into personal touch with the executives of offending companies. Car operators are provided with a report form to make such inquiries possible.

Light suggested for certain derail switch. Done.

Automatic non-clearance curve signals suggested at given location. Funds therefor have been set aside.

More powerful headlights, similar to those on a neighboring route, were suggested for a suburban line. Suggestion accepted and work under way.

Street light suggested at certain place in an outlying borough. This had been taken up with the borough authorities.

Comments Made on Car Equipment

Rough riding on one of the older series of cars was mentioned in July. Reported that all trucks were being overhauled.

Special adapter for the standard mirror was adopted to make it satisfactory for a certain type of car, following a suggestion made in July.

Suggested painting of stanchions on low-floor cars owing to the flaking off of covering, which left them unsightly. Suggested August. Reported that 200 cars had already been handled.

Window wipers needed new rubber. In hand.

Unsanitary condition caused on certain cars through arrangement of piping that tempts some of the early morning riders to treat it as cuspidor. Suggested July. Plan for covering not yet fully developed, but meantime a "No Spitting" sign of special character will be placed near this piping, bearing the signature of the Director of Public Health.

Air brake and sanding problems as seen by the motormen have led to careful study of conditions on certain types of cars. Scant flow of sand in one case was followed by enlargement of sander ports. On some cars the rear sand levers did not operate freely and called for correction. In certain train operation emergency application with automatic release of sand had a tendency to reduce the air pressure too much. A joint committee is now going into the whole question of sanding and braking improvements.

Suggestions Intended to Help Sell Rides

The suggestions with regard to transfers indicate a deep-seated belief that some persons still manage to get a two-way ride for a one-way fare. On the other hand, some suggestions call for additional transfer privileges. One suggester thought that the liberal provisions of the 10-cent crosstown transfer should be advertised more often so that fewer persons would pay double fare unwittingly. Several others recommended a more frequent cleansing of fare box glass so as to insure that the company got the fare really due.

Other suggestions showing the interest of the trainmen in promoting business were as follows:

Shorten headway on certain route. Now being checked over.

Relocate car stops for greater convenience of passengers, at specific locations.

Install shelter at certain point. Suggested August. Done.

Provide loading platform. Raised platform was impracticable, but a safety zone was provided.

Safety Co-operation with Trainmen

One outgrowth of the interest shown by the men in safety and traffic problems was the selection of a committee to attend the Detroit meeting of the National Safety Council in October, 1926, at the company's expense. The men were told they could select one delegate from each carhouse in any way they saw fit. It was decided to leave the matter to chance by the time-honored method of drawing numbers from a hat. The first number took care of the first choice and the next two were for alternates.

The Amalgamated Association will also, following the suggestion of one operator, appoint a committee of experienced trainmen to call on the City's Better Traffic Committee to set forth the experienced motorman's viewpoint of city traffic conditions and the remedying of their evils.

Praise from Union Executives

The October meeting was marked by the attendance of P. J. Shea, member of the general executive board of the union. Mr. Shea spoke highly of the Pittsburgh plant and said it was in line with the co-operative management plan recommended by President Green of the American Federation of Labor. He was pleased with the way the various suggestions had been taken up by the management. He commented on the difference in conditions from the days of non-vestibule cars to the point where operators could ask for and get more electric heat.

He advised the trainmen to be responsible and not "overload this opportunity." The Amalgamated, he continued, would do all in its power to help along such work as was being done in Pittsburgh. The trainmen were the salesmen of the Pittsburgh Railways. Contented salesmen were always better salesmen than those who have a fight or grouch against the company.

He could see that great results had already been obtained, and with 100 per cent booster co-operation they would be still greater. The men now realize that the officials of the company are putting all the cards on the table, telling the truth from day to day. The old feeling that this or that statement was a lie had gone.

Following Mr. Shea came P. J. McGrath, financial secretary of the union and seventh vice-president of the International. He said that in the old days any union officer caught in company with a railway official was sure to be fired by his members. It was different with meetings conducted in this spirit. In one month more good was done in mutual relations than the old-type business agent could have done in a year, even if he had had no other duties than following up grievences.

Tulsa in 1907

OKLAHOMA street car systems, it is said, never passed through the "horse car" age owing to the fact that they were established after the advent of the electric railway. The fact that horse cars were run in Tulsa for one week as a temporary measure was revealed, however, by a recent historical sketch in the Tulsa *Tribune*. The first street car line was established in Tulsa in 1907, by C. H. Bosler of Dayton, Ohio. On this establishment the *Tribune* states:

The first line was laid on Main Street and at practically the same time a line was run out Second Street to Cincinnati Avenue, then north, past where the Hotel Tulsa now stands. This line was hurried to completion in order to reach an east side addition by a certain date. But while the line was completed on time, the company found itself without electric power. It did not build its own power plant, but had contracted for current from the Tulsa Corporation, which failed to deliver it at the time set. The company was in a quandary as to what to do. Clarence Kline, now the receiver for the Tulsa Street Railway, who superintended the building of the line, found a way out. He harnessed horses to the cars and had them running to the addition in time to fulfill his contract. Horses were used for more than a week.

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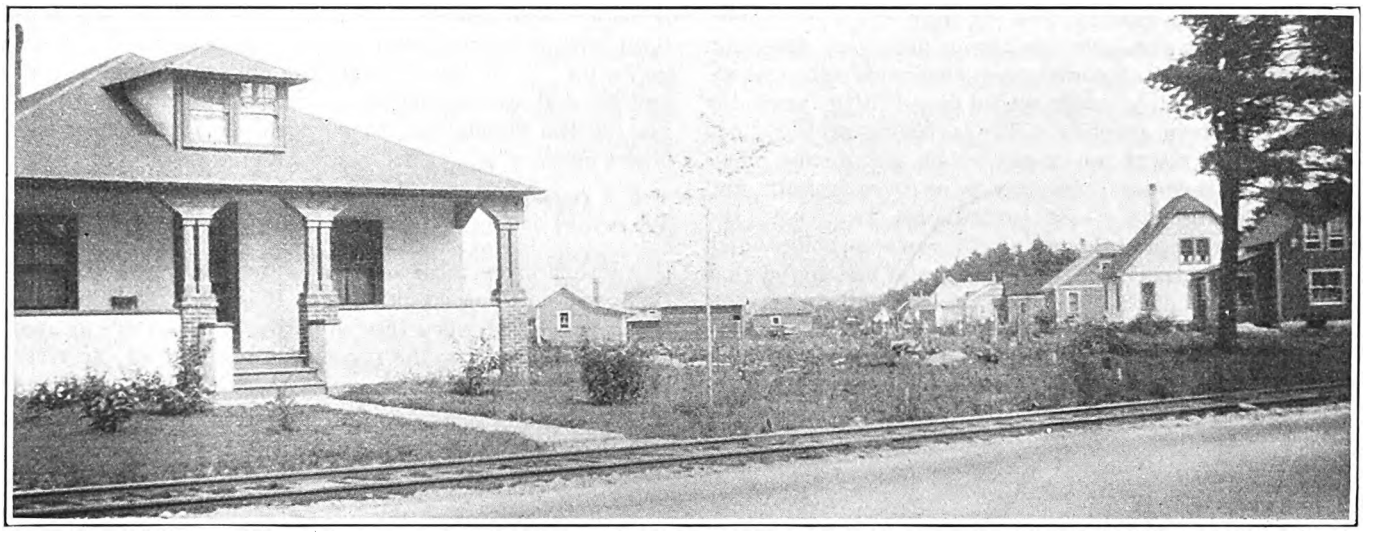

A Group of Homes Erected on the Property Formerly Owned by the Railway

A Railway Enters the Homesteading Field

Concord Electric Railways Employs Several Interesting Expedients in Tackling the Problems of Small Revenue, Ruinous Automobile Competition, Run-Down Equipment and Public Indifference—Conditions Are Now Improving

"MAKING a little go a long way" is a phrase which needs no explanation to the average railway operator. Methods by which this has been done on a typical smaller community property should be of interest to other railways with similar characteristics and problems.

The Concord Electric Railways, which serves the territory in and immediately surrounding Concord, N. H., has had its full share of difficulties since the able-bodied specter of the private automobile came to haunt the waking and sleeping moments of railway men generally. Owned by the Boston & Maine Railroad, it has been expected by that organization to stand upon its own feet financially and to pay as it goes. Concord is a community of approximately 22,000 inhabitants and, with the small outlying settlements, the railway has a total possible clientele of around 25,000. The largest industry in the community is the Rumford Press, which prints many magazines with national circulation and employs well over a thousand individuals. In addition there are a number of small mills and sundry other industries in the town. As a community, however, the town is comparatively wealthy and an exceptionally large proportion of its citizens own one or more automobiles. Naturally there are many "stormy-weather riders," but in the pleasant summer and fall months the railway is hard put to it to hold its own.

Eight years ago John B. Crawford took over the reins of authority on the local property and assumed therewith the difficult task of convincing the local townspeople that a community without adequate public transportation would be in a very bad situation indeed. At about the time Mr. Crawford came to Concord things were in rather a bad way. Of maintenance equipment the railway was woefully lacking. Its track was run down and the rolling stock left much to be desired.

When the new management took control and began to clean house shop equipment was badly needed, and since no funds were apparently available for its purchase, ways were sought to secure the necessary funds. A happy inspiration suggested the sale of old copper, steel, and assorted junk which had been lying about the shop and storerooms beyond the memory of the oldest inhabitant. The assortment was extensive, and enough money was derived from its sale to provide a lathe, a drill and several other indispensable pieces of equipment.

Funds for Improvements Secured by Sale of Surplus Equipment

What to do with the older cars which were standing about on storage tracks in various stages of disrepair was the next problem. It was decided that since the junk value of the cars would not average more than $250 and since the value of the actual parts and equipment on each car would run at around $1,029, the wisest plan would be to strip the cars and store the parts for use in replacements. Accordingly everything of any possible use was stripped from the ancient rolling stock, even the window glass and sash being salvaged for future use. Several cars were equipped with HL control, and as this type of control has been abandoned by the local road it was planned to sell the equipment when a purchaser could be found.

Next the relative needs of track and rolling stock were weighed and it was decided that the track was so far gone that immediate and drastic steps would have

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to be taken to repair some of the worst stretches. Money was not available for giving necessary attention to both of these items and since even new cars operating over impossible track would be of little avail the latter was given priority. The existing rolling stock of the company was not neglected by any means, however, but rather was carefully gone over, rebuilt and painted throughout. Just in the past two years the company has adopted the vivid yellow-orange color which is standard on the Boston Elevated, and has found that the results are all that might be desired both in attracting favorable notice on the part of local citizens and in reducing the accident hazard. The company feels that frequent and careful painting is the cheapest form of sales effort which it is possible to make and has spared no effort in keeping its equipment in first class condition.

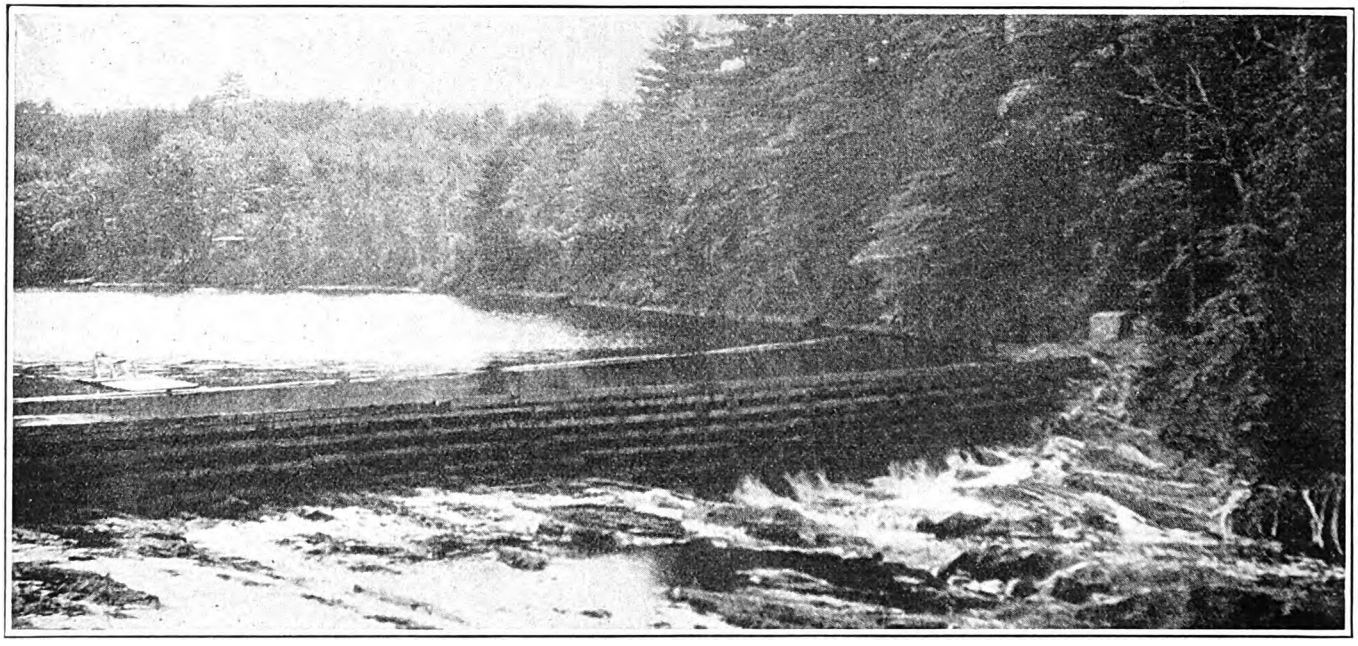
Disposing of Frozen Assets

Having given careful attention to the actual physical equipment of the property as outlined above, Mr. Crawford next began to examine into other and perhaps unsuspected channels of possible revenue. He learned that several parcels of real estate on the outskirts of Concord had been held by the company for years as investments. No income was being derived from these pieces of land and they were a constant drain because of taxes, loss of interest, etc.

At last the expedient of selling the land for subdividing was hit upon. One large section of 40 acres adjoined the trolley line which connects Concord and Contoocook Park and this was sold to the Eastman Home & Development Company. This company will build foundations and the outside structures of houses, leaving the interior work to be finished by the purchasers as time and pocketbook will permit. Thus the development is more attractive to workingmen and people with small incomes, the very type which the railway is particularly glad to welcome into the community. They are unlikely, or perhaps it would be more accurate to say less likely, to own automobiles, and very few of the 28 homes which have thus far been erected on Concord Manor, as the property has been christened, are provided with garages. All of these homes have been built within the past two years and more are constantly going up. Thus the railway was able to dispose of this and several smaller pieces of real estate at fair prices and at the same time to encourage patronage of the street cars.

May Build a Resort Hotel for Working Men and Women

Another large piece of land is owned by the Concord Company on Contoocook River. It is 80 acres in extent, being roughly divided into equal parts which are located on opposite sides of the river. On one side of the river is Contoocook Park, an amusement park owned and operated by the railway company, and on the opposite side is a wide expanse of forest land. Here the company talks of erecting a 100-room resort hotel catering exclusively to working young men and women in moderate circumstances. The charges would be made as reasonable as possible, and as the park and its environs are delightfully beautiful and unprofaned by commercialization it should be a real treat for city workers to spend their vacations there. Incidentally the automobile roads to the park are poor and the trolley is the logical method to be employed in reaching the spot.



At the Extreme Right, the Site of a 100-Room Resort Hotel Which May Be Operated by the Railway

The park itself has many attractions calculated to attract patronage from Concord and nearby communities. Roller skating, free outdoor moving pictures, band concerts on Sundays, dancing, shooting, swimming, canoeing and various other pleasures are at the command of all who attend. Fireworks feature special events and open cars are operated to the parks whenever one of these special celebrations occurs. Patrons who ride to the park on street cars are given admission as a part of their regular fare, while others must pay an admission fee of 10 cents. The park is open from Decoration Day to Labor Day and is a fairly profitable source of revenue to the company. It at least encourages riding on the cars and, further, prevents Contoocook River, which is a natural beauty spot, from being harmed by careless and indiscriminate exploitation.

All of the cars on the Concord property are now one-man operated. This was not accomplished without con-

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siderable educational work among the local citizens and newspapers. Some opposition was also encountered at first from the unions. However, the whole situation was at last ironed out and now the cars are running with very little hostility to the manner of operation expressed or implied by patrons or men.

Due to the fact that the company has its own hydro-electric plant, its cost for electric energy is quite low. This makes it possible for the railway to operate its cars at an average cost of 21 cents per car-mile, this in spite of the fact that many of the cars are rather old and decidedly heavy. Careful maintenance and a gratifying feeling of responsibility on the part of operators may also be thanked for a large share of the saving.

Business Has Improved This Year

In spite of the ruinous competition with the privately owned automobile, which continues to be used to and from work regardless of the fact that it generally costs its owner around a dollar per day for that privilege, the business of the Concord Electric Railways has shown an improvement during the first half of the present year. This fact is partially explained by the vigorous efforts which are being made to get the trackwork of the company into satisfactory shape throughout the entire system, to improve the rolling stock as much as possible and to keep it thoroughly clean and attractive at all times, and generally to improve public relations with the citizenry of Concord.

Mr. Crawford has done considerable writing for the local newspapers and has also run series of "Traction Tom" and other advertisements. He believes that the only wise policy is to lay all of the cards on the table and to tell the people just what you are going to do and why. The management is always ready to go much more than half way in adjusting grievances, real or fancied. As an example of this the pains which the company took in striving to cut down radio interference by various elements of its system might be cited. Considerable money was expended in examining and repairing all faulty bonds, in supplying converters with soft graphite brushes and in similar precautions. Such efforts as these may be classed as being secondary in importance, for the active salesmanship and aggressive operating practices are even more important in guaranteeing the future of the company.

Buses Do Not Solve the Problem

It has been suggested to the local management that the installation of buses might mark the turning point away from the company's difficulties. Careful examination of local conditions disclosed, however, that buses could not be operated over the type of roads in and about Concord for much under 35 cents per bus-mile. This is a very poor comparison with the 21 cents per car-mile which the present street cars have accomplished. Furthermore the company believes that the citizenry of Concord who would ride in buses are equally willing to ride in the street cars, the wealthier classes being largely indifferent to any and all forms of public transportation except at such times as their own automobiles are unable to traverse the highways.

In conclusion it is interesting to point out that some time ago, when the Eastman Home & Development Company, which was the organization to take over the railway's property and subdivide it, attempted to make a similar development of a piece of property in East Concord it was unsuccessful, due to the fact that no street car line adjoined the property. The type of people looking for inexpensive homes were not interested in lots unless served by public transportation. Hence it would appear that the Concord Electric Railways has a real mission to fulfill in this territory. Its economies and temporary makeshifts have served it well. It is characteristic of the more progressive type of management that the company should be planning today, not for tomorrow or for next year, but for the needs and probable public demands of several years hence.

Trucks Turned to Advantage by Ohio Interurbans

DROPPING the old attitude that truck lines are competitors and taking them under its wing, or rather hooking them up as a part of its system, the Southern Ohio Public Service Company, operating the electric interurban line between Columbus and Zanesville, Ohio, started a freight service that has given Columbus wholesale and jobbing houses a distinct advantage in the territory beyond Zanesville as far east as Cambridge.

To make this possible it has taken more than a year of effort by the company operating the interurban line to interest truck line operators in filing a schedule of rates with it, the Public Utilities Commission and the Interstate Commerce Commission. This now makes it possible to give a through rate from Columbus to points in the territory affected by combined transportation of electric line and trucks.

Under this arrangement the interurban line has become a feeder for the truck lines and vice versa, and as a result Columbus wholesale merchants have gained a distinct advantage, with a selling point in their favor because of the reduced time in delivery of orders.

Prior to the establishment of this combined service three days was required for delivery of orders by Columbus firms to their customers in Cambridge. Under the present arrangement freight delivered at the freight station of the interurban line, at Third and Rich Streets, before 4 p.m. leaves Columbus at 11.25 p.m., and arrives in Zanesville at 6 p.m. the following day. There it is picked up by trucks and delivered at the place of business of the Cambridge retail merchant by noon or before.

Points other than Cambridge in the eastern section of the state benefiting by this service are Adams Mills, Buffalo, Byesville, Conesville, Coshocton, Crooksville, Dresden, Frayersburg, New Concord, Norwich, Pleasant City, Roscoe, Roseville, Trinway and Tyndale.

A Columbus wholesale firm a few days ago was advised by one of its retail customers in Cambridge that for the first time in 30 years he had been able to order one day and receive the next, an achievement he attributed to the new arrangement.

The Columbus wholesale market gains its advantage in the territory affected because other cities are said not to have the means at hand for making deliveries within so short a time as the new service affords to the city of Columbus.

With this service started on the eastern division, operated by the Southern Ohio Public Service Company, similar service is in process for reaching points that can be served on the western division by the Indiana, Columbus & Eastern Traction Company.

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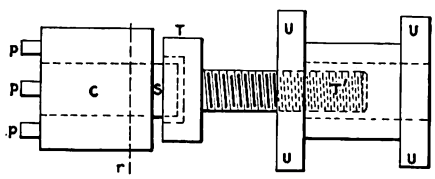
Maintenance Notes

Follower Device for Installing Commutator Nuts

SINCE commutator nuts usually extend in underneath the front edge of the commutator, special wrenches are commonly used for tightening. In the department of electrical repairs of the Brooklyn-Manhattan Transit Corporation commutator nuts are screwed up while hydraulic pressure is applied to force



Details of Follower Device Used in Installing and Removing Commutator Nuts

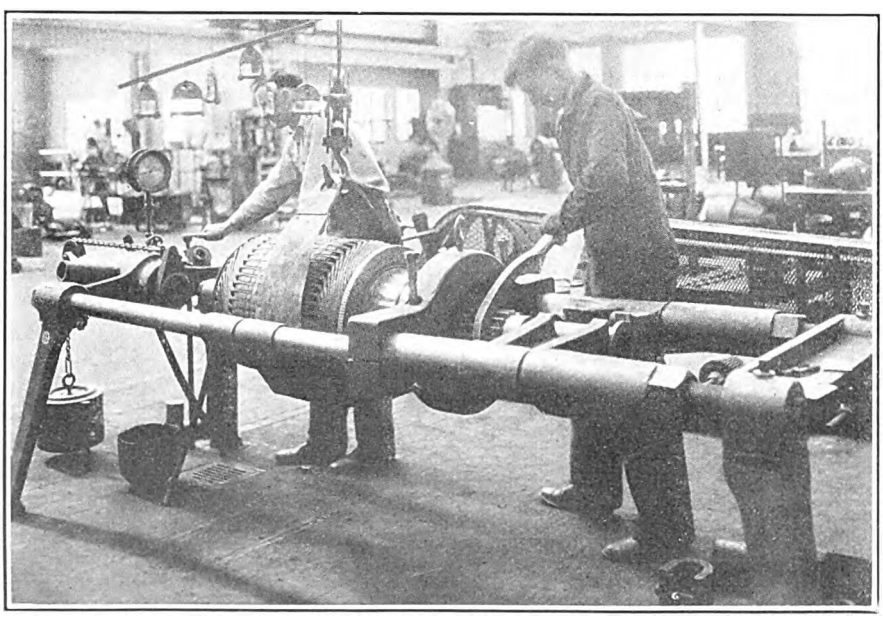
and hold the commutator in position. An accompanying illustration shows one of the company's large railway armatures in a press while the commutator nut is being tightened.

The end of the commutator rests against the crosshead of the press and pressure is applied to the outer end of the shaft so that the commutator is pressed firmly into position. For screwing the commutator nut into position a pinion with dowel pins is used. The wrench is applied to the teeth of the pinion so as to produce the turning movement. In addition to this, a special follower device is used to support the commutator end of the shaft.

The accompanying diagram shows the details of construction of the follower device and pinion. An old pinion with three projecting pins is shown at *C*. This pinion has the bore enlarged so that it will slip onto the commutator end of the armature shaft easily. The three pins shown at *P* engage corresponding holes in the commutator nut as the armature is supported as shown in the halftone. The pinion is used to provide a means for reaching into the commutator nut and enough of the pinion extends beyond the crosshead of the press so that a hook-shaped wrench can be used for turning.

The follower consists of a saddle-shaped casting shown in the diagram at *U*, together with a cupped head screw designated as *T*. The part *U* rests in the tail crosshead of the press. With the armature in place, the cupped head *T* is run up until it almost touches the pinion. The nut can then be tightened or loosened as desired.

The depth of the counterbore in the cupped head *T* exceeds slightly the full travel of the commutator nut so that the head can be run back and forth by hand to keep the dowel pins in engagement with the commutator nut.



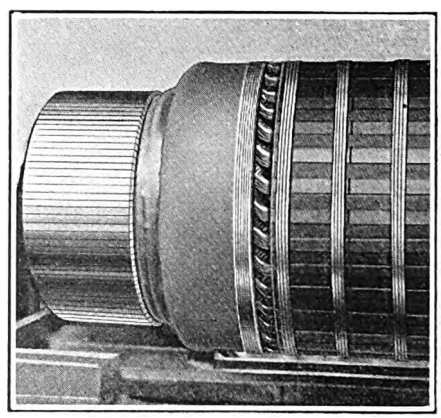
Tightening a Commutator Nut in a Hydraulic Press

Use high-grade carbon brushes to "keep that school girl complexion" on the face of your commutators.

New Canvas Hoods Decrease Armature Failures

EXPERIENCING a considerable number of armature failures due to the collection of conducting substances under the canvas hood necessitated the Wilkes-Barre & Hazleton Railway, Hazleton, Pa., changing the hood design.

It had been the practice to install



Canvas Hood with Exposed Coils

the canvas hood on the commutator end so that it was held under the first banding wire on the armature core. This resulted in an accumulation of brake shoe and carbon dust under and around the coils when they left the core slot, thereby causing grounds and short circuits.

After the old canvas hood is removed the accumulated foreign material is blown out and the coils wiped off and painted with a thick coat of insulating varnish.

The new hood is installed with a separate new banding wire so that about 2 in. of the coil is left exposed where it leaves the slot. This permits of more ventilation and at the same time eliminates the dangerous dust pockets. It is claimed this change has materially decreased the armature failures.

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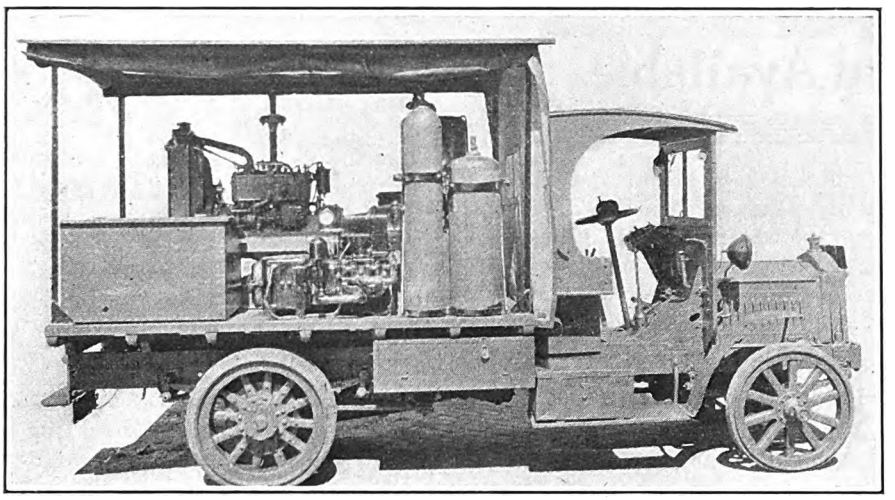


On the Right Side of This Truck of the Capital Traction Company Are the Air Compressor and Oxygen and Acetylene Tanks

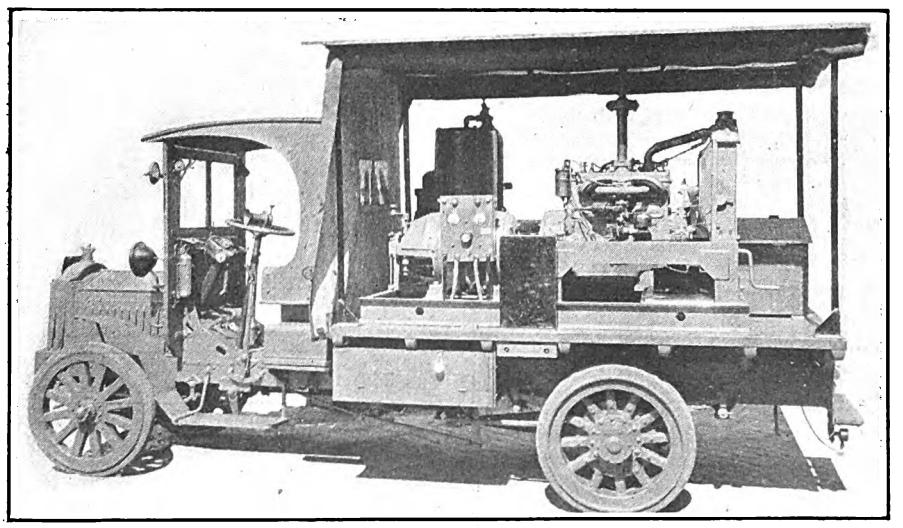
Compressor and Welder Mounted on Truck

FOR various classes of track repair, a truck has been very completely equipped by the Capital Traction Company, Washington, D. C., with apparatus driven by a gas engine for producing a supply of compressed air and current for welding purposes. Gas tanks are also included.

As the amount of equipment carried is quite heavy, it was necessary to use a truck of 2-ton capacity. The equipment comprising the outfit includes a gasoline engine-driven arc-welding set. The generator is a General Electric Company type WD-12, rated at 250 amp., 6¼ kw., 25 volts. This is coupled through a flexible coupling to a 25-hp., 4-cylinder Buda engine which operates at 1,440 r.p.m. In addition to this equipment a DH-16 Westinghouse air compressor is mounted on the truck. This compressor is operated by a 600-volt motor. Attachment plugs and a switch box mounted on the side of the truck are used for connecting this compressor with the underground conductor rail by means of a plow inserted in the slot.

Bearings, like people, are inclined to get "hot under the collar," especially in warm days. Just try a little more oil.

After welds are made, the rails are smoothed off by means of an air-operated emery wheel grinder. By having this as a part of the truck equipment, a complete job can be finished without the necessity of sending additional equipment to the location. Oxygen and acetylene tanks are carried on the truck for welding or cutting with gas and tool boxes are also provided to carry the necessary tools to make minor repairs.



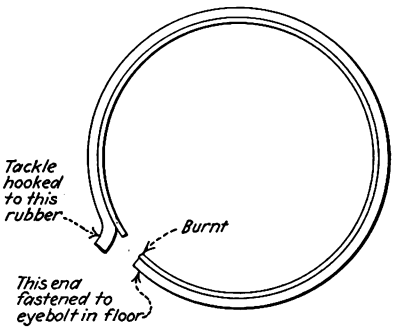
Gasoline Engine and Generator with Switch Box and Plugs for Connecting the Air Compressor to Trolley Voltage. The Air Compressor Is in the Rear Just Back of the Generator

Since with this equipment it is unnecessary to connect the welding outfit to the trolley wire, the welder can do considerably more work than with the ordinary welder, as no time is lost in moving from place to place to get the welder started. Since most of the track operated by this company is of the underground conduit type, it is necessary when using an electric-driven generator for welding purposes to dig up the street in order to make connection to the conductor rail by passing the leads under the wheel rail and into the conduit. With the gasoline-driven engine set, it is unnecessary to do this. The acetylene outfit enables the welder to make such cuts as are required in the rail without having extra apparatus sent to him.

Poorly maintained cars should pass
Into the "pray as you enter" class.

Old Truck Tires Used for Track Switch Plugs

WORN-OUT solid rubber truck tires which had been sold to the junk dealer in the past are now being salvaged and made a part of the railway stock in the shop of the Harrisburg Railways, Harrisburg, Pa. The steel rim supporting the rubber is cut by means of acetylene and the rubber cut through. One end of this split rim is fastened securely to an eyebolt in the floor and a pulling tackle is fastened to the rubber on the other end. By means of the tackle the rubber is stripped free of the rim. After removal the rubber is cut into pieces 2 in. x 2 in. x 1 in. and used for track switch plugs to keep the switch tongue in a set position. It is found that this rubber is very effective for this work due to its live condition.



The Steel Rim and Rubber Tire Are Cut Apart to Facilitate Removal

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New Equipment Available

Single Grade of Insulating Oil for Various Uses

OIL of special grade employed for insulating and cooling oil-insulated apparatus such as transformers, circuit breakers, feeder regulators and other oil-insulated and oil-cooled apparatus is being placed on the market by the Westinghouse Electric & Manufacturing Company under the trade name of "Wemco-C." By using a single grade of oil, stocks are much simplified, and after a long period of research development in connection with the oil refiner the Universal oil has been adopted.

Tests made in accordance with Specification D-117 of the American Society for Testing Materials place the dielectric strength of "Wemco-C" oil at 22,000 volts. This result is an average of five trials on the same sample of oil placed between horizontal electrodes 1 in. in diameter with their flat surfaces 0.1 in. apart.

The oil has a viscosity of approximately 57 seconds at 40 deg. C. and 280 seconds at 30 deg. C. The lowest temperature at which the oil will flow, which is called the pour test of the oil, is — 40 deg. C.

The dielectric strength of oil is affected by even a minute trace of water. "Wemco-C" oil is produced under conditions which insure its cleanliness and dryness in the sealed container. In circuit breakers, and to a less extent in transformers, the oil may receive some water in service, and it is important that the oil have the property of quickly separating from the water. This property is known as demulsibility and is determined by the resistance to emulsion test, in which the sample of oil is subjected to steam and the time required for separation of the oil from the water is noted. "Wemco-C" oil has a resistance to emulsion number of 25 seconds.

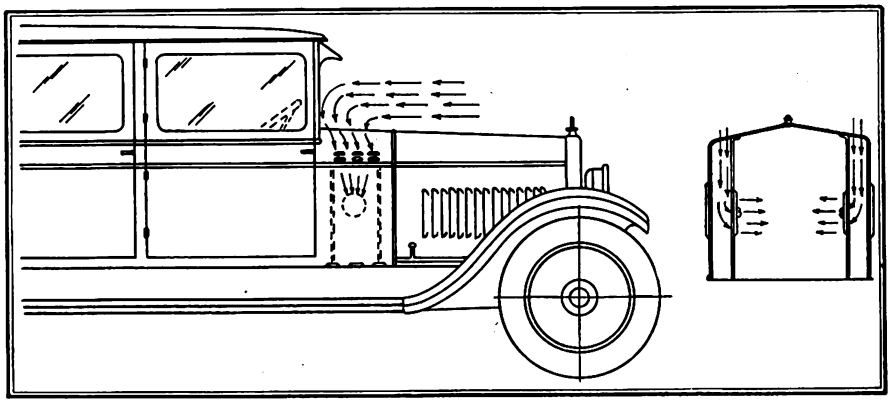
Ventilator for Bus Cowl

BY MAKING use of the air currents that rebound from the windshield of a motor bus and are forced down and around it and the top of the cowl, together with the installation of a ventilator, the Nichols-Lintern Company, Cleveland, Ohio, has overcome some unusual limitations. The Venti-Duct, as this new product is called, ventilates the cowl by means of an air duct. It delivers a strong current of air into the body during rainstorms and in hot weather.

Air is admitted through holes punched in the outside panel. These are trimmed with a suitable fixture. The outer and inner panels are used as walls for the duct. A hole through the inner panel at a suitable point for admission to the cowl and a suitable regulative means, such as the ordinary ventilator grille, together with small drainage holes in the outside panel, complete the device.

The air passes down through the air duct to an opening in the body interior. Located some distance below this opening are several small drain holes. The air rushes to the bottom of the duct and then rises through the opening into the interior of the body. Due to the tendency of the air to rush to the bottom of the duct all rain, snow and other foreign matter are dropped at the bottom before the air enters the body interior. As a result, the Venti-Duct is weatherproof. On the inside of the duct the entrance into the body interior is protected against the direct driving in of rain or snow by a hood or baffle.

As the Venti-Duct can be contained entirely between the outside panel of the body and the interior false panel, its use does not affect the appearance of the body. It can be installed in some form in any type of body. The location of the outer opening is, however, important.

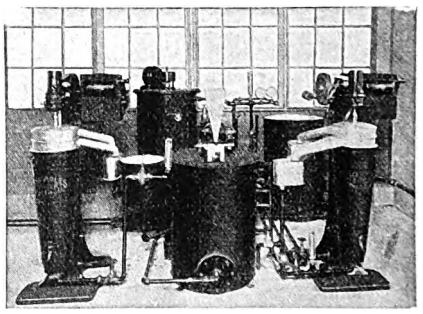


New Type Cowl Ventilator Incorporated in Body Construction for Buses

Operator's version of the "I.W.W."
"I"mproved "W"orkmanship
"W"anted.

Circuit-Breaker Oil Reclaimed Cheaply

CONTAMINATED circuit-breaker oil can be purified and maintained in condition to assure safe operation at a cost of approximately 1½ cents per gallon, it is stated, through the use of the Sharples reclaiming process. This is a centrifugal process, which it is stated may be used on circuit breakers, wherever installed.



Complete Sharples Centrifuge Breaker Oil Reclaiming Plant

The operation of this apparatus requires the services of only one man. The contaminated oil is pumped from the supply source at the rate of 150 gal. per hour, through four 6,000-watt heaters, to a 50-gal. mixing tank, where it is mixed thoroughly with the first reagent, with the aid of a motor-driven agitator. The resulting emulsion is fed into a super-centrifuge. The separator discharges the waste water containing some of the impurities, the solid impurities remaining in the bowl of the machine. The mixture is then treated with a second reagent in the second mixing tank and sent to a second super-centrifuge, and from there the purified oil is pumped to storage.

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Association News & Discussions

Courage and New Equipment Accomplish Results in Grand Rapids*

BY L. J. DE LAMARTER
Vice-President and General Manager Grand Rapids Railway, Grand Rapids, Mich.

MANY electric railways are endeavoring to win back their old patronage by applying the automotive industry's methods, utilizing the engineer's skill, the master car builder's art, the painter's brush, and adding thereto the lessons learned from successful commercial institutions—courtesy and salesmanship.

Salesmanship of urban and interurban transportation today is one of the vital factors in the life of the industry. Upon it depends the necessary increased revenues, good will and good public relations, but which can only be secured when backed by dependable service. Platform men offer the important contact between the company and the public. Any one conductor or operator meets and serves in one day more customers than most salesmen approach in many days. This being so, unless we give the platform man the right kind of atmosphere and surroundings, a new uniform, a clean, attractive car, a vehicle in keeping with the quiet running automobile our patrons have become used to, a car the employee automatically takes pride in, he will unconsciously not be very enthusiastic in his salesman's efforts, and as a result the company will directly or indirectly suffer.

In Grand Rapids the installation of new and improved equipment with all the refinements and comforts enjoyed by automobile users, with fairly courteous and attentive salesmanship by our platform men, has been attended with very gratifying results. To a large degree it has proved that the combination of attractive equipment, new uniforms and a new order of things has brought —even in the face of a monthly average increase of approximately one thousand automobile licenses issued—splendid results in increased earnings and in the necessary public good will. At the same time operating expenses have been reduced due to the new type of car and the hearty co-operation of the operators, which is reflected in an earnest effort toward power saving and in other ways.

Along with many others, I had long thought that the old, obsolete type of street car could be and should be improved if the industry was to weather the automotive competition and survive. Why should the 1890 type of street cars be operated in these modern times? Why should the same noisy, lumbering and unattractive car, lacking in comforts and refinements, continue to be operated when there were many opportunities for improvement? Why not adopt the same methods employed by the auto manufacturer and improve the type of street railway vehicle to meet the modern, popular demand?

With this in mind I went to Chicago and there met one of the leading car builders of the country.

"What have you that is new in car design?" I asked, after explaining my wants. The car builder reluctantly confessed that he had nothing new to offer. Still my idea, which seemed so simple, so natural and logical, obsessed me. It seemed to me that desirable changes in construction could be made comparatively easily.

Shortly after the meeting in Chicago, fire visited our Hall Street carhouse and destroyed more than 50 of our best cars. Our misfortune and adversity offered the opportunity for the new car design idea to be worked out. Again I conferred with the car builders, after conferring with my own engineers, and explained to them the kind of new electric rail coach I wanted.

I prevailed upon three car builders to enter one car each in a so-called competitive test. Each car builder constructed a coach that he believed would meet with my ideas. The industry is well acquainted with these coaches—the "St. Louis," the "Ohio" and the "Minnesota," which were displayed at the Atlantic City convention in 1925 and which have finally furnished inspiration for many street railways throughout the United States.

Interest of the industry closely followed the coaches from the time of their first appearance until the consignment of 27 new coaches were received in Grand Rapids. Their favorable impression on the public and the practical results they produced to some extent at least has stimulated a general movement throughout the country for better equipment. Harmonious color combinations and other new features, such as low, rakish and streamline body, control cabinet concealing unsightly appliances, etc., easy steps, leather upholstered seats, plate-glass windows, smoking compartments, rubber tiling for floor covering, thermostat heat control and automatic treadle exit, automobile type of bumper, double headlights and names instead of number system are all distinctive features.

June 12, 1926, was set apart as a gala day, a real holiday, to view the parade of the 27 new coaches. Streets were jammed as they had not been since the historic Armistice Day in 1918; city officials, representative citizens, invited guests, descendants of pioneers and early residents for whom many of the new coaches were named, public and parochial school pupils proud of the cars named for their schools and adorned with their pennant dash designs and panel insignia, participated in the colorful pageant of modern street railway equipment. The next day the coaches were placed in service, being dedicated to Grand Rapids residents, and immediately became the pride of every citizen.

A few days later came the street car bonfire at the Fair Grounds. It was a jollification staged for the people by the Grand Rapids Railway to celebrate the new coaches, the beginning of a new era in local mass transportation and to usher in the new order of things. The celebration exceeded even the expectations of the company, more than 50,000 people jamming into the Fair Grounds to enjoy band concerts, illuminated balloon ascension, fireworks display and witness Mayor Swarthout and myself touch the torches at both ends of the line of cars that had outlived their usefulness.

The Grand Rapids Railway's records show an increase in patronage on the lines over which the new coaches are operating, as compared with the older type of car. This proves that giving the people a type of street railway vehicle to ride in, to which they have

*Abstract of a paper presented at the annual convention of the Operators' Section, Iowa Electric Railway Association, Nov. 17-18, 1926, Omaha, Neb.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Dec. 6-9 — American Society of Mechanical Engineers, annual meeting, New York City, Engineering Societies Building.

Jan. 6-7—Midwest Electric Railway Association, midwinter meeting, Mayo Hotel, Tulsa, Okla.

Jan. 7—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

Jan. 10-14—American Road Builders' Association, convention and road show, Coliseum, Chicago, Ill.

Jan. 25—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.

Jan. 26-28—Association of Equipment Men—Southern Properties—Memphis, Tenn.

Feb. 3-4—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.

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become accustomed as a result of the more luxurious trend of the auto, will help restore our industry to the former place it held as a public transportation utility. We realize that civic pride in our railway system is the first step toward public friendship, patronage, fair franchise terms and adequate rates of fare, and our company has made every endeavor to improve the physical equipment with which it is rendering a regular, speedy and safe service.

A recent unsolicited statement by Mayor Elvin Swarthout that any street railway company's effort to improve its equipment, to progress and to give the best service possible is entitled to civic support, is proved by his words:

"The new coaches are more comfortable to ride in than the auto because you have more leg room, more freedom, more comfort and less liability of accident. They are the safest place in the street." His tribute was concluded by this unusual declaration:

"The city must see to it that the railway company is sustained, even if it is subsidized by the city."

It is my firm belief that by progressiveness, courage and service along the lines pointed out the road and the future will become smoother and more cheerful, and with the new order of things, people will gradually return to the street car. Good-will is sure to be further strengthened and all the essential elements combined will help our industry to emerge from stagnation to its proper place in the transportation world.

Co-operation of the Transportation and Mechanical Departments*

By E. W. Miller
Superintendent of Transportation Des Moines City Railway, Des Moines, Iowa

TO GIVE first-class, uninterrupted street car service, there must be existing between the transportation and mechanical departments a true spirit of co-operation. Each department head should be sincere and conscientious in his work, and realize his full responsibility, having in mind that both departments are necessary and must function properly to obtain the results for which they are working. There must be a well-organized program of each department as to every-day customs and practices.

It is the practice of our company for the president, all department heads, company and city supervisors to meet on Tuesday of each week, and all questions that cannot be ironed out satisfactorily between ourselves are brought up at this meeting for discussion and decision. I wish to make clear that questions other than those in dispute are brought up at this meeting, as the president of our company expects each and every department head to be progressive and wide-awake enough to offer constructive suggestions and criticisms.

On our property we have a very definite understanding between the mechanical and transportation departments as to just what is to be done under certain circumstances. To illustrate, in case of a car derailment, when there is a question as to whether or not it was carelessness on the part of the crew, defective car wheels, trucks or other mechanical defects, or bad track, the crew is called in for questioning, the car is pulled off the road immediately, sent to the shop for a thorough inspection, as well as a thorough inspection of track conditions. Our object in this precaution is to do everything within reason to prevent a recurrence of such derailment.

The transportation department directs the operation of all snow sweepers, which sweepers are manned by regular trainmen. The operation of all work trains and work of cleaning and salting switches are directed by our chief engineer, who has supervision of ways and structures. At the beginning of what may seem to be a snow storm, the transportation department immediately gets in touch with the weather bureau; and if it predicts considerable snow, the transportation department gets in touch with the chief engineer, and the heads of these two departments decide to what extent they will call out the snow-fighting force. It has been our policy in the past few years at the beginning of the storm to start our sweepers, work trains and a crew of men to clean and salt switches. By following this plan we have experienced very little interruption in service due to snow storms. We always try to avoid operating snow sweepers during the rusn hours, because during such periods it is impractical for the sweepers to keep in the clear of the passenger cars. During a snow storm, the lines are checked up carefully at regular intervals by two transportation men, who use autos for this purpose. If in their judgment a line needs a sweeper, they so advise the trainmaster, who directs the operation of sweepers.

If we call out our snow-fighting force say at 9 a.m., and the snow storm continues throughout the day, we would keep the full force going until about 5 p.m., at which time the sweepers would be pulled off the road until about 6:30 p.m. The force that sweeps, cleans and salts switches continues at work during the rush hour. Assuming the storm should break about 10 p.m., we would keep our sweepers out until all lines were fairly well cleaned up. After midnight the auto traffic and parked automobiles being off the streets, we would go over all lines with sweeper and clean the track thoroughly, clean and salt all switches, and have men on the job to note that everything is in first-class condition for the early morning cars. This method removes the snow from the rail and flangeways; but unless the snow is pushed back several feet from the rail, as soon as the auto traffic starts, they will crowd the snow back on the rail and in flangeways. We use a snow plow with a heavy wing about 10 ft. long and 2½ ft. wide on right side, set at an angle that it will push the snow about 5 or 6 ft. from the rail. This work must be done after midnight, as it is not practical to attempt this operation with automobiles parked along curbs.

*Abstract of paper presented before the annual convention of the Operators' Section Iowa Electric Railway Association, Nov. 17-18, 1926, Omaha, Neb.

Economic Situation of European Railways†

By L. Boulle
Associate manager Compagnie Générale Française de Tramways of Paris
and M. Bouteau
Manager Compagnie Générale des Chemins de fer Vicinaux of Paris

STREET railway enterprises in the cities of western Europe have been affected during the post-war period by a number of factors, including the following: (1) Increase in cost of labor and material, (2) adoption in a number of countries of a legal eight-hour day which has still further increased the hourly charge of labor, (3) a depreciated currency in many of the countries, (4) reduced riding in still other countries because of business depressions.

The information in this article is based on data received from 42 companies as follows: In Great Britain, 2; Belgium, 3; Denmark, 1; France, 20; Holland, 4; Italy, 1; Luxemburg, 1; Poland, 1; Roumania, 1; Spain, 1; Sweden, 1; Switzerland, 6. In most cases, they represent the largest railway systems in the several countries mentioned.

For convenience in the following comparisons, these undertakings have been divided into two groups. The first are the properties in those countries where the exchange value of the currency as compared with the American dollar is now at par or almost at par. These countries are Denmark, Great Britain, Holland, Spain, Sweden and Switzerland. The second group includes the properties in countries where the currency is greatly depreciated, as compared with the American dollar. These countries are Belgium, France, Italy, Luxemburg, Poland and Roumania. The work of the authors has been somewhat complicated because of the incomplete data received from a number of the properties, as well as because of variations in methods of keeping records and in the nomenclature adopted for accounts. The results given in the accompanying tables, therefore, can be considered only ap-

†Abstract of paper presented at the biennial meeting of Union Internationale de Tramways, de Chemins de fer d'Intérêt local et de Transports Publics Automobiles, Barcelona, Spain, Oct. 10-16, 1926.

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TABLE I—SHOWING CURRENCY EXCHANGE RATIOS AND PRICE INDEXES FOR THE COUNTRIES MENTIONED

	Exchange Ratio of Paper Currency in U. S. A. Dollars			Price Index of Commodities on the Basis of 1914 = 100 b			
				Wholesale		Retail	
	1913	1919	1925	1919	1925	1919	1925
Group 1							
Denmark	3.73	5.27	4.02	340	157	212	210
Great Britain a	4.86	4.40	4.81	c 307	160	215	173
Holland	2.49	2.66	2.49	304	155	195	179
Spain	5.18	5.25	7.05	204	188	174	189
Sweden	3.73	4.68	3.73	330	155	257	176
Switzerland	5.18	5.43	5.17	d 191	161	261	165
Group 2							
Belgium	5.18	10.36	22.01	d 368	565	d 468	534
France	5.18	10.99	26.81	356	555	238	399
Italy	5.18	13.07	24.79	366	690	280	598

a—In the case of Great Britain the exchange rate given is the value of the pound sterling in American dollars. In the case of the other countries, the figure represents the number of units of currency of the country required to equal the value of an American dollar.

b—Wholesale prices are 1913 instead of 1914 for Great Britain, Holland, Italy and Spain. For Denmark and Sweden some wholesale prices are for 1912 and 1913. In the table of retail prices the figures for Great Britain are for 1913 and for Holland are for 1911-1913.

c—1920.

d—1921.

proximate. These tables include in Group 2 only Belgium, France and Italy, as the data from Luxemburg, Poland and Roumania were not complete and also because the great changes in currency of Poland and Roumania made the statistics from those countries especially difficult of comparison.

As a preliminary, Table I is given to show the economic and currency situations in the countries mentioned.

Fluctuation in Gross Receipts

A somewhat corresponding variation to the figures in Table I will be found in an examination of the gross receipts of the electric railway undertakings in the countries mentioned, though differing greatly in the two groups mentioned. Thus, the gross receipts of the railways in Group 1, with the exception of those in Spain, show a fairly continuous trend. This trend can be divided into three parts as follows:

From 1913 to about 1918 or 1919 there was a gradual but continuous increase in gross receipts, amounting to approximately 30 per cent at the end of the period as compared with 1913.

From 1918 to 1921 there was a very rapid increase in the gross, resulting in 1921 in receipts in some cases double those of 1913.

From 1921 to 1925 there has been a gradual decrease in gross receipts of the properties in Denmark, Great Britain, Holland and Switzerland, and a gradual increase in Spain.

It is not difficult to explain these variations. During the war, even in the neutral countries, there was an abnormal activity of affairs which interfered with the ordinary development of traffic. Immediately after the armistice this condition subsided, but the restraints on general travel, which had existed in many countries during the war, were removed. This with the increased fares, which had been raised because of the depreciation in the currencies, accounts for the greater receipts. It should not be forgotten, also, that in Denmark, Great Britain, Holland and Sweden, the wholesale price index of commodities in 1919 was two or three times that in 1914. In Spain the increase in the index price of commodities was not so great, so that during the last seven years, it did not have so far to fall. It is not surprising therefore that the slight decrease in receipts in England, Denmark and Holland should have been accompanied by a slight increase in Spain.

TABLE II—PERCENTAGE CHANGES BETWEEN 1913 AND 1925

	Gross Receipts	Devalorization of Currency	Wholesale Price of Commodities
Belgium	450	426	565
France	400	517	555
Italy	440	478	690

Gross Receipts in Countries with Depreciated Currency

All of the countries in the group in which the currency has greatly depreciated were belligerents during the war, and in most of the tramway enterprises in these countries, the receipts fell off during the war period, but in the period 1919-1921, the effects were largely similar to those in the enterprises in Group 1. Thus, in 1921 the receipts, on a basis of 100 for 1913, were in Belgium 249, in France 237 and in Italy 438. At the same time the wholesale price index for commodities was, in Belgium 368, in France 345, and in Italy 577. For 1925 the conditions were even worse, as shown by the figures, in Table II.

Professor Seligman to Address Taxation Committee

A MEETING of the taxation committee of the American Electric Railway Association has been called for 11 o'clock Friday morning, Dec. 10, at association headquarters to discuss specifically the merits of the proposed gross-net tax method of utility taxation. In addition to the committee membership proper, the advisory members representing each state in the country have been asked to attend.

The committee will hold a luncheon meeting at the Engineers' Club at 1 p.m., Friday. Edwin R. A. Seligman, professor of economics at Columbia University, has been invited to talk on the general subject of public utility taxation, to which he has given much study and on which he is a widely recognized authority.

Since the subject is of vital importance to the entire industry, Leslie Vickers, economist of the American Electric Railway Association, is strongly urging every member of the committee and of the advisory group to attend this meeting.

Operating Expenses and Return on Capital

Table III gives average increases in operating expenses in the two groups, as compared with 1914. Operating expenses do not include any return on capital. As will be seen, with the exception of Sweden, there has been a tendency for operating expenses to fall to from about 240 to 260 per cent of the 1914 value.

TABLE III—OPERATING EXPENSES OF TRAMWAYS IN THE CURRENCIES OF THE DIFFERENT COUNTRIES COMPARED WITH 1914

	1914	1921	1925
Group 1			
Denmark	100	...	299
Great Britain	100	239	253
Holland	100	309	211
Sweden	100	555	424
Switzerland	100	247	240
Group 2			
Belgium	100	506	659
France	100	396	624
Italy	100	316	457

The return on capital in Great Britain in 1921 was 40 per cent of the return in 1913, and in 1924 it was 99 per cent. If, however, the reduced purchasing power of money in Great Britain is taken into consideration, the average return for the post-war period may be taken as averaging about 30 per cent of the period just prior to the war. The same condition holds in Holland. In Switzerland the situation is somewhat better. The return in 1921 there was from 150 to 190 per cent, and in 1925 from 125 to 180 per cent of the return in 1913.

In the countries with depreciated currency, the returns are far less. Nominally, the French figures show the return in 1921 to be from 100 to 140 per cent of the 1913 figures and in 1925 from 95 to 130 per cent. The figures, however, take no consideration of the devalorization of the franc.

Conclusions

In general it will be seen that while the properties are holding their own on the basis of traffic, the financial returns are not satisfactory and the net returns, especially in those countries where the currency is depreciated, are most discouraging to this class of enterprise. Possibilities for improvement seem to lie, if at all, in a more efficient utilization of the personnel, in improved types of rolling stock and in more scientific methods of operation. Undoubtedly, in an industry where the labor charge amounts to 50 or 60 per cent of the gross, as it does in tramways, a great deal of harm can be caused by ill-considered legislation in regard to minimum wages and maximum hours. Any such legislation which includes personnel of a local transportation company should take into consideration not only the number of hours worked per day and week, but also the intensity of the physical and intellectual effort demanded.

In the direction of improved rolling stock, the cars used at present by the electric railways of western Europe have been designed largely along the

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lines of steam railroad coaches. The rapid development of the automobile industry indicates that possibilities of improvement lie in the direction of cars patterned more along automobile lines, particularly in the direction of lightness. Unfortunately, any extended change in this direction would involve large expenditures which the industry can ill afford at present.

The greatest possibilities in improvement of operation seem to lie in more careful adjustment of schedules with the thought of economy in mind.

Barcelona Convention Attracts Large Attendance

MORE than 500 attended the Barcelona convention of the Union Internationale de Tramways, de Chemins de fer d'Intérêt local et de Transports Publics Automobiles, held Oct. 10 to 16. This association is made up of electric railway companies and municipal tramway undertakings in western Europe and the governments in a number of countries send official delegates to the meetings. The proceedings are conducted in French and a convention is held every other year. The one in 1924 was in Paris. The president of the association is F. de Lancker of the Brussels Tramways. The Barcelona meeting was honored at its last session by the presence of his Majesty King Alphonso, who expressed his pleasure that Spain had been selected for the 1926 convention and that he personally had been able to be present at one of the meetings.

At the business session of the association no changes were made in the executive committee with the exception that Gosta Hellgren of Stockholm was elected to represent Sweden, Alphons Kuhn of Warsaw to represent Poland and Andreas Falkenberg of Lilleaker to represent Norway. Messrs. Kuhn and Falkenberg occupy vacancies caused by the deaths of the former representatives of Poland and Norway. Invitations to hold the 1928 convention in Warsaw, Glasgow and Rome were received from representatives of those cities, but decision was left to the executive committee.

An abstract of one of the papers presented at the Barcelona convention, namely, "Transportation a Vital Factor in City Growth," by M. Jayot of Paris, was published on page 889 of the issue of this paper for Nov. 13, 1926. An abstract of a paper on "Economic Situation of European Railways," by L. Boulle and M. Bouteau, Paris, appears elsewhere in this issue. A paper on "Bus Body Design in Europe," by J. de Croes of Belgium, was printed in abstract on page 643 of *Bus Transportation* for November, 1926. Abstracts of papers on "Methods of Increasing Car Speeds and Rush Hour Carrying Capacities," by Paul Mariage of Paris; on "Track Switches," by Messrs. Battaille of Liége and Stoffels of Amsterdam, and on "An Index to Determine the Proper Tramway Fare," by R. Haerens of Brussels, and a progress report on rail corrugation will be printed in early issues of this paper. Three extended reports on rail cars for steam railroad service formed part of the program. Abstracts follow of other reports presented:

European Practice on Ties

This report was presented by Mr. Burton, principal assistant engineer Société Nationale des Chemins de fer Vicinaux of Brussels. Based on replies from 31 companies of the international association, the following conclusions were reached on the subject of ties for electric railway track.

Wood Ties.—Wood ties do not appear to be inferior from a service standpoint in electric railway track construction. On the contrary, the wood tie, particularly if of oak, has no superior as a support for the rail. Beechwood ties also give good service, though do not appear generally to have the good reputation which they deserve. This wood is indigenous to central and western Europe and could be employed instead of oak to good advantage. Certain other kinds of wood could also be employed to good advantage. The comparatively short life of pine ties, even when treated, does not seem to encourage their use except under especially favorable conditions. In general, preservative treatment is to be recommended, not only from the standpoint of economy but in the interests of conservation. In track replacements, it is rarely desirable to attempt to reuse the old ties.

Metal Ties.—The greater life of metal ties warrants their use at a price higher than that paid for wood, especially when native woods are not very suitable for ties. Metal ties can generally be reused.

Concrete Ties.—The use of concrete ties is too recent to permit any definite statement on their value, but from a service standpoint they are suitable for use on ballast.

General.—The weakest feature of all types of substitute ties mentioned is the method employed to attach the rail to the ties. In this respect there is little to be said in favor of one type of tie over another. Rail corrugation appears less when the rail is supported on an elastic rather than on a rigid continuous foundation.

Ballast.—Metal ties are not very suitable where the ballast is of a type having an oxidizing effect on metal, like cinders. They also seem to have more of a crushing effect on broken stone ballast than wood ties.

Safety in Car Operation

A report on safety was presented by O. Junyent of the Barcelona Tramways, who pointed out that much less attention has been given to this subject on European tramways than by those in the United States. In the way of safety equipment, European tramways realize the necessity of good brakes and fenders and use safety guards betwen motor cars and trail cars, but few cars are equipped with platform gates or doors. In fact, the only cities reporting their use are London, Amsterdam and Barcelona. Some systems even permit entrance and exit of passengers on both sides of the car on a double track.

While thus somewhat lacking in the use of mechanical equipment, most European systems pay a great deal of attention to the selection and medical re-examination of employees. The rule in Paris is to give motormen a thorough physical examination every five years up to the age of 45, then every three years between 45 and 54, and yearly thereafter. The Paris system also gives a very thorough psychological test to motormen, as described in a report at the last convention. (See ELECTRIC RAILWAY JOURNAL for Aug. 23, 1924, page 280.) At present 22 per cent of the motormen have been selected by this method, and statistics show that they have 16½ per cent fewer accidents than motormen not so chosen.

Fourteen companies of those reporting offer prizes to the motormen who have no accident records. Lyons has instructed its street inspectors to call the attention of passengers who attempt to alight from or board a moving car to the danger of this practice. A number of companies use safety posters.

The report contains a table showing average speed of cars in kilometers per hour and the number of accidents per 100,000 km. operated.

Automatic Substations

Two papers were presented on this subject. One, by M. Lombard-Gérin of the Lyons Tramways, said that automatic substations are comparatively more rare in Europe than in America, one reason being that in Europe labor is comparatively less expensive and automatic equipment comparatively more expensive than in America. However, a number of railway companies, including those at Vevey, Paris, The Hague and his own company at Lyons had installed stations of this kind. The Lyons station transforms three-phase, 10,000-volt, 50-cycle current to 440 volts d.c. and is of 900 kw. nominal capacity, though capable of working from 15 to 20 per cent overload. The converters are of the mercury arc rectifier type. In a paper on mercury arc rectifiers, M. Walty of Brown-Boveri & Company said that his company had equipped and had in service 25 substations, all with mercury arc rectifiers, and that they were giving good satisfaction. He considered that type of rectifier especially adapted to automatic substations.

Railway Motor Ratings

This topic was also considered in two reports. One, by Professor Podoski of Warsaw, gave particulars of tests made by him on six different types of railway motors used on the Warsaw and Lwów systems in Poland, tending to show the effect of passenger stops, grades, forced ventilation, etc., on motor outputs. The other paper on standardization of railway motors, by M. Peridier of the Paris Tramway Company, outlined the conditions which railway motors are required to meet in service. He urged greater participation by electric railway engineers in the work of the International Electrotechnical Commission, which has practically assumed charge of the subject of railway motor ratings.

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The News of the Industry

Bus Franchises Delayed—Jurisdiction Questioned

An opinion on the powers of the Transit Commission to fix fares on bus lines operated under a municipal franchise was recently rendered by Judge Charles E. Hughes, speaking in a private capacity. An expression of his judgment was sought by the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., which took exception to the form of franchise of the Board of Transportation requiring the carrier to agree not to invoke the authority of the Transit Commission in the matter of a maximum fare under penalty of forfeiture of its franchise. Mr. Hughes asserted that the city could not fix a 5-cent bus fare, but that the Transit Commission had sole power to make rates.

He contends there would be no forfeiture of franchise if the rate should be raised on the company's appeal. He held that the city derives its authority to prescribe terms contained in franchises from the Legislature, and has no power to fix rates, as this function is exercised by the Transit Commission, with its authority over "common carriers." Admitting that the Transit Commission fixes only maximum rates, Mr. Hughes contended that any effort by the city to fix a fare which the Transit Commission might hold as unreasonable would be invalid.

This opinion, filed by the Brooklyn company with the Board of Estimate, may delay further the awarding of the bus franchises. Mayor Walker expressed the thought that if the provision in the proposed franchise which fixes the rate of fare at 5 cents and binds the holder not to appeal to the commission is not legally binding, the law should be amended to give the city that power. John H. Delaney, chairman of the Board of Transportation, said that if Judge Hughes were correct in this matter, the alternative would seem to be municipal operation.

No comment on Mr. Hughes' bus opinion could be obtained from the Transit Commission.

Kansas City Canvass Under Way

Official canvass is being made of the 13,213 names on a petition filed recently by a committee of Republicans asking for the referendum or repeal on the twelve-year franchise extension of the franchise of the Kansas City Railways, Kansas City, Mo. A total of 11,461 names is required if the petition is to be allowed to stand, it is announced. If the striking off of the names brings the total below the required number, the committee is allowed ten days to add other names to bring it up to the required amount. H. F. McElroy, city manager, stated that fraud apparently had been committed, judging from the similarity of the handwriting of many of the names, and urged that a representative be sent to watch the official canvass. P. E. Cole, former bank auditor, was sent to aid the city clerks in the check of the names. Republican workers are busy now obtaining names to replace the 5,000 stricken from the petition by the city clerk, who held they were not qualified voters and were not signed properly to the petition.

New Nashville Cars in Movies

Movies were made at Nashville, Tenn., of the old mule car, carrying its load of old-time drivers; the new railway parlor coaches and all of the ceremony attendant upon the presentation of the new de luxe cars to the public of Nashville.

Through the courtesy of Tony and Harry Sudekum of the Crescent Amusement Company, a motion picture cameraman "shot" more than 1,000 ft. of film, from the time the parade began until Vice-President J. P. Brown of the Nashville Railway & Light Company, formally presented the new cars to Mayor Hilary E. Howse for public service.

The film reveals the thousands who lined the downtown streets to view the unusual procession, shows the new cars moving in a fleet through town and contains many intimate glimpses of "old timers" who lined the sidewalks and the electric car which was born in 1889. The pictures will be preserved as a part of Nashville's interesting history.

Electric Railroads Can Make Money!

ACTIVITY shown by the Insull interests in adding to their holdings of electric transportation lines in recent years indicates great confidence in the belief that electric railroads can make money under proper management. Taking the North Shore line as a sample of Insull-Budd management it would seem that properties under their control should make money, if any management could do so in a given situation. A glance at the map raises the question whether it may not ultimately be the Insull policy to unite the properties in the Chicago area into a comprehensive system. To this question there can at present be no answer. Studied as a group, however, it is apparent that the securities of the various companies include a number of sound investment issues and some attractive speculations.—*From an Article in Barron's entitled "Insull in Transportation."*

Chicago Mayor Opposes Receivership

In bringing forth a proposal to extend the franchise of the Chicago Surface Lines, Chicago, Ill., for six months after their expiration next February, Mayor Dever recently told the local transportation committee of the City Council that a receivership would be detrimental to the interests not only of the bondholders but of the city and car riders as well. He pointed out that the State Legislature, which convenes in January, will conclude its 1927 session on June 30 and that the city by that time would have had time to adopt a satisfactory traction ordinance and obtain the legislation required to permit unification of the elevated and surface lines.

Alderman Arvey presented to the Council a resolution requesting the transportation committee to consider the matter without delay. He said he believed that Surface Lines officials and bankers were bluffing the security holders into believing no course other than receivership was open to protect them. He said that with a short extension of franchise there would be no doubt about the city continuing to get the 55 per cent of net receipts or the security owners getting their interest payments. Neither of these things would be realized under a receivership. The move would insure the continuance of the 7-cent fare over the city and free interchange of transfer.

Mayor Dever's chief purpose in appearing before the local transportation committe was to push his plan for the immediate building of subways in the Loop district and the adoption of an ordinance providing for the levying of special assessments and their confirmation by the courts.

The Mayor hopes that the execution of such a plan will place the city in readiness for actual digging of the tubes as soon as the settlement of the whole transportation question is reached. He believes it is unwise, however, to start actual construction involving the expenditure of a part of the city's traction fund until the entire traction situation is cleared up.

Representatives of the Wells Street property owners' association were also on hand at the transportation committee's meeting to urge that the "L" structure on Wells Street in the Loop be removed and replaced with a subway. They offered to stand immediate assessment for a share of the cost of both operations.

The so-called Lisman proposal, particularly the financial features of it, continues to be the subject of much discussion in banking and investment circles. This plan has more recently been broadened in discussion to contemplate one ownership for both surface and elevated properties.

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New Line Proposed for San Francisco System

Men in public life at San Francisco, Cal., are working on a plan to construct a fast interurban line for train service from the heart of the business district down the peninsula to San Mateo. It is planned to operate five-coach trains on a twelve-minute headway to make the trip in 21 minutes. It is declared that such a project will open up the whole picturesque region south of the city to home settlement, give the city room for natural expansion and boost retail trade.

City Engineer M. M. O'Shaughnessy has compiled a mass of data to aid him. Tracks are already laid as far as Ocean View, 12 miles from San Mateo. It is estimated that $5,000,000 will be sufficient to construct this new line. A charter amendment voted by the people permits the county to build a railroad as a public utility into an adjoining county and recent approval of another charter amendment, it is said, will enable officials of the city to float a $5,000,000 bond issue.

It is claimed that lack of adequate rapid transit down the peninsula has tended to stunt the growth of San Francisco. The proposed line would be an adjunct to the present San Francisco Municipal Railway. It is declared that the work could be completed in eighteen months, but it is not likely that the project will be started until after some existing Market Street Railway franchises have expired, which will not be before two years.

Mr. O'Shaughnessy has two sets of plans for a San Francisco terminal. One is to form a loop at Stockton and Market Streets and the other is to utilize a building similar to that used by interurban trains in Los Angeles.

"J." Lease Hearings to Reopen

An investigation into the figures compiled by the Philadelphia Rapid Transit Company, Philadelphia, Pa., in support of the city-company petition for approval of the Frankford elevated lease was begun in Philadelphia on Nov. 26 by B. F. Morgal, chief of the Public Service Commission's accounting bureau. He has been directed by the commission to aid counsel for certain objectors to the 30-year extension of the lease for the city-built line, in computing exact operating costs of the elevated. The commission announced that hearings would be reopened on Dec. 9.

Opponents of the city of Philadelphia lease with the Philadelphia Rapid Transit Company for 30-year operation of the Frankford elevated line engaged Milo R. Maltbie recently to aid in the fight being waged against ratification before the Public Service Commission. Mr. Maltbie, a utilities expert of New York, headed the commission named by Mayor Moore to plan a comprehensive system of high-speed lines for Philadelphia. When counsel for the P. R. T. and for the Northeast Chamber of Commerce, City Club and United Business Men's Association met on Nov. 29 to thresh out certain data which had been requested by the commission, two of Mr. Maltbie's assistants appeared at the conference. They are George E. Goldwaithe, engineer, and Francis T. Mylott, accountant. Edward E. Roberts, engineer, representing the United Business Men's Association, also was present.

Survey in Detroit

Police Traffic Bureau Suggests Certain Corrective Measures, Though Certain Minority May Be Inconvenienced

A police traffic survey of Detroit, Mich., is now under way which has for its purpose the more efficient and consistent use of the facilities now available. The City Council has voted $30,000 to defray the cost of the survey. The Police Traffic Survey Bureau believes that when the limit of such facilities is in sight plans will have been made for amplification of or additions to them, as required.

If a program of corrective measures is not adopted the only alternative is more ordinances, more policemen to try to enforce them and large sums of money spent for street widenings, arcaded sidewalks, double-deck streets, double-deck sidewalks and many other schemes suggested, all of which cost money and require time for installation.

The following seventeen items show the scope of the work.

1. Determination of vehicular traffic flow and passenger flow at four concentric loops, having the City Hall as an approximate center; supplemented by vehicular traffic flow at isolated intersections throughout the city. Included therein is the timing of the automatic signals now in use and a determination of where additional signals should be located.
2. Determination of points within the city where minor changes, such as cutting back curbs at interesections, removal of billboards and repairs to paving, might reduce the accident hazard and increase the fluidity of traffic movement.
3. Determination of the origin, destination and routes of passenger and commercial vehicles in order to devise, if possible, selected preferential routes for both classes of service.
4. Determination of the relative speeds of street cars, buses, trucks, passenger automobiles and horse-drawn vehicles in different sections of the city and along certain streets, especially the main arteries, in order properly to time and operate the progressively timed automatic signal system now being developed by the signal bureau of the Police Department.
5. Determination of the routes selected by trucks in moving freight and merchandise between freight terminals and the business district and between the business district and residential district.
6. Determination of the use of the alleys in the business district for freight loading and unloading, with the possibility of increasing the use thereof, with a consequent reduction in the use of street space for such purposes.
7. A study of the present routing and loading points of mass transportation vehicles with a view of improving the same where possible.
8. Determination of the origin, destination and routes taken by passengers on mass transportation vehicles with a view of improving the efficiency of the same, where possible.
9. A study of the routes, street stands and movements of "for hire" vehicles.
10. A study of pedestrian movements, direction and volume, at certain congested intersections and along certain congested sidewalks.
11. In co-operation with the Retail Merchants' Association, a survey and study of the transportation habits of customers and employees to and from the stores in the downtown district.
12. A study of the transportation habits of factory employees, store employees to and from work.
13. In co-operation with the Detroit Automobile Club a study of the distribution of automobile and truck ownership in the city.
14. In co-operation with the Associated Technical Societies of Detroit and the Retail Merchants' Association, a study to determine whether or not there is a tendency toward decentralization of the downtown business district.
15. Study of the available "off street" parking space inside the limits of the Grand Boulevard and a determination of the amount and turnover of automobile curb parking in the business district.
16. Study of the available rentable garage space outside the business district and the amount of all-night street storage of automobiles in that territory.
17. In co-operation with the Board of Education, a study of the travel routes of children to and from school in order to provide the necessary protection, such as traffic officers, automatic signals and pedestrian subways where major streets are crossed by the children.

Before the work in hand is completed, city departments and civic organizations will be asked to lend their assistance. In making this survey the Police Department has staged an "open house" policy as regards suggestions for the betterment of traffic movement and control.

New York Comptroller Asks Some Pertinent Questions

Comptroller Charles W. Berry of New York insisted on Nov. 22 on having an answer to the subway questions which he propounded to the Board of Estimate more than four months ago. Until the present administration has settled upon a definite program, he said, he will not vote one cent of money for subway contracts.

The city will be in a position within a few weeks to let $50,000,000 of subway contracts which have been held up pending determination of the proceedings over the prevailing rate of wage law. Before these contracts are let Comptroller Berry will again demand to know how the subways are to be paid for, whether the plan inherited from the Hylan administration will be adhered to and how the subways, when completed, will be operated. He said:

> Members of the Board of Estimate who are responsible for this vast expenditure of money should sit down and count the cost to see how the city is coming out. What we are doing is going right ahead as though there had been no change in the administration. We are committing ourselves to an independent subway.

Further, the comptroller pointed out, subway financing overshadowed all other questions of city finance and there could be really no determination of other pending problems until the subway question had been settled. He said he had no brief for any particular policy, but declared he could not see how the city could go ahead with any of its other projects until the main question had been settled.

He favors the immediate appointment of a board of expert engineers to examine the proposed plan before further expenditures are made on the system, which, he says, will eventually cost $1,000,000,000 rather than the $500,000,000 or $600,000,000 which it was first planned to spend.

Mr. Storrs Back in America

Lucius S. Storrs, managing director of the American Electric Railway Association, returned on Nov. 30 on the *Olympic* from his seven weeks trip to Europe. While this was primarily a vacation, Mr. Storrs took occasion to look over the transportation situation in London, Berlin and various other cities.

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Improved Business in Alliance

Use of Weekly Pass an Important Factor in Better Conditions on Eastern Ohio Line—Minimum Fare of 10 Cents Sought

Business Boosters—that's what officials of the Stark Electric Railroad, Alliance, Ohio, consider passes now in use over the company's lines from Canton to Salem, a distance of about 30 miles. Eight kinds are now being issued for transportation over various parts of the division. "I want to thank you from the bottom of my heart for your passes," a prominent Alliance lawyer recently told one of the company officials. "Formerly I spent 25 cents a week for street car tickets, walking to and from work most of the time. Now I buy a pass, use it four times a day, one of the children uses it at night, all for 70 cents. Where you formerly got 25 cents of my money you now get 70 cents."

Plan Perfected in Summer

Plans for using the pass were perfected last summer. That form of transportation was introduced first on Sundays at 50 cents for adults and 25 cents for children. The pass permitted a person to ride as often or as far as he wished. Results indicated that the idea was a good one, for on the first Sunday 400 passes were sold. Results were so promising that the company put into effect similar passes. They are:

Weekly pass between Canton and Salem, transferable to any member of the family, $5; single fare between these two points is about 90 cents.
Weekly pass between Canton and Louisville, 5 miles, $1.
Weekly pass between Alliance and Sebring, 4 miles, $1.
Weekly pass between Damascus and Salem, 6 miles, $1.
Weekly pass in Alliance, 70 cents.
Weekly pass in Canton, 70 cents.
School tickets for children under thirteen, good for ten rides to any point on the line, 50 cents.
Sunday passes for adults at 50 cents and children 25 cents.

So popular has the weekly pass system become on city runs that Stark Electric officials offer to insert in the city franchise a clause which will permit the issuance of passes for the remainder of the 25-year period for not more than $1 a week. The present price of 70 cents a week will not be affected by this clause at the present time. The dollar price is made to permit an increase of the present rate should this be found necessary within the next 24 years.

The peak of the pass system so far recorded shows that more than 700 weekly tickets were issued in Alliance alone.

Company a Pass Pioneer

The Stark Electric Railroad was the pioneer in eastern Ohio to adopt this system. Not many weeks later the Youngstown & Ohio River Line adopted a similar proposition, offering passes for 50 and 25 cents. After a month of this the price of the Youngstown & Ohio passes was increased to $1.50 a pass, due to the length of the ride. The line is longer than the Stark Electric and has no intermediate city like Alliance to shorten the average length of ride. Since September, also, the Northern Ohio Power & Light Company, Akron, has been offering Sunday passes on its southern division between Canton and Uhrichsville.

The latest development in Alliance is a petition of the company before the City Council looking toward a minimum fare of 10 cents. This move is to relieve congestion on interurban cars which has resulted from large city patronage. This minimum fare, if approved by Council, will affect only the Mount Union branch of 2 miles, over which city and interurban cars operate. The same fare, 6 cents, which is charged on city cars will apply on interurban cars operating over city lines where there are no city cars. Three city cars are to be used instead of the present two cars for the Mount Union district if the minimum fare is allowed by Council.

Stops Being Eliminated

To speed up interurban service between Canton and Salem, a distance of about 30 miles, two city stops in Alliance and five in Canton are being eliminated. The Stark Electric "city zone" in Canton has been "moved in" toward the public square about half a mile. The new zone where the 6-cent fare will prevail ends at the old city limits.

House-to-House Canvass in Alameda

Officials of the Key System Transit Company, Oakland, Cal., have resorted to the plan of a house-to-house canvass in order to determine what the public needs in railway service in Alameda, Cal. Canvassers of the company have been instructed to visit every home in the island city and to make a complete report of all criticisms and concrete suggestions that may be offered. George H. Harris, general manager of the company, hopes by this means to obtain suggestions that will make it possible for him to readjust matters so as to stimulate riding.

They Had to Keep Their Cars Up

TIME payments have even had an influence on the painting of street cars. An electric railway in the Middle West a short time ago emerged from financial difficulties to an extent that permitted it to buy some new cars. After only a year of service the new equipment appeared resplendent in fresh-paint jobs, while the older cars have never been painted within the memory of man and apparently will always rattle through the streets in dreary coats of rust.

An observant passenger finally noticed a brass plate on each car which said: "—Trust Company, Trustee, owner and lessor." The cars were financed with equipment trust notes and there is a clause in the agreement requiring that the cars must be properly maintained to keep the sheriff away. — *Wall Street Journal.*

Seattle Rides Free for Two Days

For two days, Nov. 26-27, the Seattle Municipal Street Railway, Seattle, Wash., furnished free transportation between the hours of 9:30 and 10:30 in the morning, to co-operate in the opening of the Christmas shopping season in the downtown district. The merchants of the city, working with the retail trade bureau of the Chamber of Commerce, decorated the streets in the business district with a lavishness heretofore unknown to the thoroughfares, and special preparations were made in all the stores for the entertainment and amusement of children, who were urged to go downtown to view the displays.

In the meantime, the merchants in the suburban district, especially the large University and West Seattle district, protested to the City Council against the free rides, declaring the plan gave the downtown merchants an unfair advantage and was a plot to draw business from the suburbs. The merchants of course rented the municipal lines at a set sum.

Increased Rates for Watertown Sought

The Black River Traction Company, Watertown, N. Y., applied to the Public Service Commission on Nov. 18 for authority to increase its fare rates from 7 cents cash or 16 tickets for $1 to 10 cents cash, seven tickets for 50 cents. The company alleged that for more than three years past over and above expenses of operation, taxes, and interest, it had sustained a deficit for each year and that present revenues were insufficient to meet the cost of service. The Watertown City Council recently waived franchise provisions and consented to the increased fare on determination by the commission, with certain stipulations as to transfer privileges. The company also petitioned the commission for authority to discontinue the sale of the 15-cent round-trip tickets between Watertown and Glen Park, stating that the rate was unjust and unreasonable. It asked permission to charge a 10-cent fare between the two places.

A petition was also filed by the Watertown Transportation Company, a subsidiary of the Black River Traction Company, for authority to increase its fare rates to 10 cents cash fare, seven tickets for 50 cents. The Watertown City Council waived objection to the requested increase on Oct. 18. Certain transfer conditions were provided under this consent. The present bus fare is 7 cents, four tickets for 25 cents.

Los Angeles Will Oppose Fare Pleas

The city of Los Angeles, Cal., is preparing itself to fight the proposal of the Los Angeles Railway and the reported petition of the Pacific Electric Railway. The Los Angeles Railway has placed a request on file with the State Railroad Commission for a raise in rates from 5 to 7 cents. This petition has been referred to previously. It is stated, also, that the Pacific Electric Railway intends to seek another increase in its fares.

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Chester Electrification Ready in Year

Assistant Chief Engineer E. B. Temple of the Pennsylvania Railroad, in an address delivered at a meeting of the Engineers' Club at Philadelphia recently, gave a number of details regarding the railroad company's plans that had not been generally known. He said it will be necessary to have all suburban trains electrified so that they may use the subway and the new Fifteenth Street station under Pennsylvania Boulevard.

To relieve congestion in the handling of trains in Broad Street Station, the company electrified the Main Line to Paoli, a distance of 19.9 miles, in 1915. The electrified service now consists of 36 trains each way daily, or 72 in all. In 1918 the Chestnut Hill branch, 12 miles in length, was electrified, and in 1924 the Fort Washington branch, 6.3 miles in length, beginning at Allen Lane station on the Chestnut Hill branch. The service now consists of a total of 88 electrified trains, counting both directions.

On Jan. 27, 1926, the board authorized the electrification of the suburban service to Wilmington, a distance of 28.1 miles, and to West Chester via Media, a distance of 27.4 miles. Telegraph and telephone and certain signal lines between Philadelphia and Wilmington are being removed and replaced by cables in underground conduits. This work is practically completed.

The rest of the job is progressing steadily. The foundations for the cross-catenary suspension and the bridges are nearly all completed on the Wilmington line, and plans are ready to proceed on similar foundation work on the West Chester line.

There are now 138 passenger and baggage cars in use on the Paoli and Chestnut Hill lines. There will be 128 additional cars ready for the Wilmington-West Chester electrification of about 50 trains for Wilmington and 40 to West Chester. A growth in travel is anticipated similar to that which took place after the Paoli and Chestnut Hill electrification. It is expected that the suburban service on these two lines will be operated electrically early in 1928. There yet remains the electrification of the Schuylkill division to Norristown or Phoenixville, and the New York division.

California Surveys Portend Structural Changes

J. H. Dyer, general manager of the Southern Pacific Company, San Francisco, and C. O. G. Miller, president of the Key System Transit Company, Oakland, Cal., admit that surveys are in progress to devise means to eliminate duplication of service on the ferry and traction divisions of the two roads. Five plans are being studied, ranging from slight changes in the interurban traction service to the organization of a joint operating company. As yet nothing definite has been decided. Paul Shoup, executive vice-president of the Southern Pacific, at present in the East, will have the final say.

The two roads now operate parallel lines in Oakland and in other East Bay cities and ferries on a similar schedule between San Francisco and Oakland.

Colorado Line Incorporated

The Grand River Valley Railroad, Denver, Col., was recently incorporated with a capitalization of 50,000 shares no par value. The incorporators, Clare N. Stannard, John E. Loiseau, Harry T. Hughes, and others are officials of the Public Service Company of Colorado, which recently acquired the Grand River Railroad. The Grand River Valley line operates between Grand Junction and Fruita, Col. One of the officials of the road said that the acquisition was a step in its policy of expansion.

"L" Cars Wrecked in Celebration of Grid Triumph

The interiors of two Market Street elevated cars of the Philadelphia Rapid Transit Company, Philadelphia, Pa., were wrecked on Nov. 11 by West Philadelphia High School students, who were celebrating their football victory over the Central High School. At the end of the bachannal 28 students went to jail, after fighting trainmen and police who were summoned for the emergency. The windows of the cars were smashed by seats which were hurled through the glass, the electric lights were broken and the cars were in absolute darkness. Advertising cards in the upper side of the cars were torn from their fastenings and thrown through the broken windows. Later it was decided that fellow students in a tribunal would fix the penalty for the rowdyism.

Strike in Danbury

Railway and bus employees of the Danbury Power & Transportation Company, Danbury, Conn., which operates electric railway lines in Danbury and bus lines between Danbury and Bethel, went on a strike on Nov. 23. At the present time 59 operators are out. Service is being rendered by independent bus lines and taxi companies have been allowed a temporary certificate to supply service between Bethel and Danbury.

Two reasons are advanced as causes of the strike. It is said the new management refused to recognize the union and enter into an agreement similar to the one in force when the road was run under the name of the Danbury & Bethel Street Railway. The other reason is said to be the plan of the railway to substitute buses on many of its lines in the city of Danbury.

The Danbury Power & Transportation Company has long had under consideration the substitution of buses on most of its trolley lines. Since the strike began officials of the company have petitioned the Public Utilities Commission for authority to discontinue wholly or in part trolley service on ten of its routes and to substitute buses. A hearing has been scheduled for Dec. 3 at the Danbury City Hall and conference between officials of the company and a committee of strikers is planned.

$5,000 in Prizes Offered by Foshay

W. B. Foshay Company, Foshay Building, Minneapolis, Minn., public utility operator, announces an advertising contest in which prizes aggregating $5,000 will be awarded for the best series of newspaper advertisements, folder, booklet, single advertisement, slogan, or other form of advertising that may be submitted covering the Foshay utility and investment business. The contest opens Nov. 1, 1926, and closes April 30, 1927. The prizes will be awarded June 1, 1927. The contest rules follow:

1. Every ad should carry the Foshay border and the Foshay signature, as well as the Foshay slogan, "All Your Money—All the Time—on Time."
2. All copy must be centered on one dominant thought which covers our business of financing, controlling and managing public utilities and industrials and the distribution of securities.
3. All advertisements, books or folders must be original.
4. The advertisements may be illustrated or not, according to the taste of the contestant.
5. The advertisements should be submitted in a way that will protect them from damage. We will not be responsible for manuscripts lost in the mails.
6. Send all advertisements to contest editor, W. B. Foshay Company, Foshay Building, 826 Second Avenue, South, Minneapolis, Minn.
7. Contestants are not limited to any number of entries.
8. All contestants must have their entries reach us not later than April 30, 1927.
9. This contest is open to all. The prize winners will be announced June 1, 1927, and the names of winning contestants will be published in your local papers and in our two magazines, the *Foshay Spot Light* and *Net Yields*.

A number of years ago the Foshay doorstep was one office in the First National-Soo Line Building, Minneapolis. The company began by originating and selling its own public utility securities. The organization consisted of Mr. Foshay and one clerk. In 1919, Foshay securities paid $1,312 in dividends; in 1924, holders of Foshay securities received in dividends, interest and maturities $269,734. In 1925 the figures were $443,753. In 1919 the company employed five people and in 1925, 150.

The W. B. Foshay Company controls the Peoples Light & Power Corporation for the purpose of acquiring and operating public utility properties. Through its control of this corporation and other companies, the Foshay company manages utility properties in 107 cities and towns in eight states. These properties supply electricity, gas, water and street railway service to a population in excess of 170,000 people.

Kansas City Would Continue Present Fare

Application for an indefinite continuance of the present electric railway fares in Kansas City, Mo., has just been filed with the Public Service Commission by Bennett Clark, attorney for the Kansas City Public Service Company. Hearings on the application have not yet been set. In previous applications of this nature the commission has granted continuances of six months. In return for a twelve-year franchise extension recently granted, the company agreed to a slight reduction in fares, fixed in the measure at fifteen tickets for $1, making the fare 6⅔ cents.

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Buffalo Ordinance Would Prohibit One-Man Operation

Corporation Counsel Frederick C. Rupp of Buffalo, N. Y., has prepared an ordinance prohibiting the operation of one-man cars by the International Railway on important streets. It is expected the City Council will approve the new ordinance. The ordinance designates and defines congested thoroughfares and if enacted would prohibit the operation of one-man cars on almost every local line in the city of Buffalo. All but four routes in Buffalo now have one-man cars and these include all of the important lines in the city.

Fare Increase Awaited in St. Louis

An early decision by the Missouri Public Service Commission on the application of Receiver Rolla Wells of the United Railways, St. Louis, Mo., for an immediate increase in the fares of adult passengers is anticipated. The company now receives 7 cents and has asked an 8-cent base fare or two tokens for 15 cents. The ten days allowed by the commission for both the city and counsel for Receiver Wells to file briefs expired on Nov. 27. Evidence produced at the hearings on Nov. 16 and 17 showed that the system was losing $116,000 monthly under the present fares. Company officials showed that for the year ended Aug. 31, 1926, the railway earned only a 5.2 per cent return on the 1919 valuation of $51,000,000, without considering about $5,000,000 in improvements and betterments added since that time.

Safe Drivers' Club Organized at Joliet

In the interest of promoting safety on the streets and highways a Safe Drivers' Club has been organized at Joliet, Ill., under the auspices of the Chicago & Joliet Electric Railway. The club is an honorary organization composed of automobile, truck and bus drivers who take the pledge of the club to drive safely. There are no dues and the only requirement for maintaining membership is to fulfill the pledge. Membership cards have already been issued to about 500 drivers, 100 of whom are employees of the Chicago & Joliet Electric Railway.

Detroit May Vote on Rapid Transit Routes in March

Reports from Detroit indicate that at the March election voters may be asked to approve or disapprove the rapid transit routes recommended by the Municipal Rapid Transit Commission last August. It will be remembered that on Aug. 16 the commission suggested for approval an initial system of rapid transit involving 46.6 miles of line, of which 42 miles would be in the city of Detroit. The total cost of construction was estimated at $187,798,000, of which $172,011,000 would be required for the sections within the city of Detroit.

Briefly, the proposed system is divisible into four lines, namely: Vernor Highway, crosstown line, 11.2 miles; Woodward-Fort, north and south line, 7.5 miles; Salina-McGraw-Grand Boulevard-Harper-St. Jean, crosstown line, 14.3 miles; Grand River-Jefferson-Mount Elliott-Gratiot, west side and east side line, 13.6 miles.

In its report of Aug. 16 the commission recommended to the Common Council that it should take the steps necessary to submit this plan of routes to the electors at the next general election to be held on Nov. 2, 1926, but action of this kind was not taken by the Council. Now it is being suggested in Detroit that the routes be submitted to the electors at the coming March election.

News Notes

Rerouting in Effect in Baltimore.—The United Railways & Electric Company, Baltimore, put into effect on Dec. 1 rerouting on nine of its lines in the city. The action was taken as a result of the recommendation made several months ago by Kelker, DeLeuw & Company, Chicago, who made a traffic survey of the city.

Freight Business Gains.—Since the completion of its re-electrification program last August and the placing in service of four new freight locomotives freight business on the Chicago, South Shore & South Bend Railroad, Michigan City, Ind., has gained enormously in volume. Revenue from the transportation of freight in the month of September of this year was approximately $1,600 in excess of that earned in September, 1925, while October revenue was more than $2,500 greater than earnings during the corresponding month of last year. A large percentage of this increase is attributed to the growth in shipments of less than carload lots, which business the road is seeking to develop by offering fast, overnight deliveries to any point on the line.

Followers of Neutral Zone Increase.—The St. Louis Safety Council and the Associated Retailers of St. Louis have joined Director of Streets and Sewers Brooks in his efforts to have a neutral zone for street cars when Olive Street is widened from 60 to 100 ft. between Twelfth Boulevard and Channing Avenue. Both organizations contend that the neutral zone will make Olive Street safe for pedestrians and street car patrons and also speed up the car service for the thousands who depend on the cars for transportation. It is estimated that 95 per cent of the users of Olive Street ride on street cars.

Court Fixes Grade Condemnation Rights. — County Judge Wilbur A. Trares at Edwardsville, Ill., on Nov. 17, ruled that the Illinois Division of Highways had the right, in the public interest, to condemn property needed to build an overhead bridge for Illinois Highway No. 4. The Illinois Commerce Commission four years ago ordered the Division of Highways to institute proceedings to condemn property for the viaduct, but the division's authority to do so was questioned by property owners affected. The plan, if carried out, will eliminate a crossing at grade of the highway and the right-of-way of the Illinois Traction System that has been a cause of great concern from the standpoint of safety.

Trolleys to Be Used by Officials.—The Minnesota Department of Administration and Finance has instructed all other departments that state officials and employees must ride electric railway cars in first-class cities instead of hired automobiles. The order follows a long investigation of travel and subsistence allowances. Buses may be utilized only in emergencies. Where automobiles must be hired for lack of other transportation the allowance is 8 cents a mile.

Tacoma Tries P.A.Y.L. System.—The "pay-as-you-leave" system will be tried in Tacoma, Wash., by the Tacoma Railway & Power Company on its Point Defiance line, where outbound passengers will pay their fares as they get off instead of when they board the cars. Passengers on inbound cars will pay upon entering, as usual. If the scheme saves as much time and speeds up service to the extent expected it will be extended to other lines of the company. Mayor M. G. Tennant, in conference with railway officials, approved the plan.

One-Man Cars on Four Lines.—With the installation of eleven one-man cars on the Lamar line of the Memphis Street Railway, Memphis, Tenn., on Nov. 7 the company now has four lines completely equipped with full schedule operating the new type of electric rail coaches. The first line to be equipped was the Peabody line, on which service was started Aug. 11. On Sept. 29 the Second Street-DeSoto Park line was equipped, eight cars being put into service, and on Oct. 26 the Forrest Hill line was equipped, seven cars being put into service. This makes a total of 37 cars, including the Lamar service of the new type now in operation.

Lower Fare in Effect.—The Portsmouth Public Service Company has put into effect a reduced fare on its interurban operated from Portsmouth, Ohio, to Ironton, Ohio. The new fare is 50 cents one way and $1 round trip. The old fare was 75 cents one way and $1.50 round trip.

Exceeded Speed Limit, So Arrested.—Three motormen on the East Ferry line of the International Railway, Buffalo, are under arrest on charges of operating their cars in excess of 15 m.p.h. over a section of track which the city says is in a dangerous condition. The men entered pleas of not guilty when arraigned in City Court. The city is making a test case to determine the validity of the ordinance, enacted after the International Railway did not comply with a ruling of the Public Service Commission of New York State to repair its tracks in certain streets because of their alleged dangerous condition. The new city ordinance prohibits the operation of local cars in excess of 25 m.p.h., except on certain specified streets where the speed has been fixed at 15 m.p.h.

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Would Put New Schedule Into Effect.—The Virginia Electric & Power Company has filed a petition with the State Corporation Commission for authority to put into effect the new fare schedule for Norfolk, Va., eliminating all zones in accordance with the unified transportation plan approved by the City Council in October. The city has already approved the new bus fare, over which it has control, and specified the company should apply to the Corporation Commission for a uniform increase on street cars.

Modified Loop Plan Will Be Tried.—The loop plan for operation of the Seattle Municipal Street Railway, Seattle, Wash., offered as an economy measure by Clark R. Jackson, superintendent of public utilities, has been rejected by Mayor Bertha K. Landes on the ground that it might cause serious traffic congestion. However, the Mayor announces that a modified form will be given a trial beginning Jan. 1. The loop plan called for turning back all cars at Pike Street. This change in operation provides for a saving of $500,000 a year, Mr. Jackson estimates. Some of the recommendations in the Jackson plan, such as curtailment of shuttle service and shortening of runs, have been put into effect.

Foreign News

Express Railway Opened in Germany.—Between the cities of Dusseldorf and Duisburg, Germany, the municipal authorities have completed and opened to traffic an electric railway express line, 17 miles long. The maximum car speed is estimated to be about 19 m.p.h. on private right-of-way between the cities, although the track is on city street in the two towns.

Japan Extends Tramway Lines—One of the larger cities in Japan is adding 35 miles of line to its existing electric railway system. The cost of this construction will be about 28,000,000 yen ($14,000,000).

Trolley Buses to Supersede Tramways. — St. Helens Town Council in England has decided to apply to the Ministry of Transport for an order to authorize the working of trackless trolley buses over a number of routes. It is estimated that in this way the expenditure necessary for reconstruction of tramway tracks, amounting to £182,000, will be avoided.

England's Horse Car Banished.—What is said to be the last horse car in England has been withdrawn from service. For some time Morecambe, a Lancashire seaside resort, has been using this old-fashioned system of transportation, but on Oct. 4 the town authorities decided to adopt a more modern method and established bus service. However, the old horse cars were not scrapped, nor did they revert to the junk dealer; instead, the municipal tramways committee auctioned them off to people who have painted them up and converted them into greenhouses and garden shelters.

Recent Bus Developments

Chicago Surface Lines Ordered to Add Feeder Bus Service

Delayed for many months by a variety of intervening and protesting petitions, one of which had been filed by the Chicago Motor Coach Company, permission to operate bus service on the northwest side of the city of Chicago has finally been granted by the Illinois Commerce Commission to the Chicago Railways, a component of the Chicago Surface Lines.

The Chicago City Railways, which operates the north and west side surface lines, had asked permission to operate a bus route on Diversey Boulevard between the terminus of its rail lines, at Crawford Avenue and Laramie Avenue. The petition was indorsed by residents of the districts affected.

The rate of fare and the exchange of transfers now prevailing on the surface lines were ordered by the commission to prevail on the new bus route. This will permit a ride to the downtown district for a 7-cent fare by means of transfer. Under present conditions, residents of outlying districts which will be served by the new bus route would pay a 10-cent fare to private bus lines in addition to the 7-cent street car fare.

If the order, issued on Nov. 18, is carried out, this will be the first time any of the surface lines of Chicago has provided motor transportation. In issuing the order, P. H. Moynihan, chairman of the commission, indicated that similar petitions would be granted to the surface lines where transportation was needed, but where the expense of laying permanent tracks would not be justified in view of the sparse population. The city of Chicago is now endeavoring to obtain extension of the surface lines on Milwaukee, Elston and Vincennes Avenue through supplementary bus lines.

Bus Survey in Philadelphia

The Pennsylvania Public Service Commission on Dec. 1 ordered a survey of the bus-loading problem in Philadelphia. Increased congestion due to the extended use of passenger buses caused the move. The survey will be undertaken by the commission's bureau of engineers.

Seeks Lower Fare.—Application has been filed with the Ohio Public Utilities Commission for a new schedule on the Wheelersburg bus line, operated by the Portsmouth Public Service Company, Portsmouth, Ohio. The schedule provides a fare reduction, effective Nov. 25, from 25 cents to 20 cents, if passengers take advantage of the $3 book of tickets. Cash fare on the Wheelersburg bus line will remain at the old schedule.

Opposes Independent's Extension.—The International Railway, Buffalo, N. Y., appeared before the New York State Public Service Commission at a recent hearing in Buffalo in opposition to the application of Leon W. Paxton and Charles McClure, operating as the Akron & Lockport Bus Company, for permission to extend the line so as to give service between Akron and Lafayette Square, Buffalo.

Buses for Charter in Washington.—Residents of Washington, D. C., are being reminded by the Capital Traction Company that "if you are planning an excursion about town, in the suburban communities, to points in Virginia or Maryland, to a football game, a wedding, a dance or whatnot, keep in mind that the Capital Traction Company has a few modern motor coaches and buses for hire for such purposes!"

Winter Excursion Rate Announced.—The Philadelphia Rapid Transit Company, Philadelphia, Pa., announces an intercity motorbus service to New York at the winter excursion rate of $4.75 for the round trip.

New Service on Trial.—Bus service will be established by the Milwaukee Electric Railway & Light Company between Racine and Mygatt's Corners on a two months trial basis. A 10-cent fare with a transfer to Racine city cars will be charged. More than 115 families signed a petition signifying their intention of supporting the new line.

Seeks to Abandon Route.—Authority to abandon the bus route operated by the Indiana Public Service Corporation between Fort Wayne, Ind., and Peru, Ind., is asked in a petition filed with the Indiana Public Service Commission. The line is to continue between Fort Wayne and Huntington. Losses of from 10 to 15 cents a mile are cited as a reason for the discontinuance.

Bus Service Extended in Vancouver.—Electric railway service to the carhouse district at Vancouver, Wash., ceased at midnight on Nov. 8 and bus service was started the next day. This is the latest line of the Portland Electric Power Company in Vancouver to be discontinued. It had been run eighteen years. The Vancouver lines have been operated at a loss for the last three years.

Must Help Pay for Wear and Tear.—Revocation of consent to operate the Bailey Avenue bus line by the International Bus Corporation, a subsidiary of the International Railway, Buffalo, unless the company agrees to one cent per revenue bus mile to the city to help pay for wear and tear on the pavements has been voted by the Buffalo City Council. The Delaware and Delavan Avenue bus lines are not affected because these franchises are for a fixed term and are not revocable.

Seeks Permission for Bus Route.—The Los Angeles Railway Corporation, Los Angeles, Cal., has applied to the Railroad Commission for permission to operate buses along Mines Avenue and Whittier Boulevard from the intersection of Maple Avenue and East Seventh Street to Beldon Avenue. A hearing will be conducted at an early date.

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Financial and Corporate

Operating Ratio Reduced

Net Income of Lines in New York State Best in Three Years—Commission Statement Reviewed

Compared with the 1923 returns, the 1924 operating revenues of the electric railways under the jurisdiction of the Public Service Commission, with authority in New York State outside of New York City, show a slight decrease. This is more than offset by lower operating costs, so that the operating ratio has decreased from 83.88 per cent for the former year to 81.50 per cent for the latter year. While increases are observed in the number of passengers carried and in the number of revenue car-miles, they are in each instance less than 1 per cent over 1923 figures.

As in the preceding six years the revenues of this group of utilities have been insufficient to meet operating expenses and fixed charges, although for 1924 the net loss was approximately one-half that for 1922. The commission ascribes this seeming improvement in part to the discontinuance of various unprofitable lines and not wholly to increased efficiency in operation or increased traffic. It says that the complete absence of strikes during the year 1924 is unquestionably a factor in developing this more favorable showing.

On Dec. 31, 1924, only 1,934 miles of road was reported as available for operation as compared with 1,990 and 1,971 at the close of the years 1922 and 1923 respectively. Significant decreases are due to complete discontinuance of operations by the Glen Cove Railroad, Northport Traction Company, Port Jervis Traction Company and Wallkill Transit Company, which companies represent a total of 21.51 miles, in addition to which the Elmira Water, Light & Railroad Company abandoned 16.21 miles and Peekskill Lighting & Railroad Company 2.90 miles. Advice has been received that subsequent to Dec. 31, 1924, operations were not resumed by the Nassau County Railway and Rochester & Manitou Railroad, which prior to that date had reported 1.50 miles and 7.25 miles of first track respectively, thereby reducing the total mileage at the beginning of 1925 to only 1,926 miles. This figure includes various short lengths of track not definitely abandoned, but over which operations have been temporarily discontinued.

In this connection the commission says there have been a number of abandonments consented to by the commission upon hearings which have indicated that such lines are no longer necessary in rendering service required by the public. These include the Oakwood Avenue line in Troy, the Arbor Hill and Country Club lines in Albany, the Seymour and North Street lines in Auburn, the belt line and Geyser line in Saratoga Springs, a large portion of the Kingston Consolidated Railway in Kingston, that portion of the Chautauqua Traction Company's line from the south line of the village of Westfield to the village of Mayville, that portion of the Hudson Valley Railroad extending from Mechanicsville to Ballston Spa and the Kaydeross Park line of the same railroad extending from Saratoga Springs to Saratoga Lake. Service has been discontinued on the Auburn Avenue and James Street stub lines in Utica. In certain of the foregoing abandonments and cessations, bus line operation has superseded the abandoned trolley lines. This is true of the Troy, Albany and Utica cases. Bus service has been proposed in Kingston as a partial substitution, but up to the present has not been provided on account of the failure of the city to give the necessary consent.

At the time the report was made receivers were operating, among others, the Hornell Traction Company, Ithaca Traction, Hamburg Railway, Ogdensburg Street Railway, Westchester Electric Railway and Westchester Street Railroad.

RESULTS OF OPERATION OF ELECTRIC RAILWAYS IN NEW YORK STATE, OUTSIDE OF NEW YORK CITY

Item	1922	1923	1924
Number of corporations reporting	67	69	*69
Railway operating revenues	$41,858,280	$42,530,753	$42,260,468
Railway operating expenses	36,978,228	35,674,050	34,661,568
Net revenue railway operations	$4,880,052	$6,856,704	$7,598,900
Railway tax accruals	2,872,018	2,938,251	2,967,936
Railway operating income	$2,008,034	$3,918,453	$4,630,964
Net revenue, other operations	1,302,688	1,101,937	1,233,072
Non-operating income	924,942	854,561	914,487
Gross income	$4,235,664	$5,874,961	$6,778,521
Interest charges	9,034,475	8,620,343	8,762,442
Other deductions from gross income	694,362	623,402	707,350
Net income, loss	$5,493,173	$3,368,784	$2,691,268
Dividends during year	1,770,977	1,213,458	658,171
Passengers carried (fares and transfers)	599,080,364	616,377,402	621,751,146
Revenue car-miles	92,481,319	92,135,786	92,644,937
Mileage in New York state	1,990	1,971	1,934
Operating ratio, per cent	88.34	83.88	81.50

*Of which four companies discontinued operations during the year and two companies did not resume operations subsequent to the close of the year.

STATEMENT OF FARES CHARGED IN CITIES IN NEW YORK STATE, OUTSIDE OF NEW YORK CITY

Item	1921 Cities	1921 Per Cent of Total	1922 Cities	1922 Per Cent of Total	1923 Cities	1923 Per Cent of Total	1924 Cities	1924 Per Cent of Total	1925 Cities	1925 Per Cent of Total
5 cents	16	28	15	26	13	23	13	23	13	24
6 cents	9	16	5	8	4	7	3	5	2	4
7 cents	16	28	24	43	27	47	24	43	21	40
8 cents	16	28	13	23	13	23	15	27	15	28
10 cents	...	...	...	...	...	...	...	...	2	4
Total	57	100	57	100	57	100	56	100	53	100

Record Travel on Chicago Surface Lines in October

More passengers were handled by the Chicago Surface Lines, Chicago, Ill., in October of this year than in any previous month in the history of the system. Total rides for the month were 135,878,579, against 132,515,318 in October last year. The previous high monthly record was that of December, 1925, when 132,949,516 passengers were handled. The October figures of this year exceeded this figure by 2,929,063.

	1926	1925
January	129,604,602	127,666,571
February	121,282,868	115,830,619
March	131,839,632	128,009,030
April	131,452,899	126,052,447
May	132,939,381	127,542,240
June	132,980,301	125,684,909
July	130,235,208	124,566,209
August	129,214,055	125,002,113
September	127,149,619	122,964,778
October	135,878,579	132,515,318
November	.....	126,788,880
December	.....	132,949,516

With the heavy traffic period of December still ahead of the company, officials anticipate the record may again be broken. In December last year the company put into use 99.8 per cent of all equipment, or all but seven cars, to handle the Christmas shoppers. One hundred new cars have recently been added to the service, representing an investment of $1,600,000. The maintenance schedule has been arranged in such a way as to provide for the use of practically all cars during the Christmas shopping season, in anticipation of a record traffic.

A more accurate picture of the heavy amount of traffic handled over this year and the corresponding months of last year is seen in the accompanying tabulation.

The divisible receipts for October amounted to $716,112 after expenses, taxes, renewals and return on purchase price, against $320,543 in September and $477,959 in October last year. Brief mention of the record for October was made in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 27, page 983.

Despite the record handling of traffic in October, operating expenses in that month were lower than in the previous month and in October last year, when traffic was not so heavy. This reflects the extent to which operating economies have been put into effect. Operating expenses for October this year amounted to $3,852,558, or $37,465 under those of the previous month. In October last year this item totaled $3,962,650.

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COMPARATIVE STATEMENT OF THE OPERATING RESULTS OF THE LONDON UNDERGROUND GROUP YEAR 1925, COMPARED WITH 1924

	Total Railways		London General Omnibus Company Limited		Total	
	1925 £	Increase £	1925 £	Increase £	1925 £	Increase £
Traffic receipts, etc., after the operation of the common fund under the terms of the London Electric Railway Companies' facilities act agreement, dated Dec. 21, 1915, and supplemental agreement, dated Dec. 8, 1921	4,599,617	227,981	8,644,035	245,470	13,243,652	473,451
Expenditure	2,839,782	73,414	8,248,473	195,158	11,088,255	268,572
Net receipts	1,759,835	154,567	395,562	50,312	2,155,397	204,879
Miscellaneous receipts (net)	504,252	19,406	329,892	14,686	834,144	34,092
Net income	2,264,087	173,973	725,454	64,998	2,989,541	238,971
Interest, rentals and other fixed charges	1,106,221	155,377	214,324	8,799	1,320,545	164,176
Balance	1,157,866	18,596	511,130	56,199	1,668,996	74,795
Appropriation to reserve for contingencies and renewals	155,000	.....	300,000	50,000	455,000	50,000
Balance	1,002,866	18,596	211,130	6,199	1,213,996	24,795
Dividends on guaranteed and preference stocks	389,477	.....	.....	.....	389,477	.....
Balance	613,389	18,596	211,130	6,199	824,519	24,795
Add balance from last year's accounts	248,387	*70,705*	60,502	*4,138*	308,889	*74,888*
Total amount available for dividends on ordinary stock and shares and for other purposes	861,776	*52,154*	271,632	2,061	1,133,408	*50,093*
Dividends on ordinary stocks and shares	604,103	*61,440*	204,131	*4,938*	808,234	*66,378*
Rate per cent per annum	3.54	.36	6 (Free of Tax)	....	4.09	*.34*
Balance carried forward to next year's accounts	257,673	9,286	67,501	6,999	325,174	16,285

The income account of the Chicago Surface Lines for October this year compares with October last year as follows:

	1926	1925
Gross	$5,298,430	$5,145,171
Expenses	3,852,559	3,662,650
Residue receipts	1,445,871	1,182,521
Joint account expense	35,280	10,000
5 per cent interest	694,479	694,562
Divisible receipts	716,111	477,958
City's 55 per cent	393,860	262,877
Company's 45 per cent	322,250	215,081

Receiver Reports on Disposition of Kansas City Bond Funds

John T. Harding, special master commissioner under the receivership of the Kansas City Railways, Kansas City, Mo., on Oct. 29 filed his report of the final distribution of the funds derived from the sale of the first mortgage bonds of the company.

On Oct. 4, says the report, $1,250,000 was remitted to Powell C. Groner, vice-president and general counsel of the Kansas City Public Service Company, purchaser of the railway. On Oct. 26 a further payment of $1,841,815 was made to Mr. Groner.

An additional $1,500,000 to complete the total of $4,591,815 will be paid him later, but at the time of filing delivery was being awaited of the bonds in this amount to Mr. Harding.

The few bondholders who did not participate in the reorganization plans of the old company will be reimbursed to the extent of $195,844, now on deposit for that purpose.

Details of London Underground Operation for 1925

The gross traffic receipts of the so-called Underground Group, London, England, which comprises the Metropolitan District Railway, the London Electric Railway, the City & South London Railway, the Central London Railway and the London General Omnibus Company, Ltd., for 1925 amount to £13,243,652, an increase of £473,451. The aggregate operating expenses are £11,088,255, and these are increased by £268,572 over the previous year. As a result the net receipts of the group in 1925 were £204,879 more than they were the year previous.

In order to carry the traffic 209,379,914 miles was worked, an increase of 13,433,300 over the preceding year. Of these miles 143,943,201 was worked by the omnibuses, an increase of 6,892,666 over the previous year. The remaining 65,436,713 was worked by the cars of the railways. These and other operating data about the group are contained in the accompanying tables.

Arbiter Named in Settlement of Depreciation Fund

The Transit Commission recently appointed Reuben L. Haskell of Brooklyn, N. Y., as its arbitrator of contributions to be made to the depreciation fund of the New York Rapid Transit Corporation, a Brooklyn - Manhattan Transit subsidiary, under its contract with the city. Mr. Haskell, until Jan. 1 last, was County Judge of Kings County. For five years prior to that he was Representative in Congress from the Tenth District, and before that was Assistant Commissioner of Public Works in Brooklyn and Borough Secretary.

At present the New York Rapid Transit Corporation, which operates the Brooklyn-Manhattan Transit elevated and subway lines, is making annual contributions of $400,000 into its depreciation fund for replacements of the railroad and equipment. It already has paid in about $2,500,000 to this fund but the Transit Commission's accountants have recommended that the annual contribution be increased to $800,000.

MISCELLANEOUS STATISTICS OF LONDON UNDERGROUND GROUP FOR YEAR 1925, COMPARED WITH 1923

	Total Railways		London General Omnibus Company Limited		Total	
	1925	Increase	1925	Increase	1925	Increase
Passengers carried:—						
Ordinary	217,914,496	12,033,369	1,236,547,753	78,136,276	1,454,462,249	90,169,745
Workmen	51,416,986	5,937,680	.....	.....	51,416,986	5,937,680
Seasons	49,370,358	2,374,708	.....	.....	49,370,358	2,374,708
Total	318,701,840	20,345,757	1,236,547,753	78,136,376	1,555,249,593	98,482,133
Average daily number of passengers carried	942,905	56,165	3,658,425	148,087	4,601,330	204,252
	M. Ch.	M. Ch.	M. Ch.	M. Ch.	M. Ch.	M. Ch.
Route-miles owned or leased	71 64	....	....	....	71 64	....
Route-miles run over by companies' trains	¶ 139 59.5	....	....	....	¶ 139 59.5	....
Road-miles run over by company's omnibuses	....	....	801 0	23 0	801 0	23 0
Number of stations	118	*2*	....	....	118	*2*
Number of garages	....	....	43	3	43	3
Number of lifts	185	7	....	....	185	7
Number of escalators	40	8	....	....	40	8
Number of car-miles run in relation to passenger receipts	65,436,713	6,540,634	143,943,201	6,892,666	209,379,914	13,433,300
Number of car-miles run by companies' trains or omnibuses	76,909,417	6,412,561	143,943,201	6,892,666	220,852,618	13,305,227
Number of cars or omnibuses owned	1,588	27	*4,136	21	5,724	48

¶ Includes 7m. 30ch. run over the City & South London Railway (Euston to Clapham Common).
¶ Includes 11m. 5ch. run over the London Electric Railway (Euston to Edgware and Highgate).
*The number of omnibuses owned and/or worked by or in conjunction with the London General Omnibus Company, Ltd., is 4,704.
Italics denote decrease.

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The New York Rapid Transit Corporation has asked that this proposed increase be submitted to arbitration, and under the contract the commission and the railroad each selects an arbitrator and these two select a third.

Bids Announced on Dayton, Covington & Piqua Equipment

Petitions of approval for the sale of part of the property of the Dayton, Covington & Piqua Traction Line have been filed in the federal district court at Dayton, Ohio, by Charles Eliff, receiver for the company. The company stopped operations on Nov. 6.

It is estimated that the total junking price of the line will be at least $115,000, which is $12,000 greater than the highest bid for the property as a going concern. Acceptance of the bid of Jacob Ziskind, Lowell, Mass., for the tracks, trolleys and other smaller equipment was recommended. Mr. Ziskind made a bid of $81,500. Bids of the Ohio Bell Telephone Company for certain poles amounting to $1,694, and of the Buckeye Light & Power Company for other poles amounting to $480 were recommended to the court for approval. Real estate of the company which has not been sold will bring the price up to at least $115,000, it is said. A bid of $130,000 was made by R. C. Coleman, Springfield, Ohio, who sought the line to aid him in getting the bus permit. This bid was rejected.

Melbourne Shows Gain with Higher Fares

Receipts from passengers increased during the year ended June 30, 1926, on the street railway system of the Melbourne & Metropolitan Tramways Board, in Australia. Total receipts from passenger fares during the year were £2,142,234, a gain of £186,794 over the previous year. Part of this gain came from higher fares, as on May 1, 1926, the fares were raised on an average of about 15 per cent. The minimum adult fare on both cable and electric tramways is now 2d., a number of reduced rate return fares was abolished or the amount of the reduction was made less, and fare zones were shortened. The increased revenue received since the alteration in the fare rate indicates a revenue increase of about £280,000 per annum, but recent increases in wages will add about £60,000 per annum to operating expenses.

During the year there were two "go slow" strikes over part of the systems. One, which was on the Essendon Tramway, lasted a month, when it was abandoned by the men. The other involved only the employees of one depot and was referred to the Court of Conciliation and Arbitration, whose decision has not yet been given.

During the year 14.16 miles of cable track was converted to electric traction, approximately 8 miles of new electric railway track was built, 50 cars were added to the rolling stock and more cars have been ordered. Six new buses were purchased, making the total number now in service 56. Extensions were made to the repair shop and other improvements were introduced.

Some statistics for the year ended June 30, 1926, are given in the accompanying table.

RAILWAY STATISTICS MELBOURNE & METROPOLITAN TRAMWAYS, AUSTRALIA

	Cable	Electric	Bus
Revenue from railway operation	£1,048,414	£1,007,210	£97.304
Operating expenses	£847,102	£816,178	£112,289
Vehicle-miles	12,393,911	10,657,728	1,449,710
Passengers carried	127,882,115	99,017,938	7,164,095
Average passenger receipts			
Per vehicle-mile	20.167d.	22.599d.	16.095d.
Per mile of single track	£13,496	£5,948	£2,472
Per passenger	1.954d.	2.431d.	3.257d.
Number of passengers per vehicle-mile	10.318	9.29	4.95

New York State Railways Report for Quarter

A decline in revenues of the lines of the New York State Railways in Rochester, Syracuse and Utica for the quarter ended Sept. 30 over that of a similar period in 1925 is shown in the report for the three months, filed with the Public Service Commission. The net corporate income was $69,303 for the three months of this year, against $151,436 for the corresponding period in 1925 and $217,774 in 1924. The report covered a period prior to the granting of higher fares in Utica and Syracuse. The report does not segregate operations as to cities.

	1926	1925
Operating revenue	$2,307,448	$2,263,753
Operating expenses	1,819,255	1,670,389
Net operating revenue	$488,193	$593,364
Operating income	368,559	442,953
Non-operating income	86,151	86,763
Gross income	$454,710	$529,715
Deductions	385,407	378,280
Net corporate income	$69,303	$151,436

The result for the quarter of 1926 are compared with those of the previous year in the accompanying table.

Approval of Track Removal in Philadelphia

Stockholders of the Union Traction Company met on Nov. 29 and voted approval of the removal of the trolley tracks from Chestnut and Walnut Streets to the Chestnut Street subway. That was the final act of the underlying companies of the Philadelphia Rapid Transit Company controlling the tracks in the two streets.

Action taken by the four underlying companies clears the way for the actual start on the long discussed $20,000,000 surface-car subway from Fifth Street and Delaware River Bridge, under Chestnut Street to West Philadelphia.

More than a majority of the stock of the old Union Traction Company was represented at the meeting. A. Balfour Brehman, vice-president, offered the resolution, which was seconded by Timothy M. Cleary, secretary.

Defaults Decrease $234,615,700 in Four Years

In the year ended Nov. 1, 1926, $20,613,300 public utility bonds were eliminated from the default list through foreclosure, sale or payment, while in that time there was $9,586,000 in new defaults making a total of $129,098,400 still in default. The reduction in the year was $11,027,300. As Dow, Jones & Company, New York, who compile this list each year, see it, the list of defaulted bonds is likely to be materially reduced during the current year, particularly in view of the improved position of the electric railways.

The progress in decreasing defaults has been continuous since 1922, when the total reached $363,714,100. By contrast with this year's figure the decrease is $234,615,700.

The list of defaulted utility bonds is made up chiefly of traction issues.

New Director Elected.—C. Bruce Maiden has recently been elected a director of the Key System Transit Company, Oakland, Cal.

Earnings Hold Up Well.—Operating revenue of the Springfield Street Railway, Springfield, Mass., for the first nine months of 1926 was $2,358,941, or $55,599 less than for the corresponding period of 1925. Net income for 1926 showed a reduction of $53,468 in comparison with the similar nine months' period in 1925. Car-miles traveled showed a reduction of 13,812. Clark V. Wood, president, said that the net earnings of the company, exclusive of depreciation charges, were more than 2.9 times the bond interest requirements.

Would Offer Bonds.—Application for authority to sell $40,000 in 5 per cent first mortgage bonds at not less than 86 per cent of par has been made to the Ohio Public Utilities Commission by the Columbus Interurban Terminal Company. The application was filed by Arthur B. Bland, president, and F. A. Healy, secretary. The purpose is to purchase trackage and add to the facilities of the company's freight terminal in Columbus, Ohio. The Columbus Interurban Terminal Company owns the terminal passenger and freight station in Columbus. It is operated for the convenience of three interurban railways by which it is owned.

Deficit for Four Months Period.—For the four months period ended Oct. 31, 1926, the total revenue from all sources of the Interborough Rapid Transit Company, New York, N. Y., was $18,853,988, a decrease of $656,167 over the corresponding period of last year. Expenditures for operating and maintaining the property increased $589,670. Taxes payable to the city, state and the United States increased $107,300. Rentals and other income deductions increased $30,778. The net result for the four months was a deficit of $1,749,834. This is $1,383,916 greater than the deficit for the corresponding period of last year. The comparison with last

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year is influenced by the strike during the month of July of this year, as well as the fact that in July of last year there was a lump sum payment of $770,000 on account of the new advertising contract, against which there was no similar payment this year.

November—A Good Month in Seattle.—Street railway revenue on the lines of the Seattle Municipal Railway, Seattle, Wash., has averaged $80 a day more during November than it did on corresponding days of 1925, according to D. W. Henderson, superintendent. The receipts for every other month of the year have been less than those of the corresponding months of last year, with the biggest loss in February, when the fares averaged $839 a day less than in February, 1925.

Net Corporate Income Lower.—For the four months ended Oct. 31, 1926, the passenger revenue of the Brooklyn City Railroad, Brooklyn, N. Y., was $3,734,156, against $3,748,041 for a similar period of last year. Operating expenses and taxes increased from $3,212,962, to $3,231,197 for the four months ending Oct. 31, 1926. After the consideration of income deductions, there was a net corporate income of $401,492 for the four months period of 1926, against $446,915 for the four months period ended Oct. 31, 1925.

Authorizes Car Line Sale.—The Public Service Commission has recently granted the joint application of the City & Suburban Railway of Washington and the Washington Railway & Electric Company permitting the sale by the former company of all its state property rights and franchises within Prince Georges County to the Washington Railway & Electric Company. The stock of the suburban has been owned and controlled for some time by the Washington company. The order is just the official turning over of all the physical assets to the parent company.

Revenue Lower in October, 1926.—For October, 1926, the revenue of the Boston Elevated Railway, Boston, Mass., exceeded the cost of service by $2,723, against $117,704 for a similar month in 1925. The average fare for revenue passenger was 9.263 cents, against 9.279 cents. The number of revenue passengers carried was 31,423,943, against 31,890,185 for October, 1925. Total miles operated equaled 4,901,082, against 4,699,174 in October, 1925. This included motor bus mileage of 455,376, against 275,511 in October of the year previous.

Taxes for Assessments Announced.—The assessed valuations of all classes of property in St. Louis, Mo., total $1,292,357,285 for the 1926 taxes, according to an announcement of the State Tax Commission. This is an increase of $65,188,085 over the 1925 assessments. It is 26.7 per cent of the grand total of $4,835,000,000 for the entire state. Under the distributable property law of the state the $47,144,102 assessment of the United Railways, was apportioned at $38,645,780 to the city and $8,408,322 to St. Louis County. This assessment does not include land, buildings, supplies and other items assessed locally, but represents only property returned to the State Tax Commission.

Legal Notes

GEORGIA. — *Ordinance Which Requires Jitney Operators to Furnish Liability Bonds to City Is Legal.*

The regulation and control of jitney bus traffic comes clearly within the powers of a municipality. Hence an ordinance requiring the operators of such buses to furnish to the city a bond for the protection of persons injured, is the exercise of ordinary and necessary means of regulating such traffic, and the right of the city to sue on such a bond is a necessary consequence. [Transylvania Casualty Insurance Co. vs. City of Atlanta, 134 Southeast. Rep., 632.]

GEORGIA.—*Passenger Projecting Elbow Out of Window Not Negligent.*

It is not negligent per se for a passenger upon a street car to sit with his arm protruding not more than two or three inches out of the window on the side adjoining the parallel track, even though there may be horizontal bars at the window to suggest to the passenger the danger of this practice. Whether such conduct is negligent in certain circumstances is a question of fact for the jury. [Georgia Railway & Power Co. vs. Ogletree, 134 Southeast-Rep., 830.]

ILLINOIS. — *Value of Land Injured by Transmission Line*

Where a strip of land was condemned for an electric transmission line, the burden of proof of damages to land outside the strip was on the land owner. Such value should be on the basis of the most profitable use for which the land was available at the time, but "availability" refers only to present capacity for use, as may be anticipated with reasonable certainty and made the basis of intelligent estimates. [Illinois P. & L. Co. vs. Parks et al, 153 Northeast. Rep., 483.]

KENTUCKY. — *Passenger Falls After Stepping on Pebble in Street While Alighting.*

A street railway company is not responsible to passengers for injuries resulting from defects or obstructions in the street, except so far as they are in the part of the street which the railway is obliged to keep in repair or where a conductor knows or should know of obstructions or other danger at a point where passengers alight. The company is not liable if a passenger leaving a car steps on a pebble or other small rolling object on a smooth concrete pavement and falls. [Kentucky T & T Co. vs. Soper, 286 Southwest. Rep., 776.]

MASSACHUSETTS—*Discretion of Trustees in Withholding Dividends Upheld.*

The Eastern Massachusetts Street Railway Company was authorized under a special act of the legislature which directed the governor to appoint five trustees to operate the property for a certain term. After a number of years of such operation a suit in equity was brought against the trustees by certain stockholders to compel the payment of dividends on the common and adjustment shares and reduce the amount being expended for depreciation and rehabilitation. The court held that expenditures necessary to keep the capital intact are operating expenses and are to be paid before dividends are paid, and that the discretion of the trustees as exercised in this matter could not be said to be unreasonable or in violation of law. [Adams vs. Eastern Massachusetts Street Railway et al, 153 Northeast. Rep., 466.]

NEW JERSEY.—*City Council Has Large Discretion in Regulation of Buses.*

A city council has large discretion in controlling and regulating the business of motor buses operating on public streets for the convenience of the traveling public. An ordinance granting such a bus franchise, accompanied by an elaborate schedule providing for the time that buses must enter and leave the city, is therefore legal. [Dryer vs. City Council of Union City, 134 Atlantic Rep., 624.]

NEW YORK. — *Car Has Right of Way Over Pedestrians Between Street Intersections.*

An automobile driver stopped his car in the middle of a block to make some deliveries and was struck by a trolley car while he was crossing on foot to the left-hand side of the street between two street intersections. He was held to be negligent as a matter of law, as the rights of a person attempting such a crossing are subordinate to the rights of a trolley car. [Neuman vs. Union Railway, 243 New York Supp., 249.]

NEW YORK.—*Action by Public Service Commission Without Its Jurisdiction Is Void.*

The Public Service Commission granted a bus franchise without notice to a parallel electric railway whose service would be affected, as required by law. In such circumstances, the Supreme Court declared the certificate of convenience and necessity granted to the bus line to be null and void. [Hudson Valley Railway vs. United Transportation Co., 217 New York Supp., 614.]

NEW YORK. — *"Fair Value for Rate Making" of a Utility.*

A fair value for rate making of a utility is not necessarily reproduction cost less depreciation, as such a rule in times of price deflation might work a hardship on the utility and in times of price inflation might give the utility more than a reasonable return on its property. A fair value for rate making is one which will enable the utility to realize the expense of operating and keeping up its road and meeting its financial obligations from investments with a reasonable excess for dividends and contingencies. Anything below a fair return is confiscatory and anything above it is exorbitant and oppressive. [City of Rochester vs. New York State Railway, 217 New York Supp., 452.]

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NEW YORK—*Care Required at Plazas.*

A pedestrian crossing a plaza not at a regular street crossing is not a trespasser. Hence, as a matter of law, a motorman is not excused when he suddenly doubles his speed at such places and injures a pedestrian. [Hinz v. Eighth Railroad, 152 Northeast. Rep., 475.]

OHIO.—*Partial Satisfaction Received from One Responsible Party Does Not Release Other.*

A city and a railway were sued successively for injuries by a passenger who stepped from the car into a hole in the street. They were held not to be joint tort-feasors because the city's liability was based on its failure to keep the street in repair and the company's liability came from stopping the car at a dangerous place for passengers to alight without warning them. Hence, partial satisfaction received by judgment from the city did not relieve the company from a later suit. [Poehl vs. Cincinnati T. Co., 151 Northeast. Rep., 806.]

OHIO — *Contract with Union — Withdrawal from Arbitration.*

"Contracts by which an employer agrees to employ only union labor are contrary to public policy when they take in an entire industry of any considerable proportion in a community so that they operate generally in that community to prevent or seriously deter craftsmen from working at their crafts or workmen from obtaining employment under favorable conditions without joining a union. Either party in common law arbitration may withdraw therefrom at any time before the award was actually made. The award of arbitrators made under a contract which is against public policy cannot be enforced. Where there is legal fraud in the selection of the key arbitrator, the award is not binding. [Polk et al. vs. the Cleveland Railway, 151 Northeast, Rep., 808.]

PENNSYLVANIA.—*Car Trust Securities Held Taxable Under State Law.*

A section of a state law provides that "all script, bonds, certificates and evidences of indebtedness issued***or ***assumed, or on which interest shall be paid by any and every private corporation***are hereby made taxable for state purposes." Certain car trust certificates were held taxable by the State, although another section of the law indicated that certain other car trusts were not so taxable. [Commonwealth vs. Philadelphia R. T. Co., 134 Atlantic Rep., 455.]

RHODE ISLAND — *Trolley Car Strikes Automobile in Rear*

An automobile on the track just ahead of a street car waited at a street intersection for the traffic signal. After the signal had been given, both car and automobile started, but the automobile stopped suddenly to avoid another automobile which looked as if it were about to cross. A rear end collision from the trolley car behind ensued. The court held that the duty of the automobile driver to give timely notice to the vehicle behind and the negligence of the motorman in the circumstances, were questions for the jury. [O'Donnell vs. United Electric Railways, 134 Atlantic Rep., 642.]

Personal Items

New Vice-President of Accounts in Philadelphia

John F. Schmunk, a certified public accountant with offices in Harrisburg, Pa., has been appointed vice-president in charge of accounts of Mitten Management, Inc., operators of the Philadelphia Rapid Transit Company, Philadelphia, Pa. Associated with the bureau of accounts and statistics of the Public Service Commission under Coleman Joyce, the first chief of the bureau, Mr. Schmunk started business in Harrisburg in a partnership with Mr. Joyce, when the latter left the commission. Later Mr. Joyce left to become affiliated with Mitten Management and recently he was made assistant to Thomas E. Mitten, the head of the corporation. Mr. Schmunk was engaged at various times by the company in accounting and recently he assisted in valuing the property owned by the Philadelphia Rapid Transit in the case before the Public Service Commission over an increase in fares.

Charles E. Chalmers, receiver of the Second Avenue Railroad, New York City, N. Y., has been elected president of the National Bank of Yorkville, which opened for business on Dec. 1 at Lexington Avenue and 85th Street. He will continue his duties as receiver of the railway property. The Second Avenue Railroad has been one of the hardest hit in New York. Mr. Chalmers has worked strenuously to improve the property physically and has succeeded to an unusual degree in rehabilitating it, considering the handicap under which he labored. He was one of the first traction managers in New York to recognize the possibilities of the one-man car and he rebuilt practically all the rolling stock of the company for such service. The work carried out by him has been described from time to time in the ELECTRIC RAILWAY JOURNAL. It reflects great credit on him for his acumen in authorizing the undertaking and on the staff for carrying the changes through so successfully.

W. R. Morrison returned on Nov. 8 to the operating department of the Illinois Power & Light Corporation as division manager of the Quincy division. Mr. Morrison formerly was in charge of the operation of the Wichita Railroad & Light property for twelve years and later was transferred to the engineering department at Peoria, in which position he had charge of general construction work, including the new plants at Jacksonville and Champaign, Ill.

Obituary

V. R. Powell

Transportation held a peculiar fascination for the late Virgil R. Powell, manager of the Peoples Railway, Dayton, Ohio, brief mention of whose death was made in the ELECTRIC RAILWAY JOURNAL for Nov. 13. He was progressive and anxious that his line should give the best of service. Lately he had come more and more to the conclusion that the progress he desired was impossible until increased fares were authorized. It was his plan to educate the public into an appreciation of the service rendered and of the inability of a corporation to render good service unless it had the money wherewith to go ahead. On this subject he prepared a number of addresses which he delivered before civic organizations.

Years ago it would have surprised no one more than Virgil Powell himself to know that some day he was to be general manager of an electric railway property. At the age of eighteen he was a country school teacher. This calling was followed until he entered the electric railway field, presumably for a time only. The step was taken to provide him with funds to complete his classical education. Once within the railway arena, he saw the problems which the industry offered at that time, but he also saw the possibilities ahead and made up his mind to remain in that service.

During his early years of association as conductor on the Peoples Railway he completed a course in electrical engineering. That was the beginning of constant application to the various positions of timekeeper, office manager in the track and overhead line construction department, storekeeper, inspector, assistant superintendent of transportation, superintendent, claim adjuster in the operating department, and finally general manager in 1924, replacing W. E. Boileau. In his service at Dayton there was one interruption, however, in April, 1904, when he was transferred to the Chicago & Joliet Electric Railway, another subsidiary of the American Electric Power Company. Here he served as assistant superintendent of transportation. Two years later he returned to Dayton to assume the position of superintendent and claim adjuster of the Peoples Railway, filling the vacancy caused by the death of Michael Kelly, superintendent.

Mr. Powell was born in Mechanicsburg, Ohio, in 1879. He received his education at public schools there and also attended Ohio Northern University at Ada. Mr. Powell was a member of the Dayton Chamber of Commerce and was active in civic, fraternal and social affairs of Dayton.

Col. William G. Dows, president of the Iowa Railway & Light Company, Cedar Rapids, Iowa, died on Nov. 25 in the University of Iowa Hospital at Iowa City. He was one of the best known utility men in the state. Mr. Dows was 62 years old. He retired from active participation in the railway business in 1919, when he was succeeded by his son as general manager of the Iowa Railway & Light Company. In addition to his utility experience he was prominent in financial and political affairs throughout the state.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Seattle Car Order Still Under Consideration

The proposal to buy 80 new lightweight cars for the Seattle Municipal Railway, Seattle, Wash., has not been abandoned. This fact was disclosed when a conference for the near future was arranged with members of the City Council, Board of Public Works and Mayor Landes to decide whether an effort would be made to carry through the deal. An item of $1,400,000 was provided in a railway utility bond issue several months ago for the new cars and the Board of Public Works favored an award of the contract to the St. Louis Car Company, but when the company sought certain definite assurances under the terms of the contract the matter was put over indefinitely.

New Equipment in Virginia

The Virginia Electric & Power Company, Richmond, Va., will shortly award a contract for ten 44-passenger street cars of double-truck de luxe type. The company has placed an order for 21 21-passenger buses and has contracted for ten additional 29-passenger buses. The new equipment will cost approximately $300,000.

Aluminum Car Placed in Operation by Cleveland Railway

The Cleveland Railway's aluminum car, partially completed for the exhibit at the October convention of the American Electric Railway Association, is about to be placed in regular service. The car was assembled in the Harvard shops of the Cleveland Railway. It is the first of its kind to be constructed.

Practically the same design and construction were followed as embodied in the latest steel type used by this company. Aluminum and aluminum alloys were substituted under the direction of engineers of the Aluminum Company of America, with a consequent weight saving of approximately 6 tons.

There are several alloys used in different parts of the truck and body assembly, depending upon the nature of the strength required. These alloys are often known as duralumin. One of the common alloys said to have nearly the same strength as steel contains an admixture of 4.5 per cent copper, 0.75 per cent magnesium and 1 per cent manganese.

The side frames of the trucks were pressed into shape by the J. G. Brill Company with the same equipment used in forging steel side frames. The standard structural shapes used are manufactured by the extension process rather than by the rolling process to which resort is had in manufacturing steel shapes.

Practically all truck parts and equipment, except wheels, axles, motors, gears and electrical equipment, are built of aluminum.

All body parts are aluminum or alloy except doors and glazing. Bucket type seats are used and all seats face forward.

It is expected that the reduction in the weight of the car will effect a saving of 15 per cent in power.

100 New Cars for Massachusetts Cities

Tentative Rehabilitation Plans for Springfield and Worcester Call for Large Expenditures

At a recent meeting of the board of directors of the New York, New Haven & Hartford Railroad tentative plans for the rehabilitation of the Springfield Street Railway, Springfield, Mass., and the Worcester Consolidated Street Railway, Worcester, Mass., were formally approved and Vice-President E. G. Buckland was authorized to draw up agreements co-operatively with the City Council of each city.

The Springfield plan for rehabilitation in its tentative stages provides for the purchase of 50 trolley cars, double tracking in Summer Avenue and Belmont Avenue, a loop through Taylor Street and the substitution of buses on the Worthington Street line. These are parts of the plan to be taken care of first and probably followed by lesser improvements. The new cars to be purchased will be of a lighter type than the present double-truck two-man cars. They will have a 50-passenger capacity and will be arranged so they may be easily operated by one man or two men as desired. The estimated cost of the 50 cars is placed at $700,000.

The plans for rehabilitation of the Worcester Consolidated Street Railway system also provide for the tentative purchase of 50 new cars, to cost $700,000. This is out of a total of $1,000,000, which it is believed will cover immediate requirements of the system. The balance of $300,000 will go for the purchase and laying of new rails.

George Dwight Pratt, a member of the board of directors of the New Haven road, stated that the plan as approved was in keeping with the original promises held out by officials of the New Haven road when they sought to reacquire control over the street railway companies. Details of the rehabilitation had not yet been fully worked out, as a great deal depended on what the cities intended to do for the future improvement of the streets through which car lines run. He added that as soon as the City Councils approved the final plan agreed upon the New Haven road would proceed with the work.

The New York, New Haven & Hartford Railroad is not expected to place any requisitions for cars or rails until the control of the two companies by the New Haven has been certified by the Public Utilities Commission.

$700,000 a Year for Improvements in Ottawa

Ottawa, the seat of the government of Canada, is a city of about 125,000. It has 54 miles of electric railway, operated by the Ottawa Electric Railway. By comparison with cities of the first magnitude, Ottawa does not rank so very high, but the company there has been doing big things with its electric railway to keep it up to par or a little better. Thus in the last three years more than $2,000,000 has been spent on the modernization of the railway. New cars and motor coaches and track extensions into new districts account for the major part of this sum. A power station on Albert Street, another on Holland Avenue, work shops on Elm Street, a new home for the line department, a garage and many other similar items have been added to the plant.

The new car shops on Elm Street and Champagne Avenue were erected at a cost of $250,000. They cover nearly 100,000 sq.ft. of ground and embody the best features and latest mechanical devices of the most modern shops. They are designed to meet the requirements, not of today only, but of many far-off tomorrows.

Additions to power plant include two new substations, one on Albert Street and one on Holland Avenue, and 3 miles of conduit, which saved the erection of many unsightly poles.

A modern garage has been erected on Albert Street, for the fleet of O.E.R. motor coaches. This garage is up to date, being fitted with motor-driven ventilators to combat the deadly exhaust gases.

A considerable portion of the expenditure is being devoted to renewal of tracks. The north track on Sparks Street was relaid last summer. Rails weighing 122 lb. to the yard have taken the place of the 90-lb. steel laid there in 1912. It is probable that the south track on Sparks Street will be replaced with the new type rail next year.

A new home for the line department and two new "trouble trucks," minimizing delays in the service when emergent repairs are needed; the installation of the Hull Loop and station, making possible the use of double-truck cars on the St. Patrick Street line; the reorganization of the overhead structure, the construction of dams at the Chaudière, the replacement in many places of ungainly cedar poles by artistic iron uprights—here a dollar, there a hundred thousand—are among the many features of the future program.

San Francisco Expenditure for Cars $250,000

Current reports make it appear that the Board of Public Works of San Francisco, Cal., is all set to award to the St. Louis Car Company, St. Louis, Mo., the contract for the construction of fifteen car bodies for the Municipal Railway. The reported price at which

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the work will be let is $9,634 for each body. The matter of the purchase of these cars has been agitated for a long while. Only a few weeks ago the Board of Public Works approved an appropriation of $100,000 to purchase trucks and motors intended for use under these cars. The combined expenditure totals $250,000, or something less than $16,000 a car complete.

Improvements in Cars Operated Between Rochester and Syracuse

Transformation of the present interurban trolley cars operated between Rochester and Syracuse, N. Y., by the Rochester & Syracuse Railroad into up-to-date chair cars will take place about Dec. 15. The present double seats will be taken out and chairs upholstered in leather and mohair will be substituted. The present windows and wooden sash will be supplanted by 40-in. steel sash set in steel frames, giving passengers a better view of the scenery along the route.

Motor and Equipment Prices Reduced

Announcement has been made by the General Electric Company that prices on railway motors and car equipments have been reduced approximately 5 per cent, effective from Dec. 1. This reduction is the result of greater economies due to a consolidation of all railway manufacturing and engineering at the Erie, Pa., plant of the company.

According to the policy of the General Electric Company, when economies in engineering or manufacturing are effected, they are reflected in the prices of the electrical product to the operating companies.

A reduction in prices on its general-purpose motors, amounting to 5 per cent on most lines and 10 per cent on commonly used sizes of squirrel-cage induction motors, has also been made effective since Dec. 1. The motors affected by the new price levels include both alternating-current and direct-current constant and variable-speed general-purpose motors, from 1 hp. to 200 hp. Prices of standard squirrel-cage induction motors have now been brought to a level within about 10 per cent of that in 1914.

Coincident with this reduction in prices the company has announced a unified schedule of discounts for different classes of purchasers. The discount for quantity purchased at one time, on one firm order, has been made uniform on a sliding schedule for all classes of buyers. The company states that these reductions have been made possible by improved manufacturing processes and quantity production.

Swiss Electric Locomotives for Spain

In competition with German, British, American, French and other Swiss concerns the Oerlikon Maschinenfabrik of Oerlikon, has just secured a contract for the supply of 22 heavy electric locomotives for use on the electrified section of the North of Spain Railroads.

The mechanical portion of the engine is to be built in Spain by the Compania Euskalduna de Construccion y Reparacion de Buques, Bilbao. The system being adopted on the lines is the same as the neighboring French railroads, i.e., continuous current with a pressure at overhead conductor having a normal value of 1,500 volts and variable between 1,100 and 1,800 volts. The locomotives are to be capable of hauling a maximum weight of 1,200 tons, excluding the weight of locomotive. The maximum speed is 56 m.p.h. The engines will be carried by two six-wheel bogies and provided at either end with driver's cab.

The high and low-tension gears are arranged in the center of the locomotive, while two passages insure communication between the two driver's cabs. Each of the six axles will be driven by a separate motor, the torque being transmitted through reduction gear with a ratio of 1:4.94. The three motors of each bogie will be connected in series, so that the pressure applied to the motors individually will amount to 500 volts.

Adelaide Will Have 22 Additional Garfords

Seven Garford Model CB double-deck buses are in daily operation by the South Australian Railways on the streets of Adelaide, Australia. The company has found these units to be very satisfactory for its own operating requirements, and accordingly has placed an order with the Garford Motor Truck Company for 22 additional units of similar design. The first seven were placed in service early this year.

The buses, one of which is shown above, operate over what is known as the Adelaide-Glenelg route, covering a distance of 17 miles per round trip. They are operated from 6 a.m. until midnight, and a total of 204 miles a day is averaged by each bus. Fifty-eight seated passengers may be accommodated.

The body, built by the South Australian Railways, is mounted on Garford Model CB chassis, which is powered with the large type Z Wisconsin six-cylinder engine, rated at 48.6 hp. S.A.E., and capable of developing 105 hp. The chassis is equipped with four wheel air brakes and dual pneumatic tires in the rear. Its wheelbase is 220 in.

Exports of Electric Railway Equipment Are Listed

Interesting monthly figures on the exports of railway motors, electric locomotives, starting and controlling equipment for electric railways and vehicle motors, railway signals, switches and attachments are now being prepared by the bureau of foreign and domestic commerce of the United

Countries	Railway Motors		Electric Locomotives — Railway		Electric Locomotives — Mining and Industrial		Starting and Controlling Equipment for Electric Railway and Vehicle Motors, Dollars	Railway Signal Switches and Attachments, Dollars
	No.	Dollars	No.	Dollars	No.	Dollars		
Italy	...	.....	....	.....	....	.....	.....	60
Netherlands	2	1,200	....	.....	....	.....	9,200	.....
Portugal	...	.....	...	.....	..	.....	400	.....
Spain	12	15,106	....	.....	..	.....	.....	1,390
Sweden	...	.....	....	.....	..	.....	.....	1,000
United Kingdom	...	.....	....	.....	1	4,648	.....	2,071
Canada	3	1,981	....	.....	..	.....	686	10,265
Guatemala	...	.....	....	.....	..	.....	.....	909
Honduras	...	.....	....	.....	..	.....	38	.....
Nicaragua	...	.....	....	.....	..	.....	260	.....
Panama	...	.....	....	.....	..	.....	.....	218
Mexico	...	.....	....	.....	1	5,369	1,085	2,201
Newfoundland and Labrador	1	1,032	....	.....	..	.....	.....	.....
Cuba	...	.....	....	.....	..	.....	.....	2,435
Dominican Republic	...	.....	....	.....	..	.....	.....	47
Argentina	...	.....	....	.....	..	.....	.....	68
Brazil	10	7,208	2	163,200	3	11,790	2,698	16
Chile	40	23,040	7	186,305	5	66,977	.....	207
Colombia	10	4,829	....	.....	..	.....	.....	34
Ecuador	...	.....	....	.....	..	.....	2,177	.....
Peru	8	5,800	....	.....	..	.....	.....	.....
British India	6	7,935	....	.....	..	.....	.....	.....
Japan, including Chosen	...	.....	....	.....	1	6,054	.....	.....
Australia	88	123,751	....	.....	..	.....	1,895	13,780
British South Africa	16	13,770	....	.....	1	3,600	457	597
Total	196	205,652	9	349,505	12	98,438	18,896	36,158

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States Department of Commerce. The figures are listed by countries and in the cases of motors and locomotives the quantities as well as the costs are given. The statistics shown in the table on page 1031 are for the month of September, 1926.

Important Bearing Data Assembled

The new Timken Engineering Journal, a loose-leaf book of 110 pages, contains technical information relative to the application of Timken bearings to automotive and industrial machinery. A number of pages are devoted to the explanation of the Timken bearing as manufactured at the present time. Exclusive features such as the positive alignment of the rolls, one-piece precision cage and special alloy steel are explained. Typical problems, with the solutions, involving the calculation of various loads and the selection of suitable bearings are given. Tables showing bearing ratings, capacities and dimensions as well as speed capacity curves are included.

Methods of mounting Timken bearings, shaft and housing design, adjustment of Timken bearings, closures, cup and cone fitting practices, assembly methods and lubrication are treated in separate chapters. A full set of dimension sheets accurately drawn to scale, together with formulas and recommendations for the application of Timken bearings, developed through experience gained in successfully applying more than 150,000,000 bearings, comprise another section.

Galena Signal Oil Officers Resign

Changes are announced in the personnel of the Galena Signal Oil Company, New York. L. J. Drake, president; George A. Barnes, vice-president, and J. C. Tipton, manager of the foreign department, have all withdrawn from the company, Mr. Drake after 25 years of service, Mr. Barnes after 30 years and Mr. Tipton after 20 years. Their resignations went into effect on Nov. 1. It is not expected that permanent officers to succeed them will be elected until early in the new year. All of the retiring officials are well known in the electric railway field, in supplying which with lubricants the company long specialized.

Metal, Coal and Material Prices

	Nov. 30, 1926
Metals—New York	
Copper, electrolytic, cents per lb.	13.375
Copper wire, cents per lb.	15.875
Lead, cents per lb.	8.00
Zinc, cents per lb.	7.46
Tin, Straits, cents per lb.	71.625
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$7.00
Somerset mine run, Boston, net tons	3.00
Pittsburgh mine run, Pittsburgh, net tons	2.425
Franklin, Ill., screenings, Chicago, net tons	1.875
Central, Ill., screenings, Chicago, net tons	1.625
Kansas screenings, Kansas City, net tons	2.35
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, N.Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	2.10
Linseed oil, (5-bbl. lots), N. Y., cents per lb.	11.4
White lead in oil (100-lb. keg), N. Y., cents per lb.	14.75
Turpentine (bbl. lots), N. Y., per gal.	$0.89

Rolling Stock

Hamilton Street Railway, Hamilton, Ont., Canada, through its owner, the Dominion Power & Transmission Company, has awarded a contract to the National Steel Car Company, Hamilton, for 24 new cars to cost $480,000.

Ottawa Electric Railway, Ottawa, Canada, has included in its program of expenditures for the future the purchase of two new "trouble trucks."

Muncipal Railway of St. Petersburg, St. Petersburg, Fla., received on Nov. 1 the eight cars ordered on May 17, 1926. Specifications on this equipment, referred to in the ELECTRIC RAILWAY JOURNAL, issue of May 22, page 910, are as follows:

Builder of car body	Brill
Type of car	One-man double-truck pass.
Seating capacity	46
Weights:	
Car body	13,700 lb.
Trucks	10,500 lb.
Equipment	6,250 lb.
Total	30,450 lb.
Bolster centers, length	17 ft. 10 in.
Length over all	40 ft. 1 in.
Truck wheelbase	5 ft. 1½ in.
Width over all	8 ft. 5 in.
Height, rail to trolley base	11 ft. 6 in.
Body	Steel
Interior trim	Mahogany
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse
Armature bearings	Sleeve
Axles	4-in.
Bumpers	5-in. channels
Car signal system	Faraday
Car trimmings	Aluminum
Center and side bearings	Brill
Conduits and junction boxes	Brill
Control	K-35
Couplers	Brill
Curtain fixtures	Curtain Supply Company
Curtain material	Pantasote
Destination signs	Hunter
Door-operating mechanism	National Pneumatic
Fare boxes	Johnson
Finish	Color and varnish system
Fenders or wheelguards	H-B
Gears and pinions	Helical, four cars; spur, four cars
Hand brakes	Brill
Heater equipment	None
Headlights	Golden Glow
Journal bearings	Brill
Journal boxes	Brill
Lightning arresters	K-3, four cars; MD-3, four cars
Motors	Westinghouse 506, four cars; GE-264, four cars; all inside hung
Safety car devices	Safety Car Devices Company
Sash fixtures	Brill, all metal
Seats	Brill Winner 201-A
Seating material	Brown leather
Slack adjuster	Sauvage
Springs	Brill
Step treads	Kass
Trolley catchers	Earll
Trolley base	Nuttall 20-A
Trolley wheels	Ideal
Trucks	Brill 77-E1
Ventilators	Brill
Wheels	Cast chilled, 26-in.
Special devices	Fiest door hinges; Westinghouse Traction Brake Co. C-6 feed valve

Trade Notes

Electric Controller & Manufacturing Company, Cleveland, Ohio, announces the appointment of the Farr Electric Service, Inc., 228 W. South Temple, Salt Lake City, Utah, as it representative.

Silver Lake Company, Newtonville, Mass., which has been manufacturing braided cords in its plant since 1858, has organized a subsidiary plant at Chattahoochee, Ga. This new plant will occupy about 65,000 sq ft. of floor space and will produce such grades of sash cord as can be manufactured most economically in that section. The preparation processes are to be manufactured by the Whittier Mills Company, which has recently completed a plant for this special purpose. The two plants are under the same management. All sales will continue to be made, as in the past, from the general offices of the Silver Lake Company at Newtonville.

New Advertising Literature

American Strombos Company, Inc., Philadelphia, Pa., has published bulletin No. 82, describing the Strombos air signal for locomotives, motor and electric cars. The signal may also be used in yards and in signal towers.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., will gladly send copies of folder 4712, which illustrates and describes various important features of the company's exhibit at the A.E.R.A. convention in Cleveland. This eight-page folder covers the latest apparatus developments of the industry.

Carnegie Steel Company, Pittsburgh, Pa., has issued a new booklet entitled "Wrought Steel Wheels and Other Circular Sections—Forged Steel Axles." The design and specifications contained in this catalog have been completely revised and brought up to date.

General Electric Company, Schenectady, N. Y., has issued "Silent Gears," a publication of 28 pages devoted to its Fabroil and Textolite products, manufactured by it solely for the purpose of making silent gears. They differ only in the method of fabrication and not in basic materials. The company says that the history of the development of these silent gears goes back to 1908, when John Miller, chief millwright of the Schenectady Works of the General Electric Company, being aware of the necessity for such a gear, started a long series of experiments to find a material that would prove suitable. His work along these lines resulted in a radically new type of gear, which from the first proved highly successful, and which was the prototype of the modern fabroil gear.

Sanford Mills, Sanford, Me., has issued a booklet describing the use of Chase Velmo mohair velvet for bus upholstery. Velmo upholstery has been in use in railroad service over a long period of years. It has now been adopted for bus upholstery as well.

Morton Manufacturing Company, Chicago, Ill., announces that during the early days of January, 1927, it will receive for distribution a new catalog covering all of the items included in the Acme line of railway appliances and industrial steel products. Mr. Morton states that every attention has been given to the preparation of this book calculated to make it as comprehensive as possible, consistent with simplicity of form and intelligent presentation and description of the products which it represents. Those desiring copies of the new catalog should communicate with the Morton representative in their district or direct with the general offices at Chicago.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, December 11, 1926 *Number* 24

Transit and Traffic Solution Demands Broadened Viewpoint

IN THE larger cities of the world, and particularly in the United States, the traffic and transportation pot continues to boil and seethe. In London the suggestion is made in the reports of the Ministry of Transport's Advisory Committee, abstracted elsewhere in this issue, that there be set up a common management and a common fund to which all forms of passenger transport, including underground and surface railways and buses, would be parties. The board of management would be made responsible to an over-riding authority who would settle questions of community policy, determine the facilities required, control fare matters and exercise financial as well as physical supervision. Under this plan the governing motive would be the co-ordination of all facilities, so that each form of transport would perform the functions to which it is best adapted. Although no definite suggestions regarding a plan for their inclusion in such a co-ordinated system are made, the part played by the suburban service of the four main line railways entering London is mentioned. The entire proposal is based upon the premise that with proper co-ordination of facilities there is in London sufficient traffic to provide an adequate return on such a pooled investment, and also to make possible continuous improvement to meet the growing needs of the community.

Developments in New York show evidence of a growing appreciation on the part of thinking business men and the press that overlapping and competition of transportation agencies are not in the best interests of the city. There is apparent a unanimity of opinion among merchants and property owners in favor of less politics and more common sense in dealing with the complicated technical, economic and financial problems of transportation and street congestion. There is a growing sentiment against the fetish of the 5-cent fare at any cost in safety, convenience and comfort. A form of quasi-public corporation is being mentioned as a means of pooling present resources so as to bring order out of the present chaos. One or two city officials are beginning to call a halt on the orgy of reckless dissipation of the city's financial resources in ill-advised subway construction entirely independent of existing facilities. Quotation of huge deficits in the public press is beginning to make the people of the city realize the magnitude of the debt being piled up against posterity in meeting transit losses incurred in trying to make riders think they can buy a 10-cent ride for 5 cents.

Likewise in St. Louis the solution of the transportation situation seems to depend on a popular realization of the fundamental necessity of co-ordinating all existing facilities. No orderly and economical program of development can be undertaken until that is brought about. Utilization of existing surface cars is recommended as the backbone of a transportation system for the city; putting them underground in the most congested district, and extending such costly work only as the growth of the city demands.

Thus in these several important cities, and in many others as well, there is a tendency to apply common sense to the transportation problem in place of hysteria and suspicion. Through lack of general understanding of fundamentals and because of inertia and lack of interest on the part of the public at large these vital matters have in the past been left in the hands of selfish politicians. The traffic hodgepodge threatens to halt civic development by converting the avenues of commerce and communication into helpless tangles of humanity and machines. Though these came together in the modern city to facilitate the progress of business and industry, they are being rendered impotent through sheer confusion and interference the one with the other.

That co-ordination of the several facilities of travel offers the only sane means of bringing some degree of order and economy out of the present hopeless confusion and waste is beginning to become evident to those business men and property owners whose attention has been directed to the seriousness of the present situation by the increasing difficulty of doing business in the congested districts of modern cities. There is likewise a growing realization, though it is yet largely in intangible form, that solution of the bewildering complexities of the situation produced by the movement of passengers and commodities in city streets depends on a broadened approach to the problem.

Although there is no definite program proposed for considering freight movement along with passenger transportation, the mention of the suburban traffic of the London railroads in connection with other forms of local transit is significant. Likewise, the similarity of the suggestions in London and New York for pooling all transportation interests is thought provoking. There exists now in New York, in the form of the Port of New York Authority, a body with ample power to approach the freight problem from the standpoint of the community as a whole. But here again there is consideration of only one of several elements. An adequate solution of traffic congestion and transit requires simultaneous consideration of both freight and passenger movement throughout a city and its tributary area. This must be approached with a view to the present and future needs of the community as a whole, rather than of any particular section or any one agency. Only then can a real community transit plan be devised, and only then will basic improvement and sound progress be possible.

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Supreme Court Throws Further Light on Proper Basis for Utility Values

IF COSTS of construction did not fluctuate it would be a comparatively easy matter to determine the value for rate-making purposes of a public utility property. The basis for such value, though subject to certain modifications for depreciation, going value and other conditions, has been determined judicially to be cost of reproduction. But with fluctuating costs it becomes obviously an important matter to determine the date at which the reproduction is assumed. This has been especially true in recent years because of the great changes in construction costs since 1914. Hence this latter question has become of serious moment in the determination of utility valuation, namely, should properties or parts of properties erected when building was cheaper or more expensive be valued at the cost at that time or those which are in force at present?

Still another question in valuation, even more important than the one just asked, is: What effect on the value of a utility property will be caused by future changes in the units of construction cost?

The importance of the latter question is that valuations of utility property are undertaken usually not to determine the justice of past rates but the reasonableness of those in the future or early future. If the principle is adopted that present costs are to be used to determine future rates, it would seem only logical to have any new rates based on property values continue only so long as construction costs remain practically stationary. In other words, with value based on "cost of *present* reconstruction, new, less depreciation," a material rise or fall in construction costs should be followed by a corresponding revision of rates.

This, briefly, is the position taken in the majority opinion by the United States Supreme Court in the case of the Indianapolis Water Company decided Nov. 29. The court's rule of ascertaining present value is given in the following sentences:

> If the tendency or trend of prices is not definitely upward or downward and it does not appear probable that there will be a substantial change of prices, then the present value of land plus the present cost of constructing the plant, less depreciation, if any, is a fair measure of the value of the physical elements of the property. The validity of the rates in question depends upon property value Jan. 1, 1924, and for a reasonable time following. While the values of such properties do not vary with frequent minor fluctuations in the prices of material and labor required to produce them, they are affected by and generally follow the relatively permanent levels and trends of such prices.

This seems to settle definitely and for all time the determination of the date to which prices of construction are to be referred. It is the present date, not that of the time of construction, or a ten-year average, or cost figures determined on any other basis. But in the part of the decision just quoted the court goes further than simply to define present value. It speaks of "a reasonable time," "fluctuations in the prices of material and labor," future values and future rates. These points are elaborated further on in the decision where the court declares:

> In the light of all the circumstances, there must be an honest and intelligent forecast as to probable price and wage levels during a reasonable period in the immediate future. In every confiscation case the future as well as the present must be regarded.

In the case at issue, that of the Indianapolis Water Company, the court held:

> There is nothing in the record to indicate that the prices prevailing at the effective date of the rate order were likely to decline within a reasonable time, one, two or three years, to the level of the average in the ten years ending in 1923, and we may take judicial notice of the fact that there has been no substantial general decline in the prices of labor and material since that time. The trend has been upward, rather than downward.

The decision has many other interesting declarations which help to establish valuation law, such as the discussion of rate of return, not less than 7 per cent being considered justified in the case; on going value, for which 9.5 per cent was allowed; on the means for determining depreciation, which should be actual, not assumed, and on a number of other points. But to revert to the question of date of valuation, it is worth while to consider briefly the practical effect on construction policies of the application of this principle rather than the establishment for all time of a value based on prices as of a certain date, whether the time of construction, 1914, or the present.

The effect should be beneficial to both public and utility. The owner of private property who erects a building has to consider future trends in prices. He is penalized if he builds at a time of high prices and profits if he builds at a time of low prices, and he has to consider possible obsolescence and depreciation in the structure he is erecting. The same circumspection will have to be followed by utility operators in the future, whether they approve of this principle or not. The utility owners will be the only ones to suffer if they make mistakes in judgment by building at the most expensive times. But they will gain if they build at times of low construction costs, because in future rate hearings on the basis of present reproduction cost their property will prove more valuable than its actual cost at the time of erection.

The court also indicates its opinion of the frequency with which these rehearings on rates may be necessary. They are required only when there are relatively permanent changes in price levels and trends. As this is to be the law of the future, utilities will do well to keep their records of construction costs in such form as most easily to show the amounts and kinds of materials and labor used. In such a valuation inventory unit costs of any particular day can easily be applied to give the required value for rate-making purposes.

New Twin City Garage a Mark of Good Transportation Service

ONE of the differences between bus service properly co-ordinated and the type of operation that marked the early history of this vehicle is illustrated by the recently completed bus station at Minneapolis. In this city and its twin, St. Paul, the bus first made its appearance more than ten years ago. There existed also in these two cities one of the finest electric railway systems in the country, which reached its full development years ago under the able leadership of Thomas Lowry and Calvin Goodrich. Because of the notable success of this company, creating a demand for transportation, the jitney and bus found fertile fields for competitive operation. Eventually the company accepted the bus as a necessary part of the transportation systems and undertook to co-ordinate its service with that of the railway.

With the completion of the garage and bus station, concerning which a story was published in the issue of Dec. 4, the bus has obtained a sound footing in the Twin City transportation system. The bus as an operat-

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ing unit has found a permanent home. This new station is more than a garage for storing vehicles during idle hours, it is more than a place to make repairs—it is a business home for the operating personnel as well. The men have locker rooms, well-equipped lavatories and showers, tables on which to count cash, fill out reports, study time-tables and perform such necessary functions. The buses too will not merely be repaired but they will be inspected and overhauled on predetermined schedules to avoid repair as far as possible, and with the same degree of supervision that has attended car operation.

Minneapolis furnishes only one recent example of what co-ordination means. Cincinnati, Philadelphia, Kansas City, Baltimore, Cleveland, Youngstown, Atlanta and many other cities are accomplishing much the same thing. It is the work behind the scenes, so to speak, that establishes that element of difference between the superficial and the sound, the transient and the permanent, the parasite and the servant.

American Business Entitled to Federal Tax Relief

THE announcement of a surplus from federal taxes, which promises to amount to as much as $400,000,000, has precipitated a flood of suggestions as to how to dispose of it. President Coolidge originally urged a flat rebate on this year's income tax payments, but later seconded Secretary Mellon's suggestion of a credit on the tax payments due next March. The Chamber of Commerce of the United States recommends the reduction of the corporation tax and the elimination of the estate tax and the taxes on particular businesses. Representative Garner estimates that by giving the corporations a reduction of $200,000,000, prices to the consumers will be reduced as much as $600,000,000! Representative Hull says that the tariff should first be reduced. Senator Watson favors using the surplus to pay off debt.

With more than nineteen billions of Liberty Bonds outstanding, there seems to be little occasion to seek far afield for a suitable use for $400,000,000. But apparently Senator Watson's conservative proposal will not receive the consideration its wisdom deserves, and somebody's taxes are going to be reduced. When the discussion reaches this point, American industry and business should insist upon a hearing. The time has come when the country ought to be asked to make up its mind deliberately whether it desires and intends that taxes on business shall form a permanent part of the federal financial system.

The most acute situation is that relating to the income tax on corporations. They now pay $13.50 on every $100 of profit. A stockholder, when he receives what is left of that $100 as a dividend ($86.50), may, at the most, take a credit of 5 per cent or $4.33. In other words, a dollar of business profit, earned by a concern doing business under the corporate form and distributed as a dividend, must pay a special tax of something more than 9 per cent. A dollar of business profit earned under the partnership or individual form of organization does not pay this 9 per cent. In other words, our present heavy federal business tax is restricted to corporations.

Why should there be a special federal tax on business profits as distinguished from other types of income? If there should be such a business tax, why confine it to corporations? Should it not be as broad as business itself? These questions are momentous ones for American business and they deserve careful consideration. England, faced with them, decided that she could not afford to impose a special business tax on corporate profits, despite her pressing need for revenue. The case against business taxation is a strong one and deserves careful consideration and co-operative action on the part of every industry in the country. Electric railways are particularly aware of the evils which grow out of the tendency to dig into private pockets indirectly for tax revenue by appealing to the popular expedient of using the corporation as a tax collector. This is bad enough in competitive business, where the tax enters into the price of the commodity. Although it is obviously unfair and unsound thus to penalize the corporate enterprise in favor of the partnership or private business, this tendency to load taxes on corporations becomes even more severe when the business is a regulated utility, in which the price of the product is subject to regulation and does not fluctuate smoothly in accordance with the rise and fall of the cost of doing business. It is obvious that every industrial association in the country should get back of the move to reduce the tax on corporations and that the joint committee on internal revenue taxation, established by the revenue act of 1926, should be devoting itself to an analysis of this problem and the formulation of a wise policy.

Passing the Buck Will Not Solve Paving Problem

BY CHANGING from a rail transportation system to a trackless transportation system the Keighley Corporation Tramways, in England, escaped from a heavy burden of track and paving expense. Unfortunately, however, other expenditures were so greatly increased that the net result of the first year's operation was a considerable loss, while the last full year of tramway operation showed a moderate profit.

Adherents of the new system point out that the increased expenditures were largely the result of giving more service and that tramway operating costs probably would have risen had that system been continued. However, analysis of operating expenses per vehicle-mile does not support these contentions. In the way account substantial savings were made because paving costs were paid by general taxation instead of car fares. Elsewhere the savings attributable to the change from rail to railless transportation were negligible. As might have been expected, replacement of old vehicles by new ones reduced equipment maintenance costs somewhat. Conducting transportation costs fell slightly because of an increase in speed from 6.62 m.p.h. to 6.96 m.p.h. It is not unreasonable to suppose that a similar increase could have been made without difficulty by the tramways. General and miscellaneous expenditures remained the same. Power expense went up. The total cost of operation, including the paving charges carried by the municipality, probably was higher than it would have been if the tramway had been modernized.

By a process of reasoning similar to that by which the trackless trolley adherents in Keighley seek to justify their change in transportation service, some people in the United States find reasons for scrapping the street railways. But those who believe that something has been saved, when in reality money has merely been taken out of one pocket and put into another, are living in a fool's paradise. The way to solve the paving problem is to face it squarely. Sidestepping the issue only makes matters worse.

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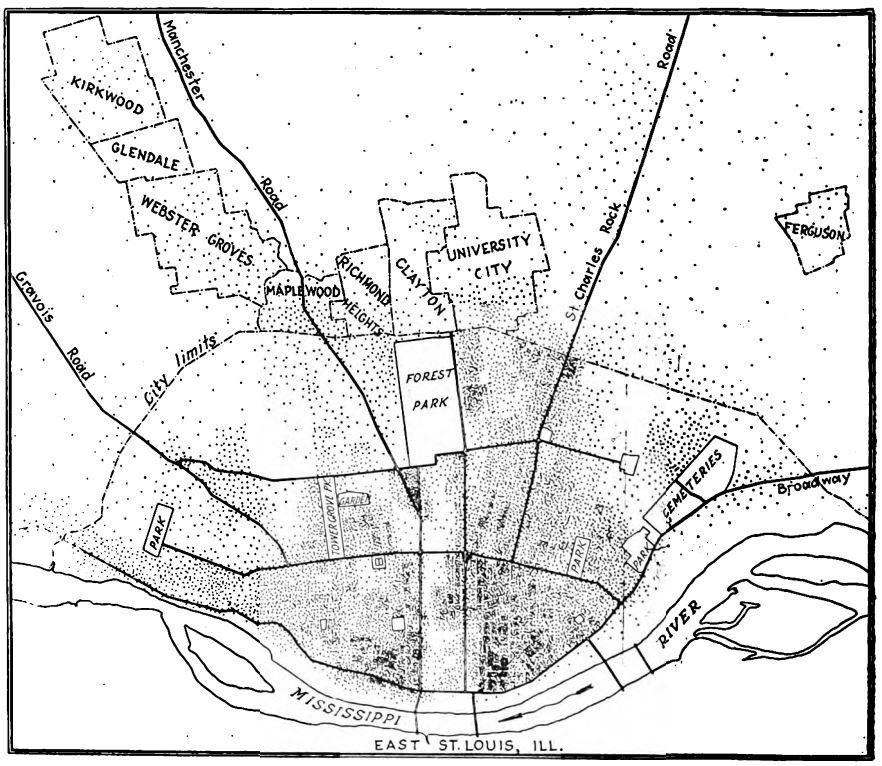
Co-ordinated Transportation Proposed for St. Louis

FIRST ARTICLE

Municipal Committee Declares Mass Transportation Must Continue to Be Provided by Electric Cars, Supplemented by Motor Buses and Rapid Transit Lines—Surface Car Subways Recommended for Downtown Area, Designed so as to Be Capable of Rapid Transit Use Later—Motor Buses Should Serve as Feeders—Present Facilities and Trends of Travel Outlined

LOCAL transportation in St. Louis is the subject of a report presented to the Board of Aldermen of that city on Sept. 24, 1926. It was compiled under the direction of the special rapid transit committee of the board by E. R. Kinsey, president Board of Public Service, and C. E. Smith, St. Louis, consulting engineer of the board. The report, which has just become available in printed form, occupies 338 printed pages, practically the same size as those of this journal, and replete with diagrams, maps and other illustrations. The report was authorized by the Board of Aldermen in October, 1924, following considerable public discussion. During its investigation the committee visited Philadelphia, New York, Boston, Chicago and Detroit.



Distribution of Population in St. Louis in 1925. Each Dot Represents 100 People

THE PROBLEMS TREATED

The report points out that although city transportation and traffic problems have always been important, they have taken on a new significance by reason of the tremendous increase in the use of automobiles and the resulting spreading out of cities within the last ten or fifteen years. Traffic congestion came on suddenly with the automobile and will continue in varying degrees, depending on the success of relief measures. Street railway officials and citizens require education to make them realize that the provision of adequate transportation in large cities is a civic problem. Originally only a convenience, it is now one of the necessities.

The importance of planning transportation in city development is indicated by the results that have followed the neglect of such planning in the past. Electric cars are carrying passengers at speeds ranging from 4 to 40 m.p.h., the different speeds being due in large measure to the environment and different relations between the tracks and other lines of traffic. Present intolerably slow speeds may be increased by intelligent and persistent planning.

Failure of old-established electric railway lines to serve the public completely has led to the development of other and competitive agencies of transportation that have impaired the service given by the street railway. A good deal of this might have been avoided in the past and can be minimized in the future by intelligent planning.

Street car riders have been the worst sufferers from the increasing use of the automobile because (a) the normal increase in street railway business has been interrupted; (b) accidents and costs of operation have increased; (c) service has slowed down, and as the automobile has educated the people to higher speeds, they have become less tolerant of the speed of street cars, and (d) there is a popular idea that the street car should be got out of the way of other traffic and that it should be superseded by other means of transit.

Each year the street railways of the country establish new records for passengers carried, showing that despite the automobile and motor bus, which will supplement but not supersede them, street cars are here to stay and must be provided for. City transportation for the great masses of people must continue to be provided by electric cars, supplemented by motor buses and rapid transit lines.

In a city of 1,000,000 people, with prospects of 1,500,000 in the near future, the relation of means of transit to growth of the city is basic. The growth of

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St. Louis reached the point some time ago where mass transportation facilities must be improved. Rapid transit facilities were provided in other large cities, even before the congestion caused by automobiles, and for the better movement of the people, as shown in Table I.

TABLE I—DATES OF INTRODUCTION OF RAPID TRANSIT IN DIFFERENT CITIES.

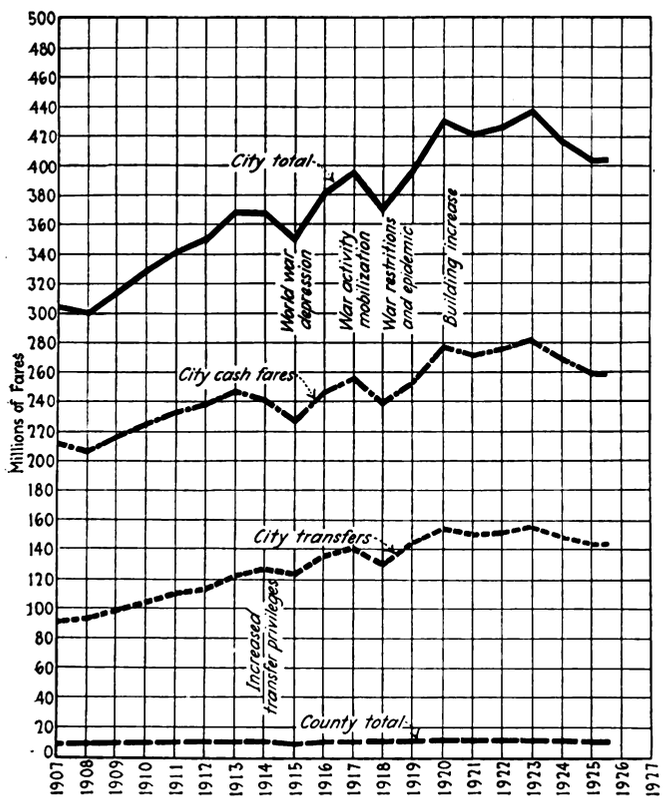
	Year	Population
New York City	1870	1,000,000
Chicago	1890	1,000,000
Boston	1893	500,000
Philadelphia	1907	1,400,000

It is evident that, by comparison, St. Louis has been ready for rapid transit for some time. Some of the advantages of rapid transit lines are:

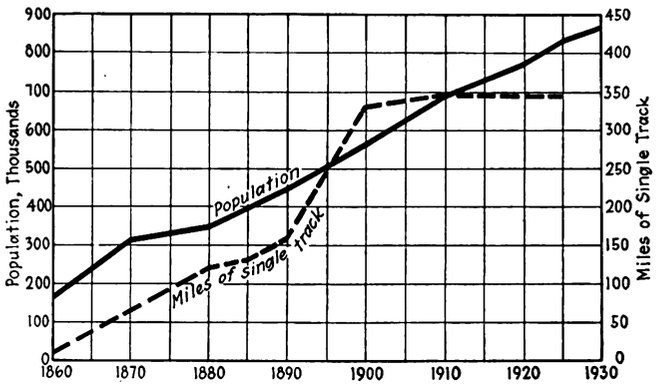
Relief from surface congestion and delay.
Increased capacity of streets for automobiles.
Increased safety on streets by removal of street cars.
Saving of time.
Outlying areas made accessible for homes.
Quickest, cheapest, most convenient form of transportation.
Street railway and bus lines relieved of long-haul traffic.
Cost of moving passengers in trains is less than in single units.
Removes crowding from street cars and permits them to give a seat to every passenger for short-haul and intermediate business.

Except in the congested business center, the stations should be not closer than ½ mile apart; if adequate local surface transportation is provided, the stations should preferably be 1 mile apart. In the congested districts of heavy loading and unloading stations should not be more than ¼ mile apart to avoid too great concentration of passengers at stations.

The first step in rapid transit will be subways for street cars exclusively in the congested districts. In the second step, rapid transit trains will be operated



Total Passengers Carried by the United Railways, All City and County Lines, 1907 to Date



Street Railway Mileage and Population Within the City Limits, St. Louis, 1860 to Date

with some of the downtown subways extending out about half way through the city. Street cars will continue to operate between outlying and rapid transit lines and downtown to serve intermediate areas and to provide local service in the rapid transit area. Motor buses will also serve as feeders and to give local service in areas not settled densely enough to justify street railway lines, also to quite an extent for surface travel in the downtown subway area from which all car tracks will be removed. Traffic on the heavy street car lines can be expedited materially by running cars express between the business center and the points where the heaviest loading and unloading take place, the intermediate district to be served by buses.

CONDITIONS DIFFERENT FROM THOSE IN NEW YORK AND CHICAGO

Conditions in New York and Chicago, calling for long through rapid transit routes, are not so comparable with conditions in St. Louis as are the conditions in Philadelphia and Boston. Boston has already done what has been recommended for Philadelphia; that is, first provide downtown subways in which surface cars may operate and which, when extended far enough out, can be used for the operation of rapid transit trains. There is much in the Boston plan that can be adapted to St. Louis. The difficulty experienced at Philadelphia by not having an operating agreement in advance of construction, which was avoided in Boston and New York by prior contracts, can be avoided also in St. Louis by having definite arrangements made prior to the construction.

Downtown subways will have a tendency to stabilize business in its present location by making it easier to get around there, and will thus encourage its growth in an orderly way in all directions from the present business center.

The operating expenses per passenger-mile on rapid transit lines, when properly supplied with passengers, is much less than on street railway and bus lines, and great economy can be effected by transferring passengers to and from the rapid transit lines, instead of hauling them long distances on street cars and buses. Long-distance street car riders are carried at a loss.

Duplication in transportation facilities and service is wasteful. Transportation can be furnished better and cheaper by a single transportation agency than by more than one. This single transportation agency should be planned to perform satisfactorily all the transportation that is needed of the classes desired by its patrons at the lowest fare.

St. Louis is certain to increase in population, as it

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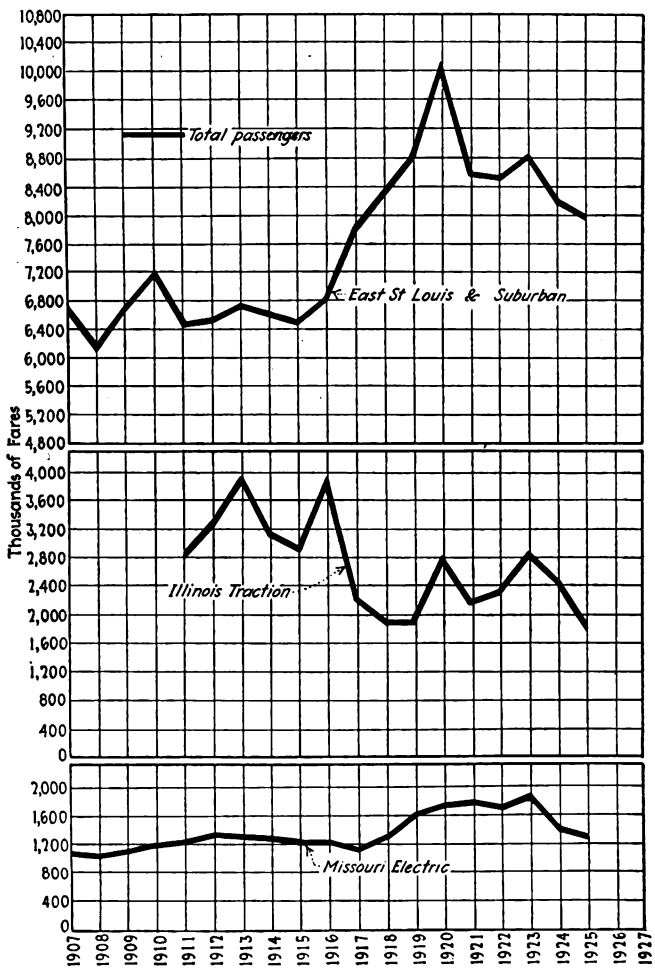
has an ideal combination of the chief factors for manufacturing and distribution. It is nearer the centers of agriculture, population, land area, mineral and timber production in the United States than any other large industrial city. Most of these centers are within a radius of 300 miles, and the wheat center and the cotton center of the country are only slightly beyond the 300-mile circle. St. Louis has an excellent climate and admits of open-air work more days in the year than any other large industrial city. It has waterway barge service to the Mississippi Valley and Gulf ports. It has lower taxes than any other large city. It is close to large supplies of cheap fuel and electric power. It has



Total Passengers Carried by Interurban Lines Entering St. Louis, 1907 to Date

great diversification in its industries, not more than 8 per cent of its labor being employed in any one line. It is served by more railroad lines than any other large city except Chicago.

The distribution of its 1,000,000 population in 1925 is shown graphically in an accompanying chart. The present average population density is now fifteen to the acre.

History of Transportation in St. Louis

The first attempt at mass transportation in St. Louis was an omnibus line started in 1843. By 1858 there were ten omnibus lines in operation; the headway on the busy lines was four minutes. The year 1859 saw the organization of ten horse car companies. By 1875 nearly all the settled districts in St. Louis were served by horse car lines, most of them competitive.

The first cable railway line was built in 1886. This was followed by other cable lines, which gradually were electrified. By 1899 all the lines, with one exception (the St. Louis & Suburban), were consolidated into one company, and in 1907 this outside company was included in the present system. The united company now has 247 miles of single track, ranking with other large cities of the country as shown in Table II.

TABLE II—ELECTRIC RAILWAY MILEAGE IN SEVEN LARGE U. S. CITIES, 1925

City	Population Served by Railways	Miles of Single Track	Feet of Single Track Per Inhabitant
Chicago (*a*) (*b*)	2,940,000	1278	2.29
Boston (*a*)	1,221,000	513	2.22
St. Louis (*b*)	831,800	347	2.20
Pittsburgh	1,580,000	592	2.08
Cleveland	1,094,000	425	2.04
Detroit	1,200,000	383	1.68
Philadelphia (*a*)	1,940,000	588	1.60

(*a*) Includes rapid transit mileage.
(*b*) Figures are for city only.

At the time of the consolidation, in 1907, free transfers were established between any line and any other. In 1914 the universal transfer system was inaugurated so that a rider might go on a street car from any part of the city to any other part for one fare, using three or four lines, if necessary.

No Extensions for More than Twenty Years

In 1904 the track mileage of St. Louis was large for the population of the city, but from that date the company has made practically no extensions. An accompanying diagram shows the increase in population and street railway mileage in various years. The lack of growth in mileage since 1900 is very striking. There was a constantly growing demand for extensions of the street railway lines, but the railway would not accede to them. In 1917 the city of St. Louis appeared before the Public Service Commission of Missouri and asked that the United Railways be made to extend its lines into undeveloped territories, and the commission ordered several miles of extensions. The company appealed to the Missouri Supreme Court, which ruled that it could not be compelled to build and operate them because it was not so obligated by its franchise. The company's apathy toward making extensions was due in the main to its financial difficulties since the consolidation.

The consolidated system was so badly overcapitalized in 1899 that by 1904 it was financially embarrassed by the necessity of refunding underlying mortgages. Some of the investment in horse car lines, and especially the heavy investment in the cable car lines and operating machinery, had been carried along into the capitalization of the electric car lines. From 1904 to 1919 the company used all its surplus above fixed charges to pay off maturing mortgages and to pay for necessary improvements, which were kept to the minimum.

The financial difficulties due to the 5-cent fare, combined with the loss in business and the increase in expenses, were offset in part by raising the rate of fare from 5 cents to 6 cents in 1918, then to 8 cents in 1919, and then back to the present fare of 7 cents in 1920. There has been no financial embarrassment due to insufficient earnings, as the company has consistently earned a comfortable margin for depreciation and surplus above interest on bonds, although capital requirements and poor credit due to overcapitalization made it necessary to reinvest in the property surplus earnings that otherwise might have been available for dividends.

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People continued to locate beyond the ends of street car lines, particularly in the southwest and northwest sections, confident that the company would ultimately extend out to them, but as the years passed a gradually increasing resentment against the company made it easier for the Peoples Motorbus Company to secure privileges to operate motor buses in competition with the electric cars.

When the receiver took over the system, it was hoped he would extend the lines, but he soon announced his inability to do anything. After the Peoples Motorbus Company became an established competitor, however, the reorganization committee of the company organized the St. Louis Bus Company, to give extension service to the street railways that the receiver could not give.

Long Hauls to Business District

Another source of dissatisfaction with the street railway system was due to conditions beyond the control of the company. St. Louis is roughly elliptical in shape. The primary business district is at one side of the city, close to the Mississippi River. The city limits are roughly 6 to 7 miles distant from the primary business district, north, west and south. Thus the average hauls are longer and the people have to spend more time on the cars than in a city where the primary business district is approximately central. This time is lengthened by the concentration in narrow business streets downtown of automobile, pedestrian and street car traffic, and this congestion is accentuated in the evening by a short peak period of about 30 minutes. This makes it absolutely impossible for the company to supply enough cars during that short period comfortably to carry the passengers. Many people are willing to pay a higher fare on the competitive motor buses. For various reasons, St. Louisans have moved prematurely from delightful high-level residence districts near the center of the city to districts farther out. This has further increased the difficulty of the street railway.

As most of the radial lines are 6 to 7 miles long, and crosstown lines much longer, and as there is comparatively little short distance riding, the St. Louis street car system has never suffered much from jitney competition, although with the longer time per trip of the cars much traffic has been lost to automobiles.

It is generally conceded, states the report, that properly to serve the primary business districts the present street surface must be given over to individual transit and that collective transit must be carried on at separated levels, either above or below present streets.

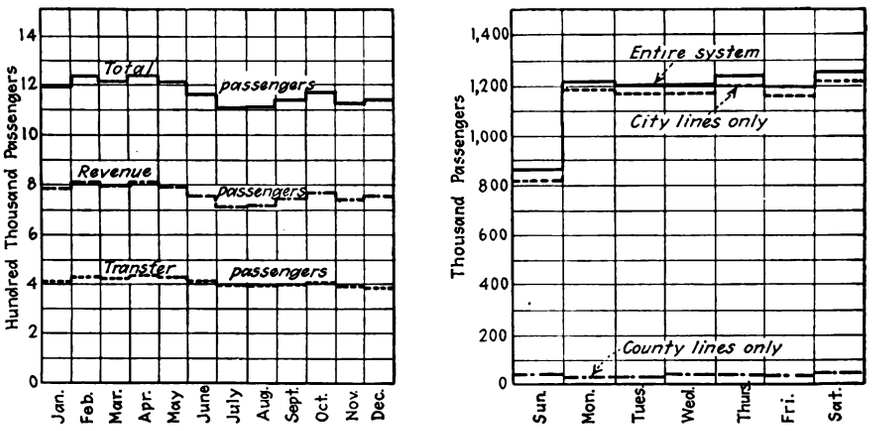
City Transportation Agencies

The companies now performing local and suburban transportation in and around St. Louis are:

1. United Railways of St. Louis.—This company operates the street railways in St. Louis and St. Louis County and the interurban line of the Missouri Electric Railroad, running from Wellston to St. Charles. Since April 12, 1919, the United Railways has been in the hands of a federal receiver, but it will shortly be reorganized as the St. Louis Public Service Company. The United Railways handles about 270,000,000 cash fares per year and about half that number of transfer passengers. This comprises about 90 per cent of the total urban traffic, the other 10 per cent being carried by the Peoples Motorbus Company.

At the end of the year 1925 the United Railways owned 347.3 miles of single track in the city and 115.6 miles in the county, making a total of 462.9 miles of single track. It owns and operates a total of 1,608 passenger cars, of which 1,429 are motor cars and 179 are trailers. Of this number 201 cars are light-weight cars of the Peter Witt type, seating 60 passengers each. The physical property of the company is in good condition. The track is well built and is maintained in fine condition. The rolling stock, though some of the cars are very old, is clean, well painted and fairly well lighted.

The receiver claims that the company has not been making a proper return on its property value and operated during 1925 at a loss. In May, 1926, he applied to the Missouri Public Service Commission for an increase in fare.



At Left, Passengers Per Month During 1925, Daily Average. At Right, Average Daily Passengers Per Week During May, 1925, United Railways of St. Louis

2. Missouri Electric Railroad.—This company is owned outright by the United Railways, though retaining its corporate entity and operating as a different company. It owns 23.4 miles of single track and eleven double-truck cars. A zone fare is in effect, there being three zones and a bridge toll to St. Charles. For the past two or three years the company has been subjected to severe competition by independent motor bus operators. During 1925 the company lowered fares in an effort to bring back some of its passengers and then installed non-stop de luxe bus service between the two terminals. This increase in service and the reduced fare has finally won back the traffic and the independent buses have gone out of business.

3. St. Louis Bus Company.—This company was organized by the reorganization committee for the United Railways to give extension service to the street railways. It operates single-deck buses in certain sections of the city and county that were in need of better transportation service. It gives and receives transfers from the street car lines and most of the rides are extension rides. The bus fare is 10 cents, of which the United Railways gets 7 cents whenever a transfer is made, the bus company receiving only 3 cents for a transfer passenger. This company began operation on Nov. 9, 1924, and operates 35 single-deck buses on eight lines over 30 miles of route.

4. Peoples Motorbus Company.—This company began

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operations in St. Louis on May 28, 1923. It is a direct competitor to the United Railways and operates over many miles of streets having car tracks. It carried in 1925 about 23,800,000 revenue passengers, less than 10 per cent of the total riders. The fare is 10 cents with limited transfer privileges between bus lines, but no transfers to street cars. It began operation with seventeen buses. In 1924 this number was increased to 120 double-deck buses and 53 single-deck buses. The buses now operate twelve lines over 70 miles of route.

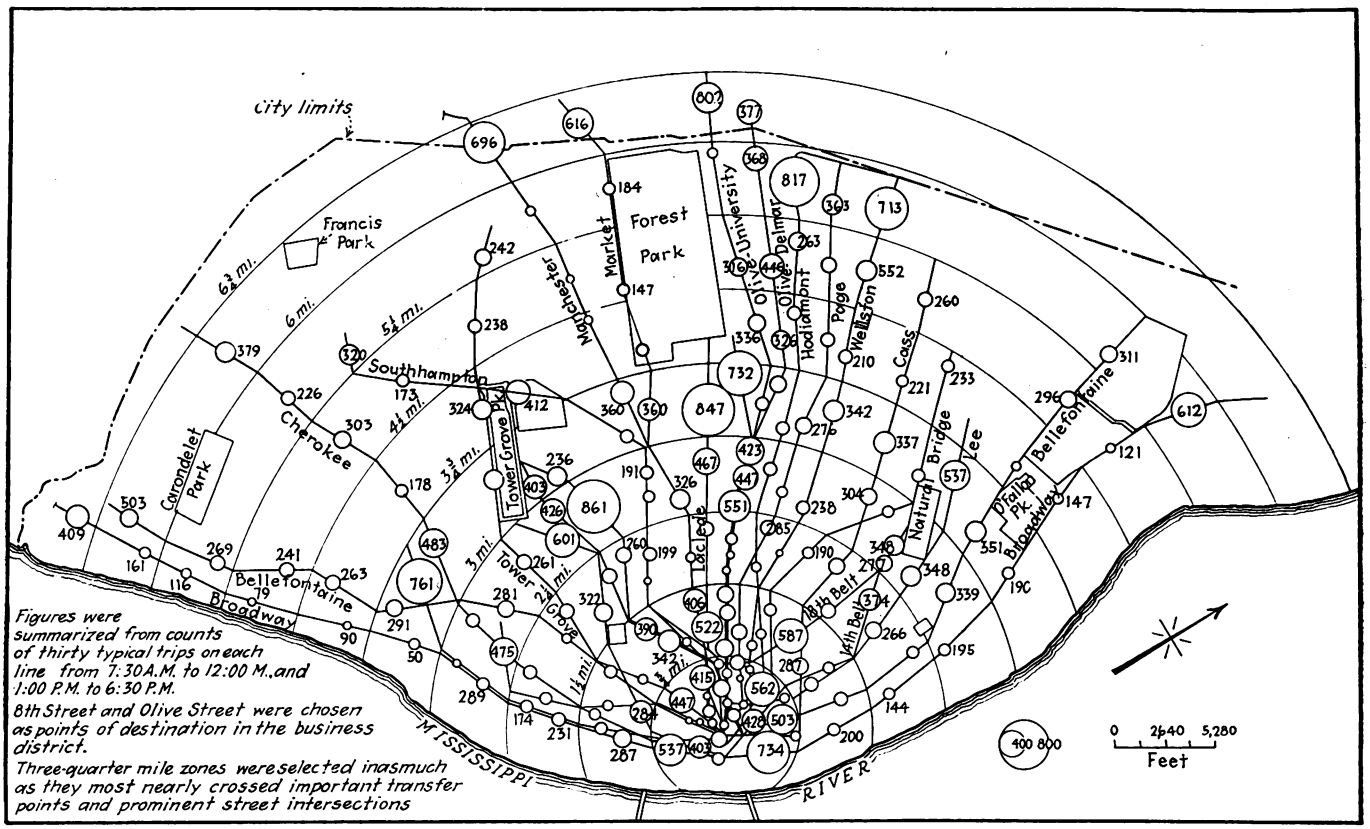
INTERURBAN ELECTRIC RAILWAYS

The territory surrounding St. Louis has been so well supplied by steam railroads that there has been comparatively little interurban electric railway development. Five electric lines extend west from the city limits, that cross the river on bridges into downtown St. Louis. Their track gage is 4 ft. 8½ in., while the United Railways' tracks are 4 ft. 10 in. gage. This precludes the possibility of through operation, which would be undesirable otherwise because of different riding characteristics. These roads are:

1. East St. Louis, Columbia & Waterloo Railway.—This company operates a line south from East St. Louis to an undeveloped railroad and industrial district of Columbia and Waterloo Hill, 25 miles from St. Louis.

2. East St. Louis & Suburban Railway.—This company operates the city street railway system in East St. Louis and interurban lines to Belleville and Edwardsville.

3. Alton, Granite & St. Louis Traction Company.—This company is allied with the East St. Louis & Suburban Railway and operates lines to Edwardsville and Alton.



Relative Proportions of the Volumes of Travel Originating in Different Parts of the City Are Shown by the Number and Size of the Various Circles. Traffic as of January, 1920

more in the nature of suburban than interurban lines, as follows:

Ferguson, 11 miles from downtown St. Louis, with a 5-mile branch to Florissant.

St. Charles, 20 miles from downtown St. Louis.

Creve Cœur, 17 miles from downtown St. Louis.

Kirkwood, 15 miles from downtown St. Louis.

Meramec Highlands, 18 miles from downtown St. Louis.

The three first lines operate principally on private rights-of-way beyond the city limits and are capable of being developed as rapid transit lines by separating the crossings. The fourth and fifth lines practically parallel and serve the same territory as the Missouri Pacific Railroad.

INTERURBAN ROADS ON EAST SIDE OF THE RIVER

On the east side of the river, in Illinois, there are four companies operating interurban electric railways

The three companies in East St. Louis operate their cars across the Mississippi River on the upper or highway deck of the Eads Bridge, in and out of the terminal of the St. Louis end of the bridge. When the steam railroad trains are transferred to the St. Louis Municipal Bridge, as proposed, these electric cars may be placed on the railroad tracks of the Eads bridge and operated at high speed on the lower deck free from all other traffic.

4. Illinois Traction System.—This company operates an interurban line from its terminal in St. Louis through 2½ miles of St. Louis streets to the McKinley Bridge, then across the Mississippi River through the streets of Venice, Madison and Granite City and over private right-of-way to Springfield and Peoria, 172 miles from St. Louis. This is the only long interurban line out of St. Louis. Its allied company, the St. Louis Electric

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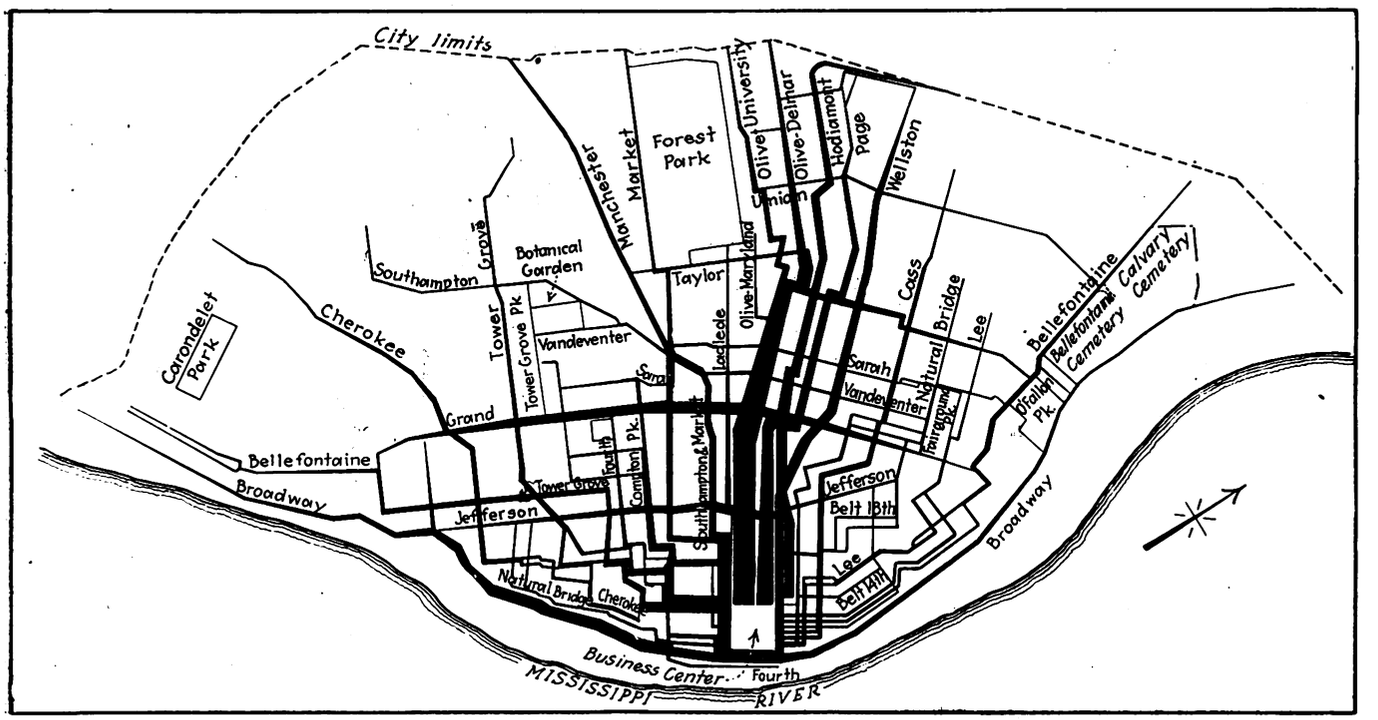
Terminal Railway, handles local business between the St. Louis terminal and Granite City. High-speed service is given by the traction system on its private right-of-way, but it is seriously slowed down in the city streets, especially St. Louis. It is making arrangements to detour its cars over private right-of-way around Venice, Madison and Granite City.

Suburban Railroad Service

Three steam railroads furnish suburban service from St. Louis, namely, Wabash Railroad, Missouri Pacific Railroad and St. Louis-San Francisco Railroad. The first does not use any depot, but loads and unloads in the open on the river front adjoining the business district. The two last mentioned use the Union station, about a mile from the business district.

Suburban Motor Buses

Motor buses are being operated on practically every road radiating from St. Louis. All are being operated into the downtown district and thus adding to the congestion. These buses should be compelled to provide bus terminals to avoid delaying traffic while loading and unloading in the streets. In future, when rapid transit routes extend out beyond the congested district, these bus lines should terminate at the outer end of the rapid transit lines and assemble and distribute passengers with those points as termini.



Daily Flow of Traffic on Lines of the United Railways. The Lack of Direct Transit Facilities to the Northern and Southern Sections of the City Is Quite Apparent

Trend of Street Ralway Travel

Two accompanying charts show the number of passengers carried on the city lines and on the interurban lines, so far as the figures on the interurbans relate to total number of passengers handled in and out of St. Louis. It will be noted that the trans-river electric railway traffic amounts to only about 5 per cent of the revenue passengers in St. Louis. This must be kept in mind when facilities are provided for trans-river traffic in St. Louis.

It will be noted that 1920 was the banner year in the history of transportation in St. Louis. Traffic from 1921 to 1923 continued approximately at the 1920 rate, but did not show the increase that should have been expected because there was a concurrent increase in the number and use of automobiles that apparently absorbed the increased travel due to the growth of the city. In 1924 motor bus competition began on a comprehensive scale. The decrease in street car riding from 1923 to 1924 was about the same as the amount of bus traffic. The increase in the number of bus passengers in 1925 was accompanied by a further decrease in the street car riding. In 1926 the traffic carried by the United Railways is on the increase.

A comparison of the riding on city lines, as just discussed, and on the interurban lines shows somewhat different characteristics. The decrease in riding in 1915 and 1917 as shown on the city lines was felt less in the country because the patrons of these lines are for the most part salaried business and professional people whose work is not directly affected by business depression. The "break" or decrease in riding occurred in 1923, a year earlier than on the city lines. This is due to the greater use of the private automobile by the country dweller to go to and from his work.

Local Transportation Characteristics

The next series of charts, four in number, relates to the character of riding on the lines of the United Railways of St. Louis. The first of these shows the origin of passengers on the lines entering the business district, the relative proportions of the volume of travel originating in different parts of the city being shown by the size of the various circles. The second diagram shows the travel over the different lines by the width of the lines. As will be seen, the greatest volume of travel is westward from the business district. The Olive Street line, the most heavily traveled line in the city, is represented by the widest line in the approximate center of

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the map. The Page, Hodiamont and Wellston lines are also easily distinguishable. The lack of direct streets which would afford direct transfer facilities to the northern and southern sections of the city is also quite apparent.

The two charts on page 1039 show the monthly and weekly distribution of travel. The monthly variation chart is compiled from 1925 figures and is based on the average passengers per day during the month, so that the variations caused by the different lengths of months disappear. It will be noted that there is not very much variation in this curve, especially during the first five months. July and August show some decrease as compared with the rest of the year. The weekly chart is based on the average for the days in question during May, 1925. This curve is also fairly flat, showing that the number of passengers is almost the same, irrespective of the day of the week, except on Sundays.

Hourly counts by lines show that on business days one-third of the passengers daily enter the central business district between 6 a.m. and 10 p.m. and that one-third of the people who do so leave the same district on the street car within one hour.

The afternoon rush period is characterized by a short, sharp peak, lasting about 30 minutes, from 5 to 5:30 p.m. During that time the street cars slow down and slow down other traffic by their delay in loading passengers. If means could be devised to spread this traffic evenly over one hour or an hour and a half conditions would be materially improved; all traffic would move faster and better street car service could be given.

The fact that one-third of the total street railway passengers enter the business district shows that it is at this point that the first step in rapid transit construction should take place.

Altogether 553 street cars enter the downtown business district within the maximum 30-minute traffic period, and nearly twice that number of cars enter during the next hour.

Railway Takes Tolls from Automobilists

FOR most interurban lines private automobilists represent a loss of revenue. Even the Illinois Traction System has suffered to some extent from the great increase in automobile traffic which has developed in recent years. But the I.T.S. has discovered one way of getting revenue back from the automobilists. This is by charging tolls for them to cross the McKinley Bridge over the Mississippi River at St. Louis, as explained in the company's 1926 Coffin prize brief.

When the McKinley Bridge, which is the largest electric railway bridge in the world and one of the principal gateways to the St. Louis territory from Illinois, was opened to traffic in 1910 it was not possible to foresee the great increase which was to occur in automobile transportation. Nevertheless, although the bridge was constructed primarily for electric railway service, provision was made for vehicular traffic through wings on both sides of the bridge. These roadways proved popular with automobilists, even though slow-moving freight vehicles and the higher speed passenger automobiles had to use the same roadway.

Somewhat more than a year ago the company decided to provide two roadways, one for the more slowly moving auto trucks and the other for passenger cars. Following out this policy, the company assigned the side roadways to the former traffic and laid a paved highway for passenger automobiles in the center of the bridge. The publicity department of the company then put in effect an extensive advertising campaign, having for its purpose the popularizing of this toll bridge among the drivers of all kinds of vehicles crossing the Mississippi River at St. Louis. This advertising featured the separation of slow and fast traffic and also the fact that the bridge offered a short, desirable route between Illinois and Missouri points.

Altogether 416 painted highway signs were placed within a radius of 75 miles along the paved roadways leading to the bridge. These signs not only carried an advertising message but told the number of miles and direction to St. Louis. These signs are supplemented by a series of red arrow "markers," placed along the main highways and directing the traveler to the McKinley Bridge. Other methods of advertising the route were also followed.

Illinois Traction System Gets a Revenue from Automobilists by Laying a Paved Highway on the McKinley Bridge and Providing Separate Routes for Slow-Moving and Fast-Moving Motor Traffic

While the cumulative effects of these signs and advertising efforts are yet to be realized, the first month following their establishment showed an increase in the earnings of the bridge of 15.6 per cent over the same period the previous year. This increase was apparently wholly attributable to the campaign, since reports for previous months had shown no similar increases.

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In Keighley, England, Local Transportation Is Now Furnished by a System of Double-Deck Trackless Trolleys and Single-Deck Gasoline Buses

Paving Burden Shifted by Changing the Type of Transportation

Substitution of Trackless Trolley Operation in Place of Tramway Service in British Industrial Town Reduced Way Maintenance Cost, but Other Expenses Were Increased and First Year Showed Large Deficit

KEIGHLEY, ENGLAND, is a town of approximately 42,000 inhabitants surrounded by a number of smaller municipalities. Two years ago all tramway service was given up and trackless trolley operation inaugurated in its place. This was done partly because the paving obligations had become very burdensome, due to the heavy vehicular traffic, and partly because much of the track was in need of immediate rebuilding. Although partial substitution of trackless trolleys or buses in place of tramways had been made in a number of other places, Keighley was the first city in England to undertake a complete change. Analysis of operating statistics for the first year of the new service shows that maintenance of way costs have been practically eliminated. Other expenses have been somewhat reduced when reckoned on a vehicle-mile basis, but the total annual expenditures were greater than before.

British law requires that tramways shall maintain the paving between the tracks and for 18 in. on each side. On the other hand, services which run without rails have to pay only the national automobile tax.

The Keighley tramway system comprised 6.62 miles of single track, of which about 2.50 miles was in dangerous condition before the substitution was made. To rebuild and pave this trackage would have cost about $145,000, it was estimated. Other sections also were in poor shape and additional expenditures amounting to $10,000 a year for renewals would have been required to restore the property to good condition. Moreover, the cost of track and paving maintenance was about $7,500 per year.

Replacement of tramway rolling stock was an impending need. The cost of twenty new trackless trolleys, and such changes as might be required in the overhead system, was estimated at $187,500. While this sum was somewhat in excess of the immediate expenditures required to continue tramway operation, it was felt that the change would be more economical in the long run. It was decided, therefore, to provide an entirely new system of transportation for the city.

Because the tramway had been one of the largest customers of the municipal electric power station, and because of the existence of a sharp traffic peak at noon as well as between 5 and 6 o'clock in the afternoon, it was thought that trackless trolleys, with their greater carrying capacity, would meet the needs of the situation better than gasoline buses. Double-deck, top-covered vehicles seating 56 passengers each were purchased.

Comparison of results under the old and the new systems shows that fewer passengers are being carried now, although the vehicle mileage has increased. A seven-minute service is at present provided in place of the ten-minute service formerly operated by the tramway. Car-miles have increased from 246,061 per year to 355,916, or more than 40 per cent. Total passengers have decreased from 4,087,718 in 1924, the last

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full year of operation, to 3,913,147. Passengers per vehicle-mile have fallen from 16.6 to 10.9, and revenue per vehicle-mile has decreased from 40.8 cents to 27.5 cents.

Establishment of competitive bus service is believed to have been responsible for the decrease in traffic. Although the buses do not actually pick up passengers on the trackless trolley routes, they carry many people who might otherwise use the trolleys.

Partly offsetting this loss there has been a considerable reduction in operating expenses per vehicle-mile. Present costs are only about 24.7 cents per car-mile as compared with 30.9 cents for the tramway in 1924. In making these comparisons the year ended March 31, 1924, has been taken for the rail system rather than the following twelve months because maintenance was neglected during the latter period in view of the prospect that the property would be scrapped. Figures for the trackless trolley are for the year ended March 31, 1926.

With the elimination of track and paving maintenance, a material saving has been made in the way and structures account. As was to be expected, equipment maintenance costs were less per vehicle-mile for the new trackless trolleys than they had been for the aged tramcars. Energy consumption decreased slightly per vehicle-mile, but line maintenance costs jumped up, so that the power account remained about the same. Due to higher speed of operation the vehicle-mile cost of conducting transportation was slightly reduced. General and miscellaneous expenses remained about the same. Detailed figures are shown in the accompanying table. British classification of accounts differs somewhat from that usually followed in the United States, but the figures from Keighley are sufficiently detailed to permit allocation of expenses in a manner approximating American practice.

The Double-Deck, Top-Covered Trackless Trolley Operated by the Keighley Corporation Tramway Has Seats for 56 Passengers

COMPARISON OF OPERATIONS

	Tramways	Trackless Trolleys
Passengers carried	4,087,718	3,913,147
Vehicle-miles operated	246,061	355,916
Average fare per passenger, cents	2.40	2.46
Revenue per vehicle-mile, cents	40.84	27.52
Expenses per vehicle-mile, cents	30.87	24.75
Operating ratio, per cent	75.57	90.12
Average passenger per car-mile	16.6	10.9
Average speed, mph	6.62	6.96

TOTAL EXPENSES INCREASED

While the operating expenses per car-mile showed a material reduction for the new system, the total annual expenditures were larger in all accounts except way and structures. This was due to the greatly increased car mileage operated. Total operating expenses were more than $90,000 for the trackless system as compared with approximately $80,000 for the tramway in 1924. To make matters worse the new system had to meet larger payments for interest and depreciation. Coupled with a reduction in gross income, this resulted in the loss of $11,000 as compared with the net revenue of $13,000 for rail operation in 1924.

The large expenditures made in 1926 by the trackless trolleys for interest and depreciation were mostly the

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COMPARISON OF OPERATING EXPENSES

(Depreciation not included)

	Cents per Vehicle-Mile	
	Tramways	Trackless Trolleys
Way and structures:		
Permanent way	3.106	.....
Cleaning, salting and sanding track	0.324	0.052
Buildings	0.028	0.336
Total	3.458	0.388
Maintenance of equipment:		
Repairs to vehicles	5.332	3.038
Shop tools and plant maintenance	0.040	0.128
Total	5.372	3.166
Power:		
Energy consumption	4.048	3.886
Line maintenance	0.552	0.826
Total	4.600	4.712
Conducting transportation:		
Superintendence	0.472	0.348
Trainmen's wages	10.826	9.410
Cleaning and oiling cars	1.082	1.122
Station lighting	0.292	0.276
Ticket check	1.412	0.974
Uniforms and badges	0.458	0.268
Licenses, etc.	0.078	1.462
Total	14.620	13.860
General and miscellaneous	2.818	2.828
Total operating expenses	30.868	24.755

result of factors not directly connected with their own operation. Previous to the general change-over, a short trackless trolley line at one time operated in conjunction with the tramways had been replaced by a bus line. Fixed charges for this old line are now paid by the new trackless trolleys, while the revenue of the route is credited to the bus operation, thus placing on the new system a burden which does not properly belong there. Fixed charges for the abandoned tramway system also are carried by the trackless trolleys.

Buses operated by the Keighley Corporation have been comparatively profitable and the revenue derived

FINANCIAL RETURNS FROM OPERATIONS

	Tramways	Trackless Trolleys
Gross earnings	$104,600	$102,000
Operating expenses	79,100	91,700
Gross income	$25,500	$10,300
Interest and depreciation	12,000	21,600
Net income	$13,500	.....
Net deficit	.....	$11,300

from this source has to some extent offset the loss of the trackless trolley undertaking. The remaining deficit is made up from general municipal funds raised by taxation.

Despite the unfavorable financial showing of the first year's operation of the new system, the people of Keighley are well satisfied. It is asserted that the tramway probably would have fared equally badly had its operation been continued, as renewal of track and paving would have necessitated large expenditures. The ability of the trolley bus to approach the curb when taking on and discharging passengers is considered an important factor in its favor. The substantial increase in the amount of service rendered has pleased the public greatly.

Benefits of Eight-Car Trains Seen in Loop

A NEW high record was made by the Chicago Rapid Transit Company, Chicago, Ill., on Oct. 7, 1926, when 989 cars entered the Loop in the hour from 7:30 to 8:30 a.m. This is the greatest number of cars ever put into the Loop in a single hour in the history of the elevated lines.

The increase in seating capacity is due to the eight-car train operation. The number of trains entering the Loop was 180 in the heavy rush hour. Before the installation of eight-car trains the usual number of trains entering the Loop in an hour was about 185, but the maximum number of cars never exceeded 910. The longer trains have made it possible to reduce slightly the number of units and increase the carrying capacity by approximately 80 cars an hour. That means an additional 4,000 seats in an hour. The increased capacity applies in about the same proportion to the evening rush hours.

80 Per Cent of Detroit Shoppers Use Public Transportation

Survey Made by Retail Merchants' Association Shows That 56.7 Per Cent Use Street Cars and 24.2 Per Cent Travel on Buses

DETROIT, the greatest center of automobile manufacturing in the world, relies on street cars to carry 56.7 per cent of its local traffic. Buses transport an additional 24.2 per cent, making a total of 80.9 per cent carried in public transportation vehicles. Private automobiles carry 19.1 per cent. These figures were computed as the result of a three-day survey made Nov. 10-12 by the Retail Merchants' Association. As one part of the city-wide traffic survey mentioned in ELECTRIC RAILWAY JOHRNAL, issue of Dec. 4, page 1020, a check was made at 27 of the largest downtown stores to determine the means of transportation used by customers. At only one store did the users of private automobiles outnumber the users of public transportation vehicles, the automobilists in that case constituting 53 per cent of the total customers.

Nearly 200,000 customers were interviewed. Of this number 110,555 used the street car, 48,251 used the bus, and 36,272 used private automobiles. The percentages for the various stores are given in the following table:

SUMMARY OF TRANSPORTATION MEANS USED BY DETROIT SHOPPERS, IN PER CENT OF TOTAL

Store	Public Vehicles: Bus or Jitney	Public Vehicles: Street Car	Private Automobiles Parked Downtown: On Street	Private Automobiles Parked Downtown: Garage or Lot
Crowley Milner Co., department store	15	68	10	6
J. L. Hudson Co., department store	28	54	9	9
Ernst Kern Co., department store	30	56	8	6
Newcomb Endicott Co., department store	28	49	13	10
Frank Seder Co., men's clothier	21	56	7	6
Bedell Co., cloaks and suits	34	43	11	12
Himelock Bros., cloaks and suits	37	27	22	14
Peoples' Outfitting, furniture, etc.	21	63	9	7
D. J. Healy shops, clothier	39	29	12	20
R. F. Fyfe & Co., shoe store	27	39	17	17
Heyn's Bazaar, women's apparel	23	55	13	9
Klines, Inc., cloaks and suits	33	48	10	9
The Rayle Co., hardware store	19	46	20	15
Grinnell Bros., music store	27	45	15	13
Russeks, cloaks and suits	38	26	18	18
Summerfield & Hecht, furniture	16	55	20	9
L. B. King & Co., retail clothing	29	39	16	16
B. Siegel Co., cloaks and suits	30	42	13	15
Tuttle & Clark, men's clothier	31	29	18	22
S. L. Bird & Sons, retail clothing	23	43	16	18
F. G. Clayton Co., retail clothing	17	53	16	14
Chas. W. Warren Co., department store	20	25	29	24
Good Housekeeping Shop	28	33	27	12
E. J. Hickey, retail clothing	55	17	14	14
Browning-King Co., retail clothing	26	40	14	19
King Blair Co., retail clothing	30	33	22	15
Wright-Kay Co., jeweler	29	32	22	17
Total customers	48,251	110,555	20,393	15,879
Per cent	24.2	56.7	10.4	8.7

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Free Parking Spaces Increase Street Car Riding

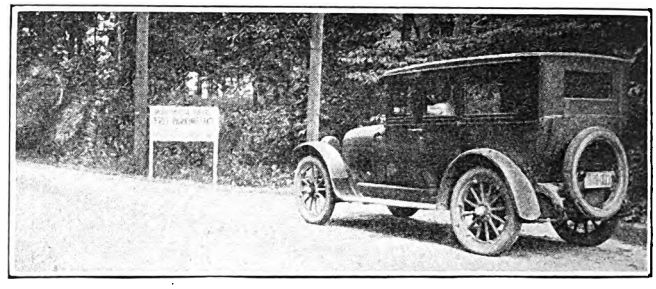
Many Motorists Avoided Congested Traffic During Fair Week by Parking Their Cars and Using Electric Cars of the Grand Rapids Railway to Reach the Fair Grounds

ONE of the big events in Grand Rapids is the West Michigan Fair, which is held there every fall. The fair grounds are located north of the city and one of the principal routes for motorists in reaching them is by way of Monroe Avenue, which runs through the city. The additional automobiles used by people going to and from the fair made this avenue very congested, so that movement was quite slow. The neck of the bottle, so to speak, was at a bridge over Grand River, a little more than ½ mile from the fair grounds. Motorists who traveled out Monroe Avenue in congested traffic and then had to wait at the bridge were naturally glad to avail themselves of parking space at that point and ride the railway company's cars the remaining distance to the fair grounds.

With the idea of increasing traffic on its electric cars, the Grand Rapids Railway established free parking space at three different locations. One of these was at North Park, at a point just before the bridge over the river was reached. In this space, about 2½ acres in size, the number of cars parked averaged from 100 to 150 per day during the week of the fair. Another parking space was established at the south side of the city, at what is known as the Detroit Street loop. This is a junction point for motorists coming in from the Kalamazoo district and other points south. By using this parking space motorists were relieved of the necessity of driving their cars through the congested city streets. The parking space on the south side consisted of about 3 acres and the number of cars parked there averaged from 50 to 75 per day during the fair.

A third parking space was established at Ramona Park. This is on the east side of the city and was convenient to the main roads from Lansing, Ionia, Flint and other towns east of Grand Rapids. The free parking space at Ramona Park consisted of a large tract and the number of cars parked there averaged from 25 to 40 per day during the fair.

In order to attract the attention of motorists to the free parking spaces, conspicuous signs were placed at the approach and entrance to the parking spaces. On the roads leading in signs were placed 500 ft. ahead of the free parking space. These read: "West Mich. Fair, Free Parking Space 500 Ft. Ahead, Watch for Sign." At the entrance to the parking space another sign read: "West Mich. Fair. Free Parking Space." A hand pointed the way. Inside the parking area a large sign was displayed giving advice regarding the avoiding of traffic dangers and accidents and pointing out that the electric cars provided a safe and comfortable ride to the fair grounds. This sign also gave instructions for obtaining car tickets without extra cost. These tickets were furnished by attendants at the parking places. These attendants directed motorists to the points where their cars could be parked and also supplied them with tickets, time-tables and other information about the railway. Through the use of this method the riding on the railway's electric cars was increased considerably.

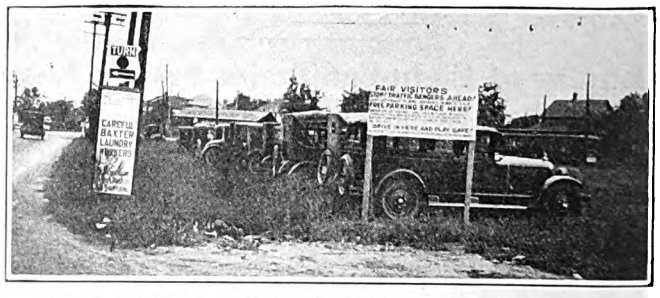


As the Motorist Reached the Edge of the City his Attention Was Attracted by a Large Sign

The Sign Attracted His Attention by Referring to the West Michigan Fair and Stating that There Was Free Parking Space 500 Ft. Ahead

At the Entrance to the Parking Place a Conspicuous Sign Was Displayed Stating that Free Parking Space Was at Hand

Inside the Space Limits a Large Sign Directed Attention to the Fact that Car Tickets Could Be Obtained from Attendants



The Total Number of Cars Parked at the Various Places Averaged from 175 to 265 Per Day

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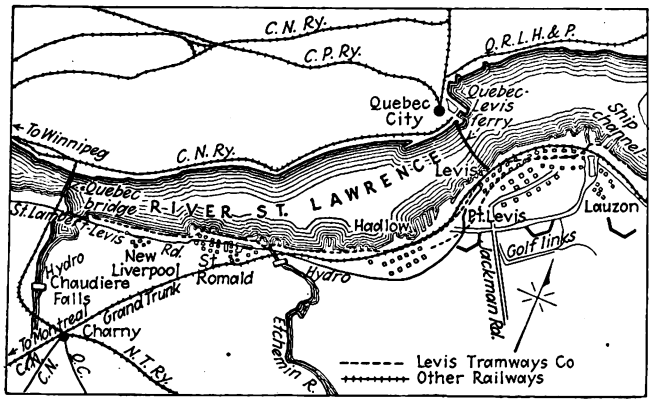
"La Passe Hebdomadaire"

Success with One-Zone Weekly Pass on Levis Tramways Leads to Two-Zone Pass with Harder-to-Buy Ticket Rate—French-Canadian Population Has Been Induced to Ride by Many Appeals to the Ideals of Thrift

By Walter Jackson
Fare and Bus Consultant

FIRST among street railways in the Province of Quebec and the second in Canada to adopt the weekly pass as part of its fare plan is the Levis Tramways. Its one-zone pass was installed May 17, 1925, and a two-zone pass was added Nov. 22, 1925. The circumstances surrounding these applications are a little out of the ordinary and are worth discussion in connection with the results attained.



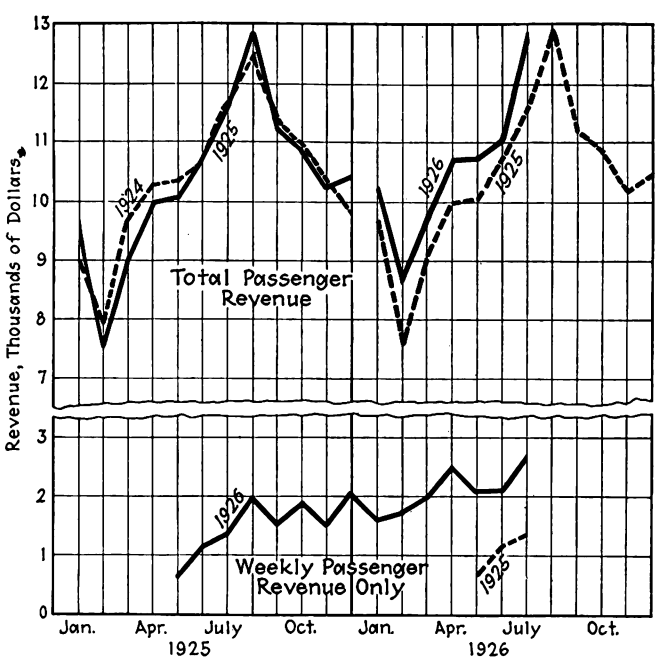
Map of Levis and Environs, Showing Routes of Levis Tramways and Points of Interest in and near Levis and Quebec

Levis County comprises the city of Levis, with a population of 11,000, and the town of Lauzon, with a population of 6,000. The latter comprises the eastern section, where are located the shipyards and drydocks. The railway, however, also serves the town of St. Romuald and two other villages, so the combined population is approximately 22,000. About 90 per cent of the people in the city of Levis live on the heights or upper level, while Lauzon and the town of St. Romuald lie along the narrow strip of lowland and foothills of the St. Lawrence River.

The railway system is operated in three divisions, known as the Up Town, which is in the city of Levis; Lauzon, which serves the town of Lauzon, and the Quebec Bridge line, which serves the town of St. Romuald and runs as far as the Quebec Bridge. The whole system is of suburban type, centering on the ferry to Quebec. The shipyards and drydocks at the eastern end of the line, with several lumber mills on the western end, are the only extensive sources of employment on the south shore. Most of the workers repair daily to the large city via car and ferry.

Within the one-zone ride in the city of Levis are a group of small stores and one theater. There is a second group at the eastern end in the town of Lauzon and a third group within the village of St. Romuald. Levis and Lauzon are within the one-zone ride, while St. Romuald comes into a second zone. The heights residents of the city of Levis are confronted with the disadvantage of climbing to get to their homes. This is an advantage to the railway, but, on the other hand, the railway is confronted with the disadvantage that these people can walk down in less time than the cars can carry them to the ferry. The traffic on the Up Town line in pre-pass days was therefore 100 per cent uphill and only 40 per cent downhill.

The churches and schools are located at such frequent intervals that persons can readily walk. Furthermore, the population is almost exclusively French and not given to riding abroad at night, as is proved by the low average number of rides per pass, viz., 2.5 daily in the one-zone area of Levis, compared with the more usual average of 3.5 to four net rides.



Graph Showing Improvement in Earnings of Levis Tramways, Particularly Since Addition of Second ($1.75) Pass and Change from Four Tickets for 30 Cents to Six Tickets for 45 Cents

In any case, the center of diversified entertainment is Quebec itself. This means that even a passholder would have to pay additional fares and give up extra time for the ferry trip and also pay two more fares within Quebec if he wished to avoid the stiff climb so nearly won by Benedict Arnold.

Despite these ride-selling handicaps, H. E. Weyman, general manager, decided to add the weekly pass to the then existing fares in Levis for three purposes—increase of good will, easier

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fare collection on one-man cars and better revenue through encouraging the public to ride downhill too.

The third reason explains why the pass price was fixed at $1 against a cash fare of 10 cents and a ticket fare of 7½ cents (four for 30 cents). About 90 per cent of the riders were using tickets, with little or no short-haul riding. In fact, the average length of ride per passenger was approximately 2½ miles.

Usually the weekly pass covers the period Monday morning-Sunday night. The Levis pass is a proper exception in covering the period Sunday morning-Saturday night. One reason is that Saturday is the universal payday, and it is the custom of the people to spend what money they have on Saturdays and Sundays. A second and more local reason is that the French-Canadians are faithful churchgoers, in addition to which the after-church hours are very popular for visiting friends and attending to other social duties. Hence practically all pass-buying prospects are on the cars Sunday.

The immediate effect of the pass was to stop a decline in revenue, February-April, 1925, having run 4.7 per cent under the same period of 1924. Despite an unusual number of rainy Sundays in the summer of 1925 and the further disaster of a strike at the shipyards in August, the revenue for May-December, 1925, ran 0.6 per cent ahead of the like period of 1924. The year 1926, including January to July, shows a total revenue of $73,956, against $68,656, a gain of 7.7 per cent over the like period of 1925, when the pass had hardly been well introduced.

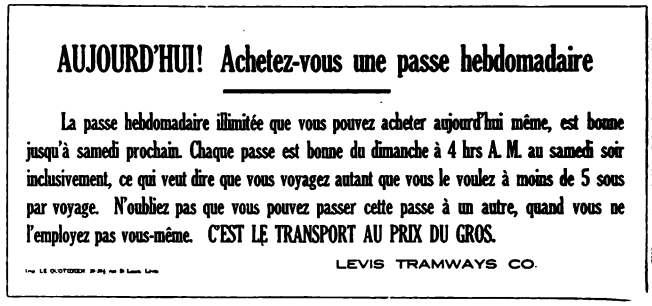
Second Pass Knocks Out Cheap Round-Trip Rate

Satisfied that the weekly pass was proving a good thing for both the public and the railway, Mr. Weyman considered its extension to the second zone of the St. Romuald route. He agreed to the liberal rate of $1.75 on condition that the manner of selling tickets be altered from four for 30 cents to six for 45 cents. This seemingly trifling change really was important, because many casuals who took a round trip could, and did, take advantage of the four for 30 cents rate instead of paying 40 cents cash. Thus it was easy for a person taking a round trip on the two-zone route to get a rate intended only for steady customers.

The $1.75 pass was added Nov. 22, 1925, and caused an immediate system increase of 35 per cent in cash fares and of 2 per cent in pass and ticket revenue combined. Although the $1.75 pass itself costs only 11⅔ rides at ticket rates, the actual increase in system revenue from transportation was 7.7 per cent. The accompanying graph shows how the pass stopped the decline in revenue and how the ticket change and $1.75 pass accelerated the increase.

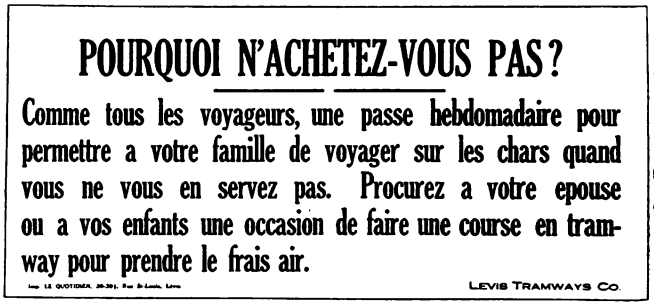
In this way a substantial decrease in fare to the regular rider, no change at all to the semi-regular rider and an optional increase to the casual rider produced more revenue and more patronage without any changes in service.

One good proof of the popularity of the pass under adverse conditions is that pass revenue now averages about 20 per cent of total earnings. Mr. Weyman's appreciation of publicity has had much to do with this result. In addition to his advertising in the press and to the many friendly editorial notices, he has made extensive use of placards both inside and outside the car.



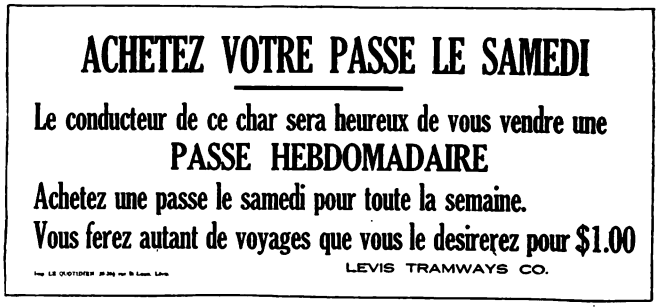
BUY A WEEKLY PASS TO-DAY!

The unlimited-ride weekly pass that you can buy today is good until next Saturday. Each pass is good from 4 a.m. Sunday to Saturday night inclusive. This means that you can ride as much as you please for less than 5 cents per ride. Don't forget that you may pass the pass to some one else when you do not require it yourself. This is transportation at wholesale prices.



WHY NOT BUY A PASS

Like other passengers to permit members of your family to ride the cars when you are not doing so? Give your wife or one of the children a chance to get some fresh air by way of a car ride.



BUY YOUR PASS SATURDAY

The conductor of this car will be pleased to sell you a Weekly Pass. Buy a pass on Saturday for use all of the week. For $1 you can make as many trips as you please.

Several of these placards are reproduced, together with translations. Another (not reproduced) read as follows:

Achetez Une Passe

Et quand vous ne vous en servez pas, pretez-la a quelqu'un pour aller a l'eglise, au magasin ou faire visite a des parents ou amis. Faites des Passes Hebdomadaires ce que vous faites d'un bain dan vos familles. Servez-vous en tous, mais un a la fois.

Translation

Buy a Pass

And when you are not using it, lend it to some one else to go to church, to the stores or to make a visit to relatives or friends. Use a Weekly Pass as you would a Family Bath—All use it, but one at a time.

Inauguration of Pleasure Tours for Tourists and Local Patrons

In connection with the map, it may be mentioned that during the summer of 1926 the management inaugurated combination tours for both tourists and local patrons. One tour is a combination of taxi, ferry and trolley to near the end of the Quebec Bridge; a second

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combination covers an automobile or coach trip to Charny, the remarkably interesting Chaudière Falls and Basin and Quebec Bridge, and return by trolley with a fine trans-river view of Quebec; while the third covers a bus ride to St. Michel de Bellechase, with luncheon on a farm. The respective charges are $1, $2 and $2.50. In this way the south shore of the St. Lawrence has been made as accessible to the sightseer as the long-familiar north shore. Tickets for these trips are sold in Quebec at the Château Frontenac and at various railway and tourist agencies.

On the occasion of the Aug. 7, 1926, Levis historical number of the Quebec *L'Evenement*, the Levis Tramways used a full page of display advertising to feature its share in the growth of the community and to announce the foregoing new services which, in themselves, will do much to make Levis and environs better known.

In this advertisement the company mentioned that it operated 12 miles of track, had equipment valued at $900,000, used modern cars averaging a cost of $10,000 each, paid out $60,000 to $70,000 a year in salaries and wages and carried 2,000,000 passengers a year. The transferability of the weekly pass also received special note. The advertisement concluded thus:

"The service of the Levis Tramways is comparable to that of the largest cities in America, and the public has reason to be satisfied therewith."

Baltimore Studies Energy Consumption of Cars

Oscillation Tests Help to Determine Energy Taken in Car Operation and Result in Improved Methods of Lubrication

FOR the last year and a half the United Railways & Electric Company of Baltimore has been making a systematic investigation of the factors entering into the energy consumption of car operation and available means for its reduction. An account of means for utilizing the heat wasted in motor rheostats for car heating in cold weather was published on page 892 of the issue for Nov. 13. In addition, a series of tests has been conducted to determine the extent and character of other preventable losses, and the company hopes, as a result, to reduce its power bill further by from $100,000 to $175,000 a year. Particulars are given in the company's brief in the Coffin award contest, and from that statement the following facts were taken:

First came a series of oscillation tests. The primary purpose of these tests was to determine the frictional losses of cars under existing service conditions, to ascertain the most economical kind of lubricant for the Baltimore system, and to determine the savings to be achieved through relubrication of the cars. Next came a series of energy consumption tests, which was simply to check up the results of the oscillation tests.

For the oscillation tests a valley between two hillsides was selected. The grades on either side of the valley were approximately 6 per cent. The car was placed on one of the inclines 700 ft. from the lowest point of the valley and at an elevation 36.27 ft. higher than this point. At this elevation the car had approximately 1,632,000 ft.-lb. or 0.615 kw.-hr. of potential energy. Then, when set free, it coasted down the incline, ascended the opposite grade and then oscillated between the two inclines until it finally stopped at or near the lowest point in the valley, having dissipated all its potential energy in frictional losses.

During the tests the number of oscillations made by the car, the distance traveled on each oscillation and the total time elapsed before it came to rest were recorded. Dividing the car's total potential energy at the start by the total distance in miles traveled gave the investigators the frictional losses of the car per mile. Cars which were efficiently lubricated naturally made more oscillations, covered longer distances and consequently showed lower frictional losses per mile than others in which the lubrication was defective. It was thus possible to determine the relative merits of different grades of lubricant.

Not only was this a test of lubricants but a test of the effect of temperature, brakeshoe clearance and general condition of maintenance, with all the disturbing factors such as varying voltage, loads and traffic conditions eliminated. The cars tested were selected at random from among cars at one of the big terminals, and the investigators found quite a difference in the adjustment of the brakeshoes and that some of them had little clearance. The tests, extending over a long period, indicated that it was possible to reduce friction in a well maintained car by as much as 50 per cent.

Thereupon an analysis of the movements of more than 1,300 cars was undertaken for the purpose of discovering a new method for determining proper periods for oiling and inspection of individual cars. The investigators endeavored to learn to what extent the devices on cars for recording the number of minutes during which power is used might also be used to determine a proper frequency for inspection and oiling. It was necessary to fix constants for each type of operation, and the percentage of each type of operation, such as dense traffic, suburban and rural, were checked so that the limits of accuracy would be definitely known. As a result, the company is now oiling one line by the minutes of power consumed, based on an indicated unit of 2.5 minutes of power use to the mile. It finds this method much more satisfactory than the former one, in which oiling and inspection was done on a time basis, and the new plan will be extended over the entire system. It will also use these data to determine the mileage performance of individual cars. Hitherto, the mileage records of the cars have been kept by a special bureau. It is believed the present plan will provide a more accurate record and at a large reduction in clerical and tabulating machine cost.

To maintain proper control over this entire set of experiments the company is constructing curves which show the energy consumption and the various factors affecting it from month to month. These curves show the average monthly kilowatt-hour consumption per car-mile per month, the average temperature per month and the average weight per car-mile per month. The consumption has been found to vary almost exactly inversely with the temperature. To eliminate the necessity of comparing one curve with another, the investigators have constructed a curve running back over the last five years on which the temperature curve has been inverted and plotted downward from the top of the sheet. This inverted temperature curve has thus become the company's standard, and the object is to reduce the kilowatt-hour curve as far below the temperature curve as possible. So far as the company knows, its use of an inverted temperature curve for a standard is original in the electric railway industry.

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Pooling of London Passenger Transport Facilities Proposed

London and Home Counties Advisory Committee, in Two Reports, Suggests Working Agreement Between All Local Passenger Transport Facilities, Including Rapid Transit Railways, Electrified Railroads, Tramways and Motor Buses—Only in This Way Can Waste of Service Be Prevented

SETTING up of a common management and a common fund to which all the passenger transport undertakings in London, including the Underground and other local railways, the tramways and omnibus lines, would be parties, is the outstanding recommendation of two reports made by the London and home counties traffic advisory committee of the Ministry of Transport on the subject of improvements in and co-ordination of passenger traffic in London. One of these reports, which deal with transit problems in the London area, covers north and northeast London and the other east London. The inquiries on which these reports were based were held before a committee of which Sir Henry Maybury was chairman, the former on ten days between Oct. 10 and Nov. 26, 1925, and the second on seven days between March 10 and 29 last. A third inquiry, relating to southeastern London, was only recently completed. No inquiries were held in regard to other districts of London, presumably because the facilities are better there.

In the first report is contained a summary of the evidence and suggestions put forward for a common management and a common fund. It is stated that a comprehensive and far-reaching proposal for meeting the difficulty of finance, which appears to be the stumbling block of all schemes of railway development in Greater London generally, was put forward on behalf of the Underground group. This proposal is not, however, confined to the problem presented by the conditions obtaining in the north London area, neither does it appear to be intended to meet only the difficulties of today. The proposal aims at a permanent solution of the whole problem of London passenger traffic.

The common board of management would, under the plan, be responsible to an over-riding authority who would settle questions of policy, determine broadly the form and nature of the facilities to be provided, settle the principles upon which fares would be charged on each form of transport, and generally exercise financial control. An outstanding feature of the scheme is that there would be no disturbance in the ownership of the existing undertakings. Their officials, who would constitute the board of management for operating purposes, would therefore have a dual responsibility, on the one hand to the owners of their undertakings and on the other hand to the over-riding authority. Under this proposal it is suggested that all the existing forms of transport could be co-ordinated so that each would be performing the functions for which it is best adapted, and the present uneconomic and wasteful competition could be eliminated, while it would be practicable to give the public more efficient services than at present are given.

The question whether the suburban service of the four main-line railways should be included as a part of this plan was touched upon, but the evidence on the point was not sufficient to allow of any definite conclusions being drawn. The matter, however, is one which will require further consideration.

Steady Development a Necessity

The proposal is based on the premise that, given such co-ordination, there is in London sufficient traffic not only to provide a satisfactory return on the large amount of capital already invested in transport undertakings, but to provide also a margin of income which would enable a steady growth and continuous policy of development to be pursued.

The Metropolitan Railway, a section of whose undertaking forms an integral part of London's local underground system of railways, suggested that a scheme for common management presented considerable difficulties for the reason that it involved a common financial interest in traffic, but all the transport interests represented at the inquiry, with the exception of the independent bus proprietors, seemed to be in general agreement that a condition precedent to any further expenditure on the development of railways is co-ordination of street transport and the restriction of omnibus competition having regard to the alternative facilities provided.

This view was not fully accepted by some representatives of local authorities and other public bodies present at the inquiry, who appeared apprehensive that their difficulties are being exploited by the railways for the purpose of obtaining a cessation of bus competition. The London County Council, however, is on record as favoring unified operation of local passenger transport undertakings under a municipal traffic control authority, provided that in the event of a reorganization of the local government a new authority might be set up by the municipality.

Specific Proposals for North and Northeastern Districts

The committee is led to the conclusion that the difficulty of passenger transport between the districts north and northeast of Finsbury Park and the central London area is primarily because there has been no adequate increase in through traveling facilities to meet the large increase in population in the past quarter century. A large proportion of the public is forced to make at least one transfer. Moreover, the facilities for changing cars, especially in inclement weather, are the main reason for the discontent of the riders from this district.

The lack of efficient and rapid transport facilities has retarded the development of the area. Given ade-

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quate and rapid transit an increase of at least 50 per cent in passenger traffic might reasonably be expected in the course of a few years.

There was a strong expression of opinion that in not improving certain of its local lines and in not electrifying its suburban system the London & North-eastern Railway has exhibited a want of consideration for the needs of the suburban traffic. It was urged that the result of this failure to keep abreast of the times is that, as compared with other railways, its services are costly, slow, infrequent and inconveniently arranged. Until it is electrified, it is felt that this railway cannot render any material assistance to the solution of the problem. Further information on electrification of this system should be obtained. The reluctance of the railway to embark on the work of electrification might be removed if it were assured that steps would be taken to insure that the electrified lines would be protected from unnecessary competition, so that the railway might be afforded the fullest possible opportunity of obtaining a reasonable return on the additional capital invested. Specific recommendations for an extension by the London Electric Railway and suitable transfer facilities were made.

As to the electric railways, the accommodation provided is greatly in excess of the demand, the seats provided in each direction on the Piccaddilly line, for instance, on a normal day being 75,000 for 18,000 passengers.

It was mentioned that 18 per cent of the total tramway passengers are carried at unremunerative workmen's rates provided by statute. With ordinary fares there would have been a gain in revenue of £114,000, or 5 per cent on the capital of the company. The buses are not required to offer similar fares and do not provide corresponding service in the rush hours.

Prior to 1922 all the omnibus service in the area was operated by the London General Omnibus Company and its associated companies, which appear to have had some regard to the alternate facilities provided by the tramways. Beginning at that time the number of independent competing buses has rapidly increased, and in order to protect itself the L. G. O. Company has felt it necessary to increase substantially the number of its buses. As a result there is no longer that co-ordination which up to 1922 had existed between the bus and tramway undertakings and buses operate in large numbers over the whole of the tramway routes in the area.

It was contended that neither tramways nor buses would meet adequately the needs of the public in the outer areas, on account of slow speed and limited accommodations. The average speed of the buses in the London area was, in fact, found to be slightly less than that of the tramways, being 9 m.p.h., as compared with 9.6 m.p.h. for the tramcars.

Finally, the committee pointed out that it has been impressed by the contention of the representatives of the railway companies and the tramway undertakings that the main difficulty in the way of the provision of suitable through facilities is the acute and wasteful competition between the various passenger transport agencies operating in the area. The proposals submitted on behalf of the Underground group appeared to it to furnish a possible solution of the whole problem of London passenger transport. It was recommended that these proposals, referred to earlier in this article, should be carefully examined with the least possible delay. The committee, feeling that consideration of the plan was outside the scope of its assignment, requested the Minister's authorization before proceeding further with it.

PLANS FOR EAST LONDON

In the second report, that on east London, the committee states that the inadequacy of the through railway traveling facilities to and from that section generally has been established. This condition exists because the improvements in the facilities have not kept pace with the increase in population which has taken place during the past 25 years, and the even greater increase in the number of persons desiring to travel.

It is clear, in the opinion of the committee, that electrification of the steam railway lines in this area would afford the speediest means of providing a substantial improvement in the train services. A representative of the Metropolitan District Railway, who has had considerable experience in the operation of electric train services, stated at the inquiry that experience has shown that the capacity of a line can be increased from 100 to 200 per cent by conversion from steam to electric working.

Similar statements relative to wasteful competition of trams and buses were made as those referred to in the report on north London. Throughout the day only about 21 per cent of the available bus and car seats were occupied, while even in the peak hour no more than 56 per cent of the car seats and even fewer of the bus seats were occupied.

With regard to competition, the committee stated: The evidence submitted by the representatives of the local authorities, particularly those owning tramway systems, as to the adverse effect of unnecessary omnibus competition with tramways provides sufficient justification of the soundness of the policy adopted by the committee with regard to the restriction of such uneconomic competition.

Finally, the committee desired to add that the evidence submitted at this inquiry strengthens its view that no lasting solution of the London passenger transport problem can be secured so long as the present competitive methods are pursued. It is only by the elimination of all wasteful, uneconomic and unnecessary competition between the various transport agencies that it will be possible for any considerable improvements to be effected, particularly in the way of the construction of new underground or surface railways. As a means toward this end the committee, in its report upon the inquiry on the traveling facilities to and from north and northeast London, stated that the proposals submitted at that inquiry for the establishment of a common management and a common fund appeared to it to present a possible solution of the whole problem of London passenger transport. The evidence submitted at the inquiry upon which this report is based has convinced the committee that the unified management of the local passenger transport agencies—i.e., underground and other local railways, tramways and omnibuses—would provide the only permanent solution of the whole problem of London transport.

Speaking in the House of Commons on Nov. 30, Col. Wilfrid Ashley, Minister of Transport, stated in reply to a question that after consideration of the recommendations in the two reports he has asked the London traffic advisory committee to explore further the possibility of the institution of a common fund or of working agreements in connection with the operation of passenger traffic undertakings in the London area.

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The Readers' Forum

Saving Paper in Committee Reports

NATIONAL ELECTRIC LIGHT ASSOCIATION
NEW YORK CITY, Dec. 6, 1926.

To the Editor:

Your editorial of Oct. 16 headed "Too Much Paper Used in Some Committee Reports" was of great interest to this office, as in the last 2½ years we have been proceeding along the lines of your editorial, and, thanks to the hearty co-operation of all concerned, with considerable success. Under the leadership of C. F. Hirshfeld, chairman, the Engineering National Section has been making a determined effort to make its reports as pithy as possible with the result that whereas in the year 1923-24 31 Engineering Section reports required 1,141 pages of type, 36 reports in the administrative year 1925-26 required only 992 pages. This is a reduction in the average size of reports from 36.8 pages to 27.5 pages.

The same policy of condensation has been applied to all reports and, thanks to the efforts of A. Jackson Marshall, secretary of the association, and the chairmen of the other sections, we have been able to reduce the size of our Proceedings from 1,912 pages in 1924 to 1,664 pages in 1926. We do not feel, however, that the maximum brevity has been attained and all efforts are being made toward increased economy in language and maximum content of information.

K. M. ELISH,
Editor Publications.

Figures on Car Speed in London

WALLINGTON, SURREY, ENGLAND, Nov. 26, 1926.

To the Editor:

Table V in Mr. Jayot's article on page 891 of the JOURNAL of Nov. 13 gives the average car speed of the London Tramways as 6 m.p.h., almost the lowest in the table. Actually, the average speed is 9.6 m.p.h. on the principal, or London County Council, system and slightly more on the combine systems. The average is therefore, apparently, the highest of the cities enumerated.

Apparently the figures relating to passengers carried annually and number of cars in service in London refer to the combine systems only. It is not clear why London is credited with only 416 cars in service when L. C. C. system has 1,850 cars in stock apart from the combine.

Furthermore, the 1,086 cars listed against Glasgow refer to cars in stock, not average in service.

I observe that while figures are given for the Leeds system several much larger British systems are not included. Hence the data given in the table abstracted from the paper by Mr. Jayot are not very representative.

HENRY A. WATSON.

EDITOR'S NOTE.—As explained in the article, the figures given in table V were based on replies received to a questionnaire sent out by the International Association. The table contains only the data of those systems which replied. In the case of London the replies relate only to the Metropolitan Electric Tramways, the London United Tramways and the South Metropolitan Electric Tramways but do not include the London County Council Tramways. As only part of the London tramways were represented, no figures were given in the columns showing population served and annual rides per inhabitant for London.

As One Passenger Sees It

SAGINAW, MICH., Nov. 10, 1926.

To the Editor:

On a recent trip I made on electric interurban lines in Michigan and Ohio I encountered a number of practices which suggested reasons why some of these lines are losing passenger traffic. On leaving the terminal there were approximately 100 passengers on one car.

After getting as many as possible on board this car, several were turned away. There seemed to be no one in authority to tell them whether or not another car would be added. After quite a delay a second car was coupled on. Before reaching an important intermediate station all passengers going beyond that point were transferred to the head car, which was already well loaded. Thereafter it was packed, several women sitting in the smoking compartment. This car was built of wood, needed paint and was very dirty.

In the terminal city I found that the interurban stations were quite a distance apart, forcing a person with baggage to use a taxicab to get from one to the other. On the next lap of my journey I rode a two-car train. This was a very comfortable ride. The cars were clean and equipped with white seat covers. The power was weak, however, and the speed was entirely too slow to meet with public approval.

Then, too, there have been few improvements made recently in seats. Why not install seats similar to those being used in motor coaches, with air cushions that are really comfortable to sit in, and space them farther apart than the present car seats? It would make very little difference in the total seating capacity —possibly about two seats.

Electric roads must now depend on through traffic and the small lines should be consolidated in order that through service can be given over a larger area. If consolidation is impossible, through cars should be operated. At present, in order to get between two important Ohio cities, a stopover of 1½ hours at an intermediate point is necessary. How can the railways expect to get traffic when such conditions exist?

Great care should be taken when selecting platform employees, as they are the ones who come in contact with the public. There should be a meeting held at least once a month and the men instructed in the art of salesmanship so they can really sell transportation to the public. Courtesy to the public is the most important qualification for being an efficient platform man.

Most people would prefer an interurban car to a bus if they both gave the same quality of service. Congestion on the highways has become severe. Now would be a good time for the electric railways to start giving the kind of service that would win back the public favor they formerly enjoyed.

It seems to me that electric lines would do well to advertise more in the daily papers, calling the attention of the public to the fact that they are selling transportation for far less than the cost of operating an automobile. Some time ago I was talking to a man who uses the electric interurban to get to and from his work every day. It costs him about $60 a year. He said his neighbor who works in the same factory bought a used automobile, paying $300 for it, and at the end of a year of traveling back and forth it was worn out. Thus one year's transportation cost the second man $300 besides the upkeep of his automobile. Why not do more publicity work to tell the public about such cases as this?

A DAILY INTERURBAN RIDER.

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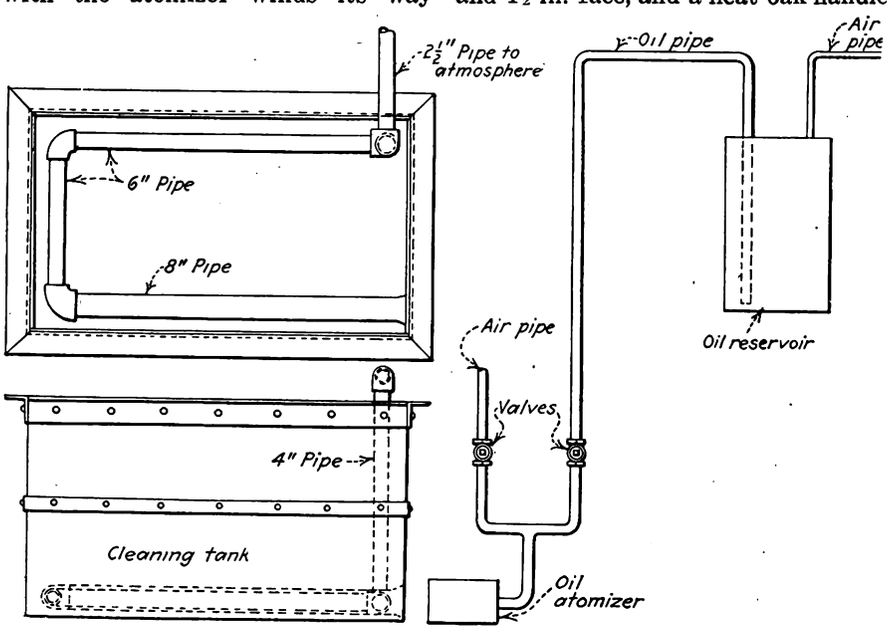
Maintenance Notes

Cleaning Mechanical Parts Prolongs Life

GREASE, dirt and brake shoe dust are removed readily from mechanical parts by boiling in an Oakite solution in the shop of the Reading Transit Company, Reading, Pa. Thoroughly convinced that in order to prolong the life of certain mechanical parts it would be essential to give more careful attention to their cleanliness during the overhauling process, H. E. Aldrich, master mechanic, searched for suitable equipment to accomplish these results. Inability to obtain in the market just what was required, necessitated the designing, building and erection of equipment with the shop organization from the material on hand.

The principal parts of this equipment consist of a tank with heating pipes, atomizing oil burner, oil storage tank and suitable pipe connections. The general arrangement of this apparatus is shown in the accompanying sketch. The tank is constructed of ⅛-in. boiler plate rigidly reinforced with ½-in. angles and 1-in. x ½-in. flat steel. An 8-in. iron pipe welded to the tank directly in line with the atomizer winds its way around the bottom of the tank and gradually reduces in size until it makes its exit to the atmosphere at a diameter of 2½ in., this reduction being made to prevent rapid heat exhaust. The flame from the atomizer entering the 8-in. pipe raises the temperature of the solution very rapidly to the boiling point. Storage of oil is taken care of by an 8-in. x 36-in. tank conveniently located on the wall above the atomizer. Air is used to force the oil from the tank to the atomizer as well as to assist in the vaporization of the oil at the atomizer. Since motor bus engine oil discarded from the crank case is used for fuel the cost of operation is extremely low.

Equipment to be cleaned, such as motor housings, gears, pinions, journal boxes, trolley bases, bearings, etc., is immersed in the Oakite solution and permitted to boil for a certain length of time. After removal it is found to be free from grease, dirt or brake shoe dust. This apparatus has proved a valuable addition to the equipment of the Reading Transit Company's shop and the results which have been obtained have been far greater than expected.

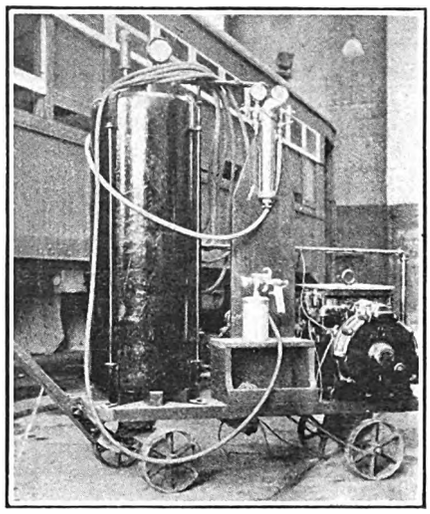


General Arrangement of Cleaning Tank, Oil Storage Tank, Atomizer and Piping for Cleaning Metal Parts

Portable Paint-Spraying Equipment

PAINT spraying is not an innovation in the shop of the York Railways, York, Pa., but the desire to concentrate the spraying equipment in a portable manner led E. L. Greene, master mechanic, to design and build a small compact truck for this purpose. This truck is about 18 in. wide and 4 ft. 6 in. long and is constructed of 1-in. oak boards fastened securely to suitable steel axles. Iron wheels, 6 in. diameter and 1½ in. face, and a neat oak handle make movement throughout the shop easy.

On the front of the truck is a 16-in. by 48-in. vertical air reservoir with a gage and safety valve. It is held in place by 4½-in. tie bolts



Paint-Spraying Equipment Mounted on Truck

fastened to saddles over the top of the tank and angle irons bolted to the truck floor. A National AA-1 compressor bolted to the floor on the rear end of the truck furnishes the necessary compressed air for spraying. A De Vilbiss Manufacturing Company's paint-spraying equipment is conveniently mounted on a

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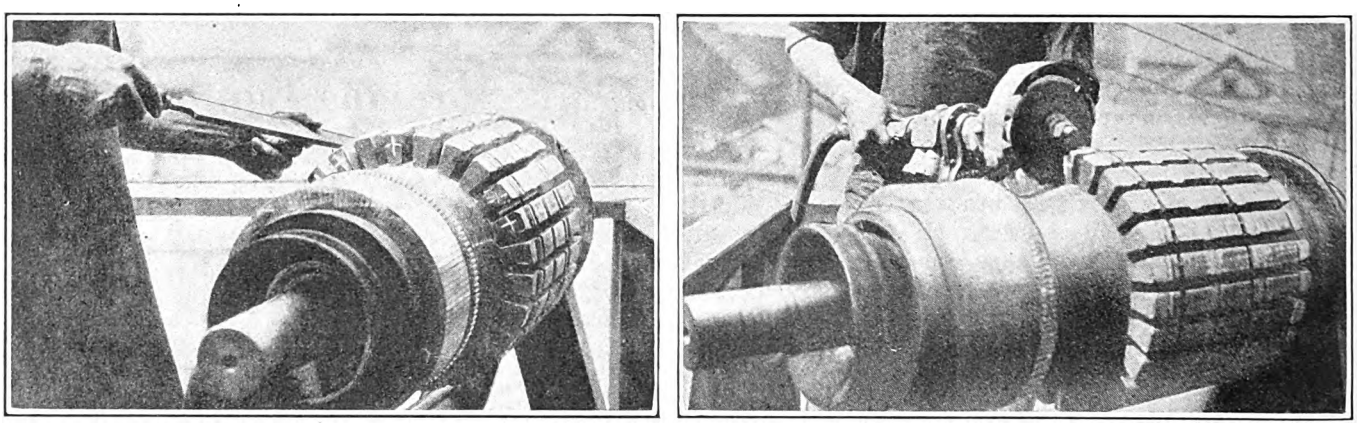
tapered oak plank between the compressor and the air reservoir. The pistol grip type spray gun is used.

This paint-spraying equipment, with its tank and compressor painted black and the remainder with color combinations corresponding to the car colors, presents a very attractive appearance. The compactness of design, together with the ease with which it can be moved about, gives the shop a portable outfit readily transferable to any point and a means for doing quickly and effectively any desired painting job.

Time Saved by Grinding Armature Cores

GROUNDING or short circuiting of armature coils usually results in burning the armature core laminations. These burns and blisters must be removed in order to rewind the armature properly and not allow projecting edges to damage the winding. Where the armature core slots are cleaned up by filing the operation is quite long and tedious. In the Hall Street shop of the Grand Rapids Railway this work is done by a portable air grinder. An emery wheel 4 in. in diameter by ¼ in. thick is used. This is driven by a No. 7 Simplex air grinder. In order to prevent particles from flying about the shop a guard has been placed over the wheel. This is 2 in. wide and is made of a piece of band steel welded to the frame at both ends. By use of this method blistered laminations are cleaned up in 50 per cent of the time formerly required by filing.



At Left, the Old Method of Cleaning Armature Slots and Removing Blisters from Laminations Was by a File. At Right, with the New Grinder the Time for Cleaning Armature Laminations and Slots Has Been Reduced 50 Per Cent

Many an armature that gets "het up boils"
May be traced indirectly to "bad order" field coils.

Should Grounds of Electric Railway Systems Be Burned Off?

BY G. H. MCKELWAY
Distribution Engineer Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y.

BURNING off grounds on electric railway systems is a practice confined most generally to the medium-sized systems rather than to either the small or large ones. Small systems do not follow it because they have not the generator, converter or feeder capacity in service to burn off a heavy ground without overloading the machinery or feeders, so there would be as much likelihood of burning up one of these pieces of apparatus as there would be of burning off the ground. Again, the delay to the line on account of leaving a circuit breaker out until the ground can be cleared is by no means as important in a small town as it would be in a large city.

Another reason why the small company does not find it advisable to burn off a ground is the additional cost of repairs. The destruction of a part of the trolley wire and the annealing of much more of it may mean a great deal to a struggling line. Therefore certain companies prefer to have a little longer delay and be able to repair the trouble by the use of a single splicer.

When the system is in a city of 50,000 or more inhabitants there is a much greater chance of the power or substation attendants keeping the circuit breaker closed and attempting to burn off the grounds when they occur. The station and feeder capacity are greater, the objection to delay is greater, the cost of repairs is relatively small, and there is not such close co-operation between the men of the power and line departments. With very large companies, as a rule, the pendulum of practice swings back to the same position as for small companies, although not for the same reason.

The large company has at least as much objection to delay as the medium-sized one has, if not more. It has all of the generator capacity necessary for burning off the grounds and the increased cost of repairs is negligible. The objection to burning off grounds on large properties is based not on greater cost of repairs, but on greater liability of accidents that would injure people or result in greater damage to the railway company.

A broken trolley wire falling on and perhaps entangling itself around a crowded car will cause a flash, which will probably frighten some of the passengers. There is still more liability of this occurring if the single flash caused by the falling wire is followed by additional ones, as the station operator closes the circuit breaker several times in succession, or holds it shut in an effort to burn off the ground. Injuries to passengers are caused not alone by burns from the arc, but by bruises and cuts occasioned by the stampede which may result from a series of flashes.

Even if the wire falls clear of the car and grounds on the rail, attempts to clear the ground will be delayed if it is arcing. When the ground has burned off the wire will usually be found to have been annealed back to at least the first side feed. As a result several sections of trolley wire will have to be run in, and this will result in a "moving block" that often

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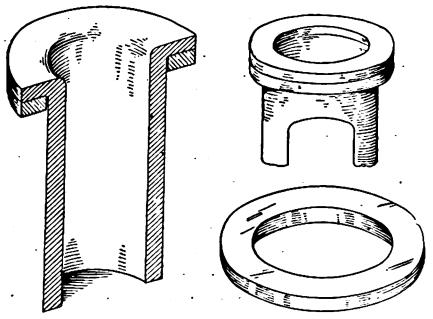
will cause more annoyance than the short delay to the entire system.

If the ground is on a feeder much more power is required to burn it off, especially with a system consisting of underground cables, such as are often used on large systems. There is greater danger of the trouble spreading on such installations from one cable to another and at least involving several cables so as to cause a bad burn-out and a prolonged delay, not to the one line alone but to several, and with the expense of repairs running up into thousands of dollars.

A wreck on a third rail line is liable to ground the conductor rail, and by trying to hold in on such a ground cars may be set on fire and possibly cause serious accidents. On the Brooklyn surface lines it is the custom to close the breaker at once if it has opened, and then, if it comes out again, to wait a half minute before closing it. If it comes out a third time it is the practice to notify the chief operator and close the breaker at longer intervals, as instructed by him. On third rail lines the feeder is always picked up first on a test resistance to see whether the breaker came out on an overload or on a ground. If the latter is the case, it is left out until the ground has been cleared, it being tried out on test resistance from time to time.

Bearing Flanges Reclaimed

UNDERSIZE armature and axle bearing flanges are being reclaimed in the shop of the Lackawanna & Wyoming Valley Railroad,



Reclaimed Bearings and Cast Ring. Axle Bearing at Left and Armature Bearing at Right Show Rings Installed

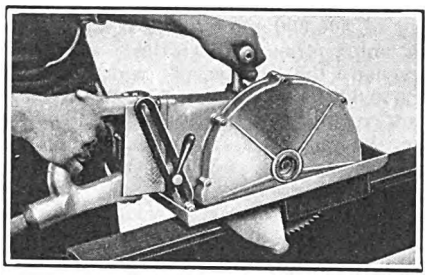
Scranton Pa., by the installation of a cast ring of the same chemical composition as the bearing. The worn outside surface of an armature bearing and one surface of a cast ring are machined, sweated together, riveted and turned to standard size. In the case of an axle bearing, the ring is sweated and riveted to the back face of the flange and then turned to size.

New Equipment Available

Portable Electric Hand Saw

FOR use in sawing lumber on construction jobs, the Wappat Gear Works, Pittsburgh, Pa., has placed the "Alta" portable electric hand saw on the market. It is provided with a universal motor and cuts boards as thick as 3 in.

A special feature of the device is a telescopic guard which incloses the blade and opens automatically when



New Type of Portable Electric Hand Saw

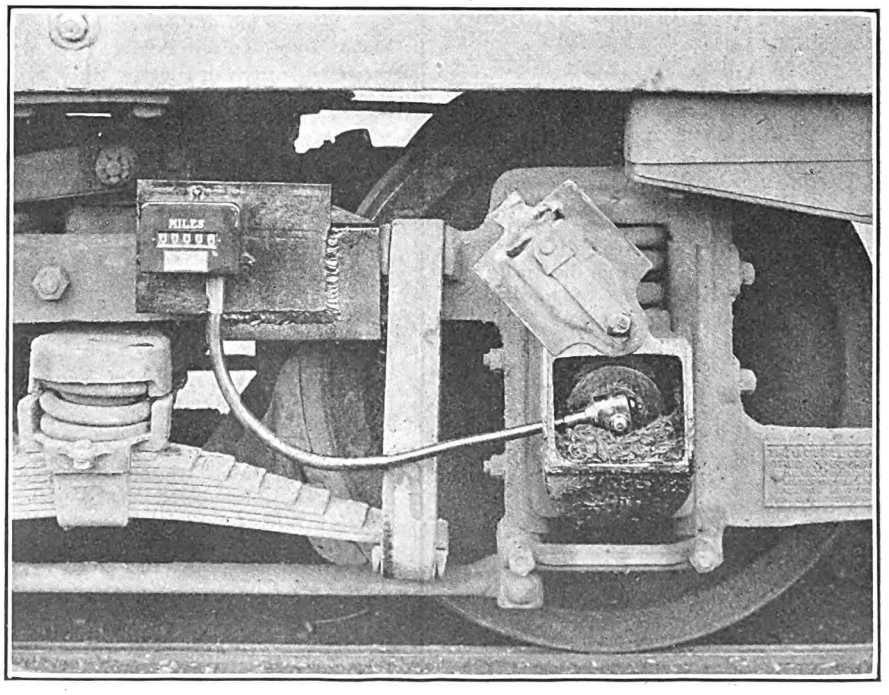
the saw is pushed into the material. The guard closes again as soon as the cut is completed. This provides safety against accident and also protects the blade from damage. To prevent tipping, a wide carrying shoe supports the weight of the tool so that the only effort of the operator necessary is to guide the saw. The shoe is adjustable so that it may be set for any depth of cut.

An air blast from the motor ventilating fan is directed to the front of the saw blade to blow dust away. Particular attention has been given to placing of the handle so as to give good balance and to eliminate wrist strain. The outfit weighs 31 lb.

Odometer Used on Street Cars

MILEAGE is recorded in both a forward and backward direction by an odometer which has recently been adapted for use on electric cars by the Ohmer Fare Register Company, Dayton, Ohio. It was described in ELECTRIC RAILWAY JOURNAL, July 4, 1926, but the first installation for street car use has just been made. As shown in the accompanying illustration the device may be mounted on the truck frame and connected by a flexible shaft to the worm gear attached to the axle in the journal box. This shaft rotates very slowly, making but 63 turns to each mile traveled by the car. Thus there is but little wear and tear on the mechanism of the odometer.

The figures shown in the recording window of the odometer are large and easily discernible from a considerable distance. The figures snap into place as each mile is covered, so that there are no half figures to interfere with the reading of the mileage.



First Odometer Installation for Street Car Use

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Association News & Discussions

New York Subways Saturated

President of Interborough Rapid Transit Company Tells Institute of Electrical Engineers No Relief for Transit Is in Prospect Until Greater Track Capacity Is Provided

FRANK HEDLEY was introduced before the audience at the meeting of the American Institute of Electrical Engineers in New York on Friday evening, Dec. 3, as the president of the Interborough Rapid Transit Company and the editor of the "Subway Sun." Before he launched into the subject of giving the facts with respect to passenger movement over his lines Mr. Hedley said he would like to tell the truth, the whole truth and nothing but the truth about rapid transit in New York, but the institute meeting was neither the time nor the place.

It seemed unusual to him that a man should be asked to speak about transit who has devoted most of his life to the study of the subject. Tis own feelings were very much like those of his own customers. They thought they knew more than he did about running the railroad, and he often thought that he knew more about railroad matters than did his president, so when he was elected to the post of president he kept both titles and is now both president and general manager.

Traffic figures which he quoted were startling in their totals. Mr. Hedley said, however, that his friends among subway riders were not disposed to doubt the veracity of his remarks. Their experiences, particularly in the subway, led them to think Mr. Hedley was conservative in his totals. Mr. Hedley said that his riders might be likened to tenants, of whom there were 3,500,000 a day, and many of them left gum behind them on the seats as a final decoration.

The burden of Mr. Hedley's remarks was to the effect that the eight main line tracks on the system were saturated with trains at the rush hour and that the situation could be relieved only by the construction of additional tracks. One of his quips was that the capacity of the subway today resolved itself into the question of the physical strength of the people who push themselves in. His aim was to tell what the company did with what it had to do with. The success attained was due to the assistance of the heads of the various departments, and the best results were secured only by discussion among the men themselves. The criterion of the company was the greatest number of passengers that could be transported with safety.

As a measure of the extent of the service of the company, he said that on Nov. 29 3,875,000 passengers had been carried safely on both the elevated and subway lines. The original subway had been built with an estimated capacity of 300,000 passengers a day and a maximum estimated capacity of 500,000 passengers a day. Only a short time after the lines were opened the company was carrying 1,000,000 passengers a day and at present it is not unusual to transport on the enlarged system 2,500,000 subway passengers and more than 1,000,000 elevated passengers each day.

Mr. Hedley also reviewed very briefly some of the aspects of the technical and physical operation of the system. He told about the company's own power stations, the emergency connection with the system of the New York Edison Company in order to insure uninterrupted service, the signal system on both the subway and the elevated, methods of track protection at curves, the inspection of system of track to guard against possible track failures, the blockade alarm system so as to inform operators of any tie-up and the ventilating equipment.

He also told about the work of the company in its effort to speed up the movement of trains, showing that with seven motor cars to a standard train a capacity of 4,000 hp. could be developed at 1.7 m.p.h.p.s. acceleration, with the motorman notching up from the off to full, or parallel position, at one turn of the controller handle. The retardation problem was not so simple, but with the electric pneumatic brakes applied to all the cars at one time, a constant pressure in retardation of 2 m.p.h.p.s. had been attained, or about 40 per cent better than on the steam railroads. He then went into the subject of inspection of cars. This is done on a mileage basis of 1,200 miles. A particularly complete record of work on the cars is kept and the men responsible for the defects are disciplined if the cars do not make the allotted 1.200 miles. Many of these practices have been described before in the ELECTRIC RAILWAY JOURNAL.

The other speaker of the evening was George S. Silzer, formerly Governor of New Jersey and now chairman of the New York Port Authority. This board was created by an act passed in 1921. It was born out of two circumstances. the fact that New Jersey wanted freight differentials and that the breaking out of the war had brought out the need for a centralized authority to handle traffic in the port of New York. Within the province of the board is 180 miles of shore line, over which territory there are 9,000,000 people. Before the creation of the Port Authority there was no central body to deal with problems of the port. Each interest dealt with matters in his own way. There was no collective mind to study questions that arose.

Mr. Silzer went over the ground very thoroughly. He told about the bridge projects of the board, linking Staten Island and New Jersey, and the proposed crossing of the Hudson River by bridge from Edgewater to uptown New York. He also told about the proposed terminal railroad to intersect all of the present existing carriers in the metropolitan district and disclosed some of the features of the central warehousing plan by which shippers will transport their merchandise to central distributing stations, from which the goods will be reassigned to the particular carrier over whose lines the shipment is intended to be transported.

He spoke about the increase in the interstate bus traffic and indicated the extent to which this traffic would be increased under the stimulus of direct entrance into the city of New York over the proposed new bridges and through the vehicular tunnel under the Hudson

COMING MEETINGS OF *Electric Railway and Allied Associations*

Jan. 6-7—Midwest Electric Railway Association, midwinter meeting, Mayo Hotel, Tulsa, Okla.

Jan. 7—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

Jan. 10-14—American Road Builders' Association, convention and road show, Coliseum, Chicago, Ill.

Jan. 18-19—Kentucky Association of Public Utilities, annual convention, Brown Hotel, Louisville, Ky.

Jan. 25—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.

Jan. 26-28—Association of Equipment Men—Southern Properties—Memphis, Tenn.

Feb. 3-4—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.

Feb. 7-10 — American Institute Electrical Engineers, annual convention, Engineering Societies Building, New York City.

Oct. 3-7, 1927—American Electric Railway Association, annual convention, Public Auditorium, Cleveland, Ohio.

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River. He said that an orderly program for the benefit of the port of New York was now under way and he wandered how long it would be before the people of New York took up the question of local traffic and made a real effort to try to solve it. While he did not say so directly, the tenor of his remarks indicated that Mr. Silzer felt that it would probably be necessary for the Port of New York Authority still further to co-ordinate its activities in the handling of passengers and freight with the activities of the existing carriers in the city of New York.

There was a goodly sprinkling of ladies present at the meeting and despite the technical nature of some of the facts the audience was unusually attentive and apparently very appreciative of the remarks of both speakers.

Automatic and Manually Operated Track Switches*

By P. Battaille
Liége Tramways
and
K. Stoffels
Amsterdam Municipal Tramways

THIS discussion is a continuation of the report of the committee on the same subject at the last convention. Replies from 32 companies indicate that seventeen of them use electric switches and have about 300 in use, and that these switches are taking the place of track switches mechanically operated.

Electric switches are of two kinds, high voltage, or those operated from the trolley circuit, and low voltage, or those in which one rail of the track is insulated and the switch is operated by the current after it has passed through the motors on the cars. The Weenan, Collins, Siemens, and I.E.M. are of the former type and the Battaille, Oerlikon and A.E.G. of the latter type. In the replies to the association questionnaire, emphasis was laid by a number of companies on the need for regular inspection and overhaul of switches. The time spent in their repair per year is estimated by different tramways as follows: Amsterdam, 62 hours; Rotterdam, 52 hours; Zürich, 60 hours; Liége, 70 hours. The railway system reporting the largest number of electrically operated track switches in use was the Amsterdam Tramways with 86.

The committee estimates that if there is a gain of one-half minute in the operation of the car over a switch through the use of electric operation it would pay a railway company to install electric operation where the switch is turned more than twice a day. This conclusion is reached as follows:

Operating expenses per car-day on most railways averages 450 francs, and this sum is equivalent to ½ franc per minute. Then if an electrically operated track switch saves ½ minute for each operation it would have to be used only twice to effect a saving of ½ franc a day. This sum is the average cost of electric switch maintenance, as determined by replies to the data sheet.

*Abstract of paper presented at the bienial meeting of Union Internationale de Tramways, de Chemins de Fer d'Intérêt Local et de Transports Publics Automobiles, Barcelona, Spain, Oct. 10-16, 1926.

Possibility of an Index to Determine the Proper Tramway Fare†

By R. Haerens
Manager Compagnie Belge des Chemins de fer Réunis,
Brussels, Belgium

PRACTICALLY all of the electric railway systems in Europe have been obliged to increase their fares for a number of causes, including the following: A considerable increase in wages due to labor legislation in favor of an eight-hour day; a large increase in the cost of labor and material since the close of the war, and marked reductions in the purchasing power of money. To these reasons are added, in the case of countries with a depreciated currency, the effects of the lower exchange rate.

The result of these conditions has been a practical stoppage in the development of the tramway industry and has suggested the advantages, if possible, of some basis for a sliding scale for fares based on the conditions which experience has shown affect electric railway enterprises. This means, of course, in the case of private companies, that some arrangement must be made with the controlling authorities for a modification of the franchise conditions. Incidentally, it might be said that municipal tramway systems are the exception rather than the rule in the cities of western continental Europe.

Three Principles Recognized in Tramway Franchises

In the grant of tramway franchises in the past, it has been the practice in western Europe for both parties to recognize three definite principles:

1. During the early part of the life of the franchise the company will be building up its traffic and that it depends on the earnings of the latter part of the franchise period to make up the losses incurred during its early life. In consequence, where the franchise includes a clause permitting the municipality to take over the line, the basis during the early part of the franchise is not the earnings of the property, but the investment plus a certain per cent as a bonus.

2. The average franchise usually also includes a statement of the amount of taxes to be paid and often also one specifying a minimum for wages and a maximum for hours of work for the employees.

3. The third point often embodied in a railway franchise is that the municipality reserves the right to share in any very large returns made by the enterprise, though it declines in any way to participate in any loss.

Having considered the principles embodied in tramway franchises in the past, an effort will be made to determine whether it is possible to draft an additional clause by which the rate of fare would vary in proper ratio with changes in wages paid, legal hours of work, cost of power and other operating expenses. A formula to cover the two major factors mentioned will first be considered.

Let:

S = the hourly wage rate, which will be assumed to be 3 francs

E = the cost of electrical energy, which will be assumed to be 0.3 francs per kilowatt-hour

Assume, also, the total wage account = 10,000,000 francs per year and that the total expenses for electrical energy = 1,500,000 francs

Then the fare index (I) to cover these two major items will be:

$$I = S + 1.5\ E$$

In this formula the constant 1.5 has been introduced as a weighting factor to give the two items of expense their proper value. Thus:

$$\frac{S}{1.5E} = \frac{3}{0.3 \times 1.5} = \frac{3}{0.45} = \frac{10{,}000{,}000}{1{,}500{,}000}$$

In other words, the proportion is equal to that of the total itemized expenses already mentioned, or 10,000,000 francs and 1,500,000 francs.

This formula leaves out of consideration the cost of other materials, but experience has shown that they vary practically with hourly wages and electrical energy, so they can be neglected, though where motor buses are used, it would be useful to include a third term based on the cost of rubber tires.

Still another factor is increased taxes. The importance of this has been shown in some cases recently and the franchise should be made to read that the fare be increased in accordance with the increased taxes.

It is true operating expenses are not in absolute ratio with the items of cost mentioned. Thus they are affected by the scheduled rate of speed, extent of car loading and some other factors. The formula mentioned above has therefore its limits. Inclusion in the franchise of a clause covering it will help, but there should also be a general clause granting right of revision of terms to the operating company in case the proposed index does not entirely cover the situation.

†Abstract of paper presented at the bienial meeting of Union Internationale de Tramways, de Chemins de Fer d'Intérêt Local et de Transports Publics Automobiles, Barcelona, Spain, Oct. 10-16, 1926.

American Economic Association to Discuss Regulation

EFFECTIVE public utility regulation will be the subject of one of the most important discussions at the 39th annual meeting of the American Economic Association, to be held at St. Louis, Mo., Dec. 28-31. This will be in the form of a round-table conference in charge of Dr. John Bauer of the American Public Utilities Bureau. Others on the program are Profs. Robert L. Hale and J. C. Bonbright, Columbia University; H. G. Brown, University of Missouri; Martin G. Glaeser, University of Wisconsin, and C. E. McNeill, University of Nebraska.

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New Englanders Discuss Snow Fighting

SNOW FIGHTING formed the main topic of the regular monthly meeting of the New England Street Railway Club held Dec. 2 at the Copley Plaza Hotel, Boston, the program being based on the presentation of four practical papers by H. M. Flanders, general manager Springfield Street Railway; N. J. Scott, manager Hartford division the Connecticut Company; W. C. Bolt, superintendent of rolling stock and shops Eastern Massachusetts Street Railway, and E. L. Lockman, assistant engineer of surface lines Boston Elevated Railway. An extended discussion followed the reading of the papers.

President Fred D. Gordon occupied the chair, and after the usual dinner in the evening Albert A. Northrop of Stone & Webster, Inc., Boston, gave an interesting talk on "Power," illustrated by motion picture films. Dean Wallace B. Donham of the Harvard Graduate School of Business Administration, who had been scheduled to address the club on "Business Administration in Street Railway Management," was unable to be present on account of illness. Abstracts of the papers on snow fighting and the discussion that followed will be published in an early issue of this paper.

American Association News

Parking Unanimously Condemned

Police, Railway and Mercantile Interests at Metropolitan Section Meeting Agree on Causes of Congestion in New York

GENERAL agreement concerning the causes of traffic congestion in the streets of New York was voiced by speakers at a meeting of the Metropolitan Section, A.E.R.A., held on Dec. 3 at the Engineering Societies' Building. The viewpoint of the Police Department was explained by William A. Coleman, deputy chief inspector in charge of traffic. W. G. Strait, vice-president New York Railways, presented the operators' side of the case and F. C. Fox, assistant to the president A. I. Namm Company, explained that of the retail merchant. Despite a brisk snowstorm the meeting was well attended.

Inspector Coleman said frankly that parking is the worst problem which faces the traffic division of the Police Department. He called attention to the excellent results accomplished by parking restrictions originally imposed during the subway strike and recently made permanent. An abstract of his talk appears on this page.

The important part played by the surface car and the bus in New York City transportation was brought out by Mr. Strait. He quoted figures showing that the surface car is not of itself a slow vehicle, but is well able to maintain adequate speed when not unduly hampered by other traffic. Mr. Strait's paper appears in abstract elsewhere.

Keen appreciation of the seriousness of the traffic problem was shown in the talk by Mr. Fox. He said that the merchants are partly responsible for the creation of congestion. They have established many large stores in a comparatively small shopping district and they are now beginning to feel the adverse effects of this policy. On account of the difficulty of reaching these downtown stores there is a growing tendency for people to make their purchases at neighborhood stores. He expressed apprehension that this process of decentralization would continue rapidly unless parking was restricted, particularly on streets where car lines operate. In his opinion there are marked economic advantages for the customer in shopping at a large store, and these will be lost if the difficulty of reaching the downtown stores causes people to do their buying locally. Mr. Fox spoke of an insidious propaganda being put forth against the surface car in favor of the bus. He thought that if buses were substituted for cars the public would soon find that the remedy was worse than the disease. An abstract of the talk by Mr. Fox will appear in a future issue.

Prior to the discussion of traffic congestion, A. L. Hodges, secretary Brooklyn City Railroad, gave an interesting account of the recent congress of the National Safety Council and urged all railway men to take a lively interest in the work of this body. The concluding speaker on the program was William S. Hamilton, assistant to the superintendent of transportation Brooklyn City Railroad, who told of changes in operation made with a view to relieving congestion. J. H. Hanna, who was present as a guest, spoke a few words of greeting. Motion pictures taken at the summer meeting of the New York Electric Railway Association at Bluff Point and of the outing of the New York Railroad Club at Pelham Bay Park were shown.

Police Department Finds Parking Most Frequent Cause of Delay*

By W. A. COLEMAN
Deputy Chief Inspector Police Department, New York City

FROM my experience in the Traffic Division, it is my opinion that the greatest obstruction and the most frequent cause of delay to the free movement of traffic is inconsiderate parking. How any citizen who has any regard for the rights of others can drive up with his car in the early morning into a narrow street, possibly with a street car line running through, or on some other busy thoroughfare in a congested business section, and lock it and leave it for six, seven or eight hours, as is often the case, is something I cannot understand and certainly disapprove of. Ten chances to one, whenever or wherever traffic conditions are discussed, you will find this man to be loudest in his denunciation of traffic congestion and asking why the hell something isn't done about it.

It is impossible, with the limited force we have, to stop all unlawful parking. Properly to serve a summons on these long-time parkers means that a patrolman must watch and wait six or seven hours until the owner of the car returns to take it away. This is a waste of police time, but is necessary in order to obtain a conviction in court.

During the recent subway strike the value of preventing parking was amply demonstrated by the emergency regulation which was put into effect at that time and has since been made permanent, prohibiting parking on the most important north and south bound avenues below 59th Street from 7 a.m. to 10 a.m. and from 4 p.m. to 7 p.m. The effect was almost instantaneous. We increased the width of the roadway on these avenues at least 15 ft. over night.

The day on which the strike went into effect traffic practically was at a standstill all of that day. It was impossible to make any time getting up or down town. On the following day, when the emergency regulation went into effect, one could hardly believe such a change was possible; traffic flowed so smoothly there was no congestion; it looked to me like a holiday or Sunday in New York. It proved beyond any doubt that one of the most helpful remedies for relief of our traffic congestion is to put a no parking regulation into effect.

Another obstruction to the movement of traffic is the street cars. Take, for instance, Madison Avenue, where a light control system is in operation. For two minutes traffic is permitted to proceed north and south and one minute east and west. When the green light appears the automobile and the street car proceed; the automobile should in that two minutes cover from twelve to fourteen blocks, but owing to the limited roadway space and parked cars on every block the automobile cannot pass the street car between blocks, and as the street car has to stop every block or two for twenty or thirty seconds at least to permit passengers to alight or to get aboard, the automobile has to stop also. The two minutes allowed very soon expires and the automobile rarely travels more than four or five blocks during the two-minute interval.

Another cause of delay to faster moving traffic is the horse-drawn vehicle. In some cities it is not permitted in certain congested sections. I doubt if any such regulations could be put into effect in this city, but I do believe that considerable of the trucking now being done in the daytime will have to

*Abstract of a paper presented at a meeting of the Metropolitan Section, A.E.R.A., Dec. 3, 1926.

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be done at night, also that loading and unloading from the side of a vehicle will be made compulsory. If this was done another great obstruction to moving traffic would be removed. Another help would be to have some zoning regulation for business districts. In some buildings in the thirties there is a business conducted on every floor, and the backed-in vehicles completely tie up the street all day.

This congested area extends from 30th to 42d Street, from Fourth to Eighth Avenue. It often takes from 30 to 40 minutes to get across town through some of these streets. We are going to put some restrictive regulation in effect here. We may select two or more crosstown streets in this section and prohibit parking entirely, confine it to one side, or limit parking to twenty minutes, and watch the effect. We have not decided which street to try it out on or when it will be done.

We must, if we are going to permit this constant increase in vehicles, do something to increase the width of our roadways if we expect to keep traffic moving. I think we must eventually double deck some of our streets; we can widen others to at least 34 ft. by reducing the sidewalk widths. Where new roadways are being built and the space is available a width of 80 ft. is the least that should be considered as practicable.

The total registration of motor vehicles in the five boroughs up to and including Nov. 1, 1926, shows there are 589,578 motor vehicles in this city alone; to this must be added thousands of vehicles that come here daily from other parts of the country. How are we going to accommodate this enormous traffic growth to our already overburdened streets is a problem that I am facing with some apprehension, and while I am no alarmist, it looks to me, unless help comes from some source, and comes quickly, we will see traffic completely tied up in certain parts of this city.

Street Cars Travel as Fast as the Traffic*

By W. G. Strait
Vice-President New York Railways

EVERY one is willing to suggest means to solve the traffic problem of the future, but so great is our national reverence for the automobile that few dare to propose a solution for the problem as it now exists. In an interesting interview on this subject, Thomas A. Edison takes a look ahead and tells us that the construction of streets at different levels and the perfection of a helicopter which will enable airplanes to rise and descend vertically will eventually cure our traffic ills. This ought to be good news for the New Yorker of 2026, but it affords small comfort to a citizen of today, marooned in the safety zone at Fifth Avenue and 42d Street. Until we can divert our present traffic to air routes, something must be done to promote a more efficient use of these lanes of travel which are now available. As a matter of simple justice as well as common sense, the rights and well-being of the greatest number of people affected by traffic strangulation ought to receive first consideration.

Surface cars and buses carry 40 per cent of the total number of passengers carried on all transportation lines in Greater New York. Two out of every five residents of New York City, or 1,200,000,000 passengers a year, are subjected to unnecessary inconvenience, delay and annoyance in order that a few thousand owners of automobiles may enjoy the privilege of storing their cars on public thoroughfares—on the property of the public, whose progress to and from their homes is thus retarded.

If such a large proportion of the people of our city use street cars under the present unfavorable conditions surrounding surface travel, how many would use them were adequate traffic restrictions put into effect? Is it not reasonable to assume that such restrictions would bring about a considerable measure of relief from the overcrowding on subway and elevated lines?

Every surface system in the city is equipped to handle a much greater volume of business than it is now able to take care of. With a speeding up of traffic these systems would become important factors in solving the transportation problem. A great deal of short-haul traffic and not a little long-haul traffic have been diverted from the surface carriers to subway and elevated lines, to taxicabs and private automobiles, not because of any failure on the part of the surface lines to provide service, but solely because of conditions beyond their control.

Street cars can travel as fast as the traffic. To prove it I need only give the result of a series of speed checks recently taken on certain lines of the New York Railways system which are most affected by congestion. On Broadway, for example, the schedule running time from 59th Street to South Ferry is 46½ minutes. A southbound car, leaving the northern terminus at 7 a.m., arrived at South Ferry 33½ minutes later, thirteen minutes under schedule. Starting north at 7.38, it arrived at 59th Street in 47½ minutes, one minute over schedule time. Now look at the other side of the picture. A southbound trip, commencing at 3:12 p.m., required 65½ minutes; a northbound trip, starting at 2:04 p.m., required 67 minutes, and another northbound trip, at 4:18 p.m., required 73 minutes to complete. But at 6:25 p.m., when traffic had thinned out and the parked vehicles had disappeared, the same car and crew made the trip in 33 minutes, 13½ minutes under schedule.

It was the same story elsewhere. On the Seventh Avenue-Delancey Street line, where the schedule running time is twenty minutes, the time of trips varied from eighteen minutes in the early morning to 52 minutes in the late afternoon. On Sixth Avenue, with a schedule time of 22½ minutes, an early morning run was completed in 15½ minutes and a late afternoon trip in 39 minutes.

I could furnish similar evidence from each of our eleven lines if it were necessary, but you, as practical transportation men, know as well as I that traffic is the controlling factor in determining how much time is required to carry passengers to their destinations. I might say, incidentally, that the crews on the cars that were checked had no knowledge that a check was being made.

So long as the rights of the traveling public are subordinated to the comfort and convenience of owners of private motor cars, just so long will New York's traffic problem remain unsolved. What it is costing the city in lost time and energy, and in dollars and cents, is beyond computation. The worst of it is that the situation is becoming worse, not only monthly, but daily.

There are 400,000 passenger automobiles registered in Greater New York, to say nothing of the New Jersey, Long Island and Westchester suburbs. If parked close together, they would occupy a street extending from City Hall to Omaha, Neb., but most of them seem to be trying to find parking space south of 59th Street. That is why the Manhattan Surface Line Operators' Traffic Committee seeks the abolition of parking in that section.

Every well-informed, unbiased student of the traffic problem realizes that the remedy lies in discouraging the use in congested sections of the inefficient carrier and encouraging the efficient carrier—the one which transports the most people while utilizing the least amount of roadway space. At present the reverse of this principle is being applied.

Must Convince the Merchants

Parking prohibitions will not only have the effect of opening up new lanes of travel, but will also discourage the use of the inefficient carrier—the one hauling, on an average, $1\frac{7}{10}$ passengers—in the more congested sections, where these prohibitions are applied.

The only reason why practically unrestricted parking is permitted is that certain shortsighted merchants have been able to exert a potent influence in favor of the practice. In their eagerness to encourage the parking of cars in front of their stores they forget that they are making these stores inaccessible to other potential customers who travel in private cars, in taxicabs, in street cars and in buses.

The practical transportation men of New York City must combat this fallacious view. If possible, they must convince the merchants of the desirability of prohibiting unnecessary parking, but whether or not they can do this they must convince the proper authorities that it ought to be done because public interest demands it. Every legitimate influence that can be exerted upon public opinion and city officials ought to be exerted to bring about the desired result. Each of us can help as individuals and also as representatives of a vital industry. We owe this much to

*Abstract of a paper presented at a meeting of the Metropolitan Section, A.E.R.A., Dec. 3, 1926.

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ourselves, to the thousands of people who constitute the ownership of these properties and to our patrons.

Members Elected

MEMBERSHIP was voted to two operating electric railway companies, eleven manufacturing companies and six individuals at the meeting of the executive committee of the American Electric Railway Association held Nov. 19. Following is a list of the new company members:

OPERATING COMPANIES

Chicago, South Shore & South Bend Railroad, Michigan City, Ind.

Newport & Providence Railway, Newport, R. I.

MANUFACTURER COMPANIES

Ferodo and Asbestos Incorporated, New Brunswick, N. J.

Fremont Metal Body Company, Fremont, Ohio.

Hunt Spiller Manufacturing Corporation, South Boston, Mass.

Kelly-Springfield Tire Company, New York, N. Y.

McJunkin Advertising Company, Chicago, Ill.

Meyer & Wenthe, Chicago, Ill.

The New Departure Manufacturing Company, Bristol, Conn.

The Northern Granite & Stone Company, Cleveland, Ohio.

Phillips Petroleum Company, Bartlesville, Okla.

The Seiberling Rubber Company, Akron, Ohio.

Truscon Steel Company, Youngstown, Ohio.

Power Transmission and Distribution

ORGANIZATION of sub-committees and outlining of work to be undertaken filled a two-day meeting of the power transmission and distribution committee of the Engineering Association held in New York Dec. 2 and 3. Members present were F. McVittie, chairman; J. W. Allen, M. W. Cooke, J. H. Drew, S. S. Hertz, A. J. Klatte, H. S. Murphy, J. F. Neild, W. J. Quinn, M. B. Rosevear, W. Schaake, A. Schlesinger, D. L. Smith and R. E. Wade. J. C. Daiman represented W. H. Bassett and E. D. O'Neill represented C. L. Hancock.

It was decided to hold the next meeting of the committee in Chicago, March 7 and 8. In order to conform with the action taken at the last convention regarding specifications for steel tubular poles, it was agreed to remove from specification D202-16 all reference to tubular steel poles beginning on page 332 of the Manual, including the text and tables on pages 342 and 343. A paragraph was agreed upon which is to be inserted in place of the matter removed. It was also agreed to remove section D202-25 from the Manual and include the specifications as approved by the American Engineering Standards Committee in place of it.

Improvement of the wireograph, which is used for making measurements of trolley wire, was discussed and it was decided that the chairman of sub-committee No. 3 should place before the Bureau of Standards and also before several universities the question of making an analysis of the principles of this instrument to include suggestions for correcting errors which now exist.

The question of pole reinforcement as a means of avoiding replacement of depreciated poles was discussed and results of experiments being made in Chicago and on the Third Avenue Railway in New York were given.

Work of the various sub-committees was started by meetings which were held Dec. 3. Sub-committee No. 1, which is to review existing Manual sections, went over all the present sections relating to power transmission and distribution and decided on the ones which would receive detailed consideration. The sub-committee on this subject consists of J. W. Allen, chairman; J. H. Drew, S. S. Hertz, K. J. Keith, John Leisenring, W. J. Quinn, M. B. Rosevear, W. Schaake, A. Schlesinger and R. E. Wade.

Study of specifications for materials used in catenary construction will be continued by sub-committee No. 2. Recommendations of the 1926 committee were gone over in detail and many points were cleared up. The sub-committee on this subject consists of D. L. Smith, chairman; S. H. Anderson, W. H. Bassett, J. H. Drew, S. S. Hertz, John Leisenring, M. B. Rosevear, W. Schaake, A. Schlesinger and R. E. Wade.

Trolley wire wear and breaks will be studied further by sub-committee No. 3, which will endeavor to clear up disputed points regarding the accuracy of the wireograph. The sub-committee consists of H. S. Murphy, chairman; J. W. Allen, S. H. Anderson, W. H. Bassett, M. W. Cooke, J. H. Drew, C. L. Hancock, A. J. Klatte, J. F. Neild, M. B. Rosevear and G. F. Wennagel.

Sub-committee No. 4 will continue to confer with the American Society for Testing Materials in an effort to improve the specifications for bronze trolley wire. Discussion of this subject showed that there is a tendency for closer agreement on the twist test which has been under discussion. The personnel of the sub-committee is: H. S. Murphy, chairman; J. W. Allen, W. H Bassett, M. W. Cooke, C. L. Hancock, A. J. Klatte, J. F. Neild, M. B. Rosevear and G. F. Wennagel.

Investigation of radio interference will be continued by sub-committee No. 5 and this committee will be very glad to receive any reports of experience and conditions from any member of the association who is having problems to solve. The sub-committee inc'udes W. J. Quinn, chairman; S. H. Anderson and D. D. Ewing.

Inductive co-ordination will be studied and sub-committee No. 6 will endeavor to maintain contact with the American committee on inductive coordination. The sub-committee on this includes J. F. Neild, chairman, together with D. D. Ewing and A. Schlesinger.

A new subject is being considered by sub-committee No. 7. This is a layout designed for the distribution system of automatic substations. It was agreed that information should be gathered to form a definite basis for the development of such a system. This information will be obtained from the principal manufacturers, together with engineers who have automatic substations. The sub-committee consists of G. F. Wennagel, chairman; D. D. Ewing, J. Leisenring, W. Schaake, A. Schlesinger, D. L. Smith and R. E. Wade.

The advisability and possibility of establishing a standard by which various methods of operating and maintaining overhead lines can be compared was considered by sub-committee No. 8 Discussion brought out that many variables must be considered and the sub-committee will try to formulate some recommendations to take care of various conditions. The sub-committee includes M. W. Cooke, chairman; K. J Keith, A. J. Klatte, H. S. Murphy, J. F. Neild and W. J. Quinn.

Standardization of trolley wire reels is a new subject being undertaken by sub-committee No. 9. Discussion of this showed that all felt very definite recommendations should be made. Designs for standard reels will be worked out and will be submitted to all manufacturers of trolley wire in an endeavor to secure agreement. The sub-committee includes J. F. Neild, chairman; W. H. Bassett, C. L. Hancock, S. S. Hertz, K. J. Keith, A. J. Klatte and D. L. Smith.

Wood Preservation

SUB-COMMITTEE assignments and subjects to be studied during the present year were discussed at a meeting of the committee on wood preservation held at New York on Dec. 8, 1926. It was decided to drop some of the topics considered by the committee last year and to concentrate on others. A special attempt will be made to present data in the committee's report showing the economic advantages of treating timber. Those present were: C. A. Smith, chairman; A. P. Way, W. L. Harwood, E. F. Hartman, E. H. Swayze, W. H. Fulweiler and R H. White, Jr.

Manufacturers' Committee to Expand Activity

IN A MEETING of the committee on co-operation of manufacturers held at association headquarters on Dec. 6 suggestions for broadening the scope of the committee's activity were made. During recent years, this committee's work has consisted principally of co-operation with the publicity committee for the purpose of enlisting the support of manufacturers in presenting the railway situation to the public.

The plan for broadening the committee's functions would extend its activities to other things. The thought was expressed that this might ultimately result in making the committee a clearing house for presenting to the executive committee the collective views of manufacturers. Suggestions made in a letter by M. B. Lambert, transportation sales manager Westinghouse Electric & Manufacturing Company, for setting up a regional organization of the committee which could be made the means of stimulating interest on the part of all manufacturer representatives in the subject of improved equipment were discussed at length. Suggested names for such regional appointments were made to Chairman Wickwire. Other activities in which such a regional organization would make possible greater co-operation by manufacturers in promoting the interests of the electric railway industry were outlined and discussed.

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The News of the Industry

Temporary Extension on the Way

Recent Moves at Chicago Indicate Respite for Surface Lines—Rumors of Bus Service with 4,300 Vehicles

Because it is regarded as the only temporary solution of the traction problem possible; because it would give the Legislature time to pass laws permitting the incorporation of such features as terminable permits and unified transit in the new franchises, and because it would protect the interests of the city during the impending receivership, the transportation committee of Council of Chicago voted almost unanimously on Dec. 8 to recommend to the Council that it extend the Surface Lines franchises for six months until July 1, 1927. The lone Alderman who protested said that the city should not put itself on record before the companies signify whether or not they will accept the offer.

A resolution outlining the terms of such a grant had been previously prepared by Corporation Counsel Francis X. Busch at the instance of the local transportation committee and Mayor William E. Dever, who first urged the extension two weeks ago. In commenting on the proposal Mr. Busch asserted that it was unlikely the grant would prevent a receivership.

City-Wide Bus Proposal Submitted

Rumors that the Chicago Motor Coach Company was prepared to offer a city-wide bus service to the city were set at rest on Dec. 8. On that date J. A. Ritchie, president of the company, addressed to Mayor Dever and the Council a letter in which he said that "we propose giving Chicago a complete installation of modern double-deck motor coaches serving not only the people now served by the Surface Lines, but extending the installation to localities at present without any service." He said the art of motor coach design and construction has developed to the point where mass transportation can be adequately handled by the motor coach.

According to him the modern large capacity coach is a more efficient carrier than the street car, due to the marked improvement in construction in recent years. On the other hand "there has been little progress in recent years in street railway systems." His company proposed to furnish "a sufficient number of motor coaches so that during rush hours there would be available 290,000 seats as compared with 156,000 now provided by the Surface Lines."

The total capital investment for the proposed city-wide motor coach operation in Chicago is estimated by him at less than one-half of the present value of the Surface Lines as reported by the Board of Supervising Engineers. The length of the average ride per passenger on the Surface Lines in Chicago, Mr. Ritchie says, is about 4 miles. On the present motor coach system, operating largely on the boulevards, the average ride per passenger is about 6 miles.

Mr. Ritchie expressed the opinion that notwithstanding the case now pending in the Supreme Court of Illinois between the city and his company, involving certain legal questions, and having in mind the importance to the city of Chicago of an early settlement of its surface transportation problem, an agreement could be entered into between his company and the city which would bring about a prompt solution of the problem. He said the agreement would be binding on the city and his company no matter which side is successful in the pending litigation.

Mr. Ritchie says the interests he represents desire to confer with the city authorities to work out a plan which will meet with public favor. According to him the subject of fares, period of contract, compensation for the use of the streets, etc., have all received careful attention by his company.

$20,000,000 Interurban Extension Authorized

Immediate construction of a connecting link of the Piedmont & Northern Railway between Spartanburg, S. C., and Gastonia, N. C., a distance of 55 miles, was authorized by stockholders of the railway at a meeting in Greenville, S. C., on Dec. 8. The action of the stockholders ratified a proposal of the board of directors made about a month ago. A resolution adopted by the stockholders also authorized the directors to proceed as they see fit with extension of the Piedmont & Northern lines north from Charlotte, N. C., to Durham, N. C., with such branch lines and along such route as the directors may see fit.

This is a distance of about 135 miles, and when this second addition is completed the rich cotton belt of South Carolina and the tobacco growing section of North Carolina will be connected with a continuous electric railway. Extension of the Piedmont & Northern lines, which will ultimately represent an expenditure of about $15,000,000 or $20,000,000, will be financed by stock sales and bond issues according to the judgment of the board of directors. With this action of the stockholders in ratifying the proposal the matter now reverts back to the directors, who are instructed to enter into any contracts or agreements that they deem advisable in pushing to completion the extension.

Work on the extension of tracks from Spartanburg to Gastonia will begin as soon as legal and financial details can be worked out so that the tracks will be ready for the operation of trains within about one year.

L. J. DeLamarter Nominated for Civic Prize

Louis J. DeLamarter, vice-president and general manager of the Grand Rapids Railway, Grand Rapids, Mich., has been named by the Association of Commerce of that city as candidate for the $1,000 award offered by the Harmon Foundation of New York to the person responsible for the most outstanding civic achievement for the year.

Mr. DeLamarter merits consideration for the honor because of his contribution to the progress of railway service with the new cars that have brought Grand Rapids renown in that field.

Inquiries indicating interest in the Grand Rapids treatment of its railway problem have come from all over the country, says Lee H. Bierce, secretary of the Association of Commerce.

The chairman of the award jury is Julian W. Mack, judge of the United States District Court at New York. Other members of the jury are Jane Addams of Hull House, Chicago; Will W. Alexander, director of the Commission on Inter-Racial Co-operation, Atlanta; Mary S. Gibson, Los Angeles, and Rev. John A. Ryan, director of the National Catholic Welfare Council, Washington, D. C.

The award is not competitive in a literal sense. While nominations are invited, the judges are not restricted to a choice from among nominees.

New Corporation Would Operate in Michigan

The Rapid Transit Corporation of America, incorporated under the laws of the State of Delaware, which has taken over the Michigan Elevated Railway Corporation and the Detroit Elevated Corporation, still in the promotion stage, has applied to the Michigan Public Utilities Commission for permission to do business in Michigan.

It is proposed to construct a monorail line from South Park, near Port Huron, Mich., to Detroit. Officials of the company announce that financing of the line is assured.

Officers of the corporation include C. M. Goodrich, K. Vedder, William O. Fitzgerald, George A. Schwab, Dr. J. C. Walker and Fred Rohnert.

Labert St. Clair Recovering

Labert St. Clair, director advertising section of the American Electric Railway Association, is convalescing at his home in Rye, N. Y., from the effects of an operation to which he submitted shortly after his return to New York from the convention at Cleveland.

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St. Petersburg Municipal Line Goes to 7-Cent Fare

Seven cents is now being charged in St. Petersburg, Fla., on the lines of the Municipal Railway of St. Petersburg. The old fare was 5 cents. The increase, effective on Dec. 1, was recommended by R. E. Ludwig, director of public utilities, and was approved by the City Commission.

Steady decreases in the total receipts from passengers were ascribed as the main reason for a higher fare. Railway receipts in October fell off 10 per cent compared with a similar month last year, and November, according to Director Ludwig, is 15 per cent below November, 1925. In addition, the company has been called upon to pay for large improvements out of the operating funds.

With a fare of 7 cents, sixteen car tokens are to be sold for $1 and the special rates for school children will remain. The two-zone system within the city has been abandoned, reducing the regular fare to the Jungle and Shore Acres from 10 to 7 cents. Although the increased rate applies only to St. Petersburg, it was intimated that the question of an increase from 10 to 14 cents for Gulfport would be taken up with the Town Council of Gulfport and the Florida Railroad Commission.

Commissioner Charles L. Snyder said that in his opinion the municipality should not operate a public utility at a loss. He explained that the city should not charge taxpayers who do not ride the street cars for the deficit caused by the riding public. He said the increased fare was a temporary measure taken to tide the municipal railway over until the city was relieved of the extra burden of expenditures brought about this year by extensions to the railway and losses suffered by operation of a municipal bus line. City Commissioner Serviss explained that buses were now paying their own way.

Boston Committee Contemplates Extensions

A special commission, created by the Legislature last year, has made several recommendations to the new Legislature regarding rapid transit in Boston. These include an extension of the rapid transit system from Governor Square to permit Boylston Street trains to go farther west; a subway station at the corner of Charles and Cambridge Streets; an extension of the East Boston tunnel again, running it from Maverick Square in East Boston out to Day Square, and an extension of the Elevated service beyond the Everett station.

The commission reports against the proposition to scrap the Boston Elevated structure in Charlestown and in Washington Street, Boston, as unwise and uneconomical, but it concludes that the city of Boston might buy the elevated structure. Such purchase would not be different from the state's purchase of the Cambridge subway, and the ownership of it by the city would be like its ownership of the subways and tunnels in Boston. It would relieve the Elevated of a burden and permit of the construction of other improvements when needed. If the elevated structure were owned by the city and a rental of 6 per cent were charged the railway, the annual rent would amount to $1,800,000 and the purchase price load would be paid from the sinking fund. This would be about $27,000,000. If the purchase money cost the city 4 per cent to borrow, the debt would be paid in 27 years, from the sinking fund accumulation.

The commission which makes these recommendations is composed of Chairman Attwill of the Public Utilities Commission, Stanley R. Miller of the board of trustees of the Boston Elevated Railway and Col. Thomas H. Sullivan, chairman of the Boston Transit Commission.

Wage Increase in Pittsburgh Proposed

The trainmen and the management of the Pittsburgh Railways, Pittsburgh, Pa., have approached the Traction Conference Board with a view to increasing the rate of pay of trainmen 1½ cents per hour, effective Jan. 1, 1927. It is believed that although the present agreement between the company and the trainmen does not expire until May 1, 1928, this move is economically sound because of the splendid co-operation rendered to the company and the public during the past year, and because of the many economies the men instituted or aided to put into effect.

A poll of the members of the Traction Conference Board indicates that they would agree to the proposition, but action cannot be taken officially until the railway budget for 1927 is presented.

Wheeling Favors Revised Franchise

The proposed revised franchise of the Wheeling Traction Company, Wheeling, W. Va., has been generally received with favor by representative citizens as a result of a joint citizen-Council meeting. The suggestions were also favorably received by A. C. Spurr, general manager of the company. He informed the Council and the citizens that the revision was not being sought because of the assumed operation of the Mozart Park line but because it was necessary to ask for relief; that the company was operating in Wheeling under antiquated franchises, and that many cities and a few states had through legislation relieved the railways of obligations similar to those that exist in Wheeling.

Clauses demanding frequent and efficient service, as well as safety for patrons of the line, will be inserted in the proposed franchise before conclusive steps are taken. The fare is not to be more than any zone fare in the city. In this way the city will receive adequate compensation for relieving the company of surface paving conditions. In exchange for the relief obtained through revision the Wheeling Traction Company will expend $65,000 in rehabilitating the line.

Seeks Higher Rates in Norfolk But Not Richmond

Substantial increases in rates on its Norfolk, Va., division are asked by the Virginia Electric & Power Company in a petition just filed with the Virginia Corporation Commission. The case will be heard on Dec. 16. The company asks a cash fare of 10 cents, with three tokens for 25 cents and weekly passes at $1.50, the passes to entitle bearer to ride the company's cars or buses at will during the seven-day period. School tickets will be 24 for $1, if the petition is granted. Under the new schedule free transfers will be granted between street cars and buses on the division and all zones will be abolished. The company asks that the new rates and provisions become effective Jan. 1.

The City Council of Norfolk has petitioned the State Corporation Commission to grant the company the new schedule. The latter has agreed to rerout its lines in accordance with recommendations of a recent commission which investigated the traffic situation in Norfolk for the city government. It is claimed by the company that it is making at present only 2 per cent on its properties in the Norfolk division.

In connection with the desired increase in fares in Norfolk, Mr. Wood said that the company felt honor bound, not to ask for an increase in Richmond for at least a year. In that city the company was not now making the 8 per cent on its investment to which it was entitled under the law. The company hoped, however, that the new bus routes and the railway extensions under the new franchise would make up the revenue.

He pointed out that Norfolk now has three fare zones, operative particularly on the line through the city to Ocean View and Willoughby Spit, and that the new fare would do away with zones entirely. He also said that the new fare was based on extensive rerouting and other plans recommended by a traffic commission. Only about 5 per cent of the users of the Norfolk system would pay the 10-cent fare under the new rates, Mr. Wood said statistics would show. The other 95 per cent would either ride on the tokens, which will be procurable for 8½ cents, or use a weekly pass, which was to be transferable and would cost $1.50.

Improvements to Be Made by Inland Empire

Ralph Budd, president of the Great Northern Railway, says that if the purchase of the Spokane & Eastern Railway & Power Company and the Inland Empire Railroad by his company is approved by the Interstate Commerce Commission extensive improvements will be made during 1927 on the lines purchased. The properties to be taken over operate from Spokane to Cœur d'Alene, Idaho, and from Spokane through the Palouse wheat district to Moscow, Idaho. The Inland Terminal building and grounds will be leased or sold when physical connections are made between the two systems, permitting the Great Northern depot to be used by the electric lines.

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New York May Do Something About It

Public Interest Has Recently Become Aroused Over the Direction in Which New York City Is Headed in a $1,000,000,000 Expenditure for Rapid Transit Lines Intended to Be Municipally Operated, but Which Must, After an Experimental Period of Three Years, Be Run at a Fare that Will Cover Costs—Unification with Existing Lines Suggested—Some Angles of the Situation Reviewed

SOBER attention is being focused on the transit situation in New York. Not since the negotiations of the so-called dual subway contracts of 1913 has the transit matter been so much in the public prints as has been the case in the last few weeks. Many circumstances have worked to this end. The agitation about the pending bus contracts has been consistent. The matter has become a public issue by the attitude of Comptroller Berry. The transit companies, notably the Brooklyn-Manhattan Company, have issued several statements, among them an opinion by Charles E. Hughes that it would do the city no good to attempt to write into the pending bus contracts stipulations seeking to fix the fares. Coupled with all this has been agitation about a revival of the plan for the unification of all the local systems. This last would involve the ditching of the dual contracts, so called, under which the subways are now operated, and the making of new contracts in which the 5-cent fare, according to Chairman Delaney of the New York City Board of Transportation, would not be a primary consideration.

It is impossible to go into all the political angles of the matter. It should be said, however, that a large part of the credit for having raised the subject of transit as an issue is due to Comptroller Berry. He insists that the matter of subway financing overshadows all other questions of city finance and says there can be really no determination of other pending problems until the subway question has been settled. Mr. Berry is not committed to any particular plan, but he has declared emphatically that he cannot see how the city can go ahead with any of its other projects until this question has been disposed of. He favors the immediate appointment of a board of expert engineers to examine the proposed plans before further expenditures are made on the system now under construction.

Municipal System Under Construction

Right here it should be explained that the city of New York is committed at the present time to the construction of a system of rapid transit lines, intended to be run by the municipality itself, estimated to cost $625,000,000. Mr. Berry and others, many of them experts in matters of this kind, say the cost of this system may run as high as $1,000,000,000. In order to complete the system by 1931 the estimated money requirements from 1925 and 1926 were set down at $238,000,000. To date only $94,605,157 has been appropriated. Critics of the program of transit construction to which the city is committed say that even this inadequate amount of more than $90,000,000 has been secured only by neglecting other important municipal improvements. By legislative act the proposed city system will be compelled to operate at a 5-cent fare for the first three years. After that service will be at cost. As a consequence the losses for this period, according to estimates made by the Board of Transportation, will be $61,994,800. According to Mr. Berry, the city's present annual deficit on its non-earning investment in the existing rapid transit facilities is $13,845,000. As critics of the present program see it, the competitive operation of the city system will not accelerate the date when the city will receive a return on its investment in the existing rapid transit system, publicly owned but privately operated.

Alarm expressed by Mr. Berry at the situation as it now stands is shared by the Real Estate Board of New York City, which feels that the present subway program threatens the financial stability of the entire city. Lawrence B. Elliman, chairman of this board, stated recently that the billion-dollar program developed during the Hylan régime, and generally indorsed by Mayor Walker, will bring the city's debt up nearly 50 per cent, to the unheard of value of 25 per cent of the assessed value of New York City's taxable property. According to Mr. Elliman, confusion and bankruptcy seem inevitable for the city.

A Matter for Technical Rather than Political Attention

The natural reaction to that thought is that the greatest care must be exercised to develop systems with economy and foresight and to operate them so that they will be the least possible burden on the public. According to Mr. Elliman the New York public has been unmoved by the traction situation that has been skidding along on the brink of despair for so many years. As he sees it, the solution of the matter is largely in the hands of men elected to public office untrained in the technic of transportation and that the matter too frequently receives such casual treatment as was meted out to it by Mayor Walker when he said, confidently, that he "knew this traction thing would turn out all right."

According to Mr. Elliman the baffling problem is not engineering or even financing but discovering some way to engage the public attention long enough to obtain public understanding of the situation. The financial condition of railways had but little effect on the public, but he thought it would be interesting to see if the possible fear of bankruptcy of the city of New York itself would prove to be sufficiently vital to the people themselves to cause New Yorkers to pause for a moment in their mad rush to contemplate the direction in which the $1,000,000,000 municipal subway scheme was heading them. If their attention could be arrested, then perhaps the public would demand that technical rather than political attention be given to this most threatening problem.

But the rapid transit matter, as such, is not the only problem. Tied in with it is the subject of granting bus franchises. Here again concern is expressed for the future outlook. The committee on city transit of the Merchants' Association has expressed its appreciation of the estimates and facts contained in the report by the Board of Transportation relating to the various routes proposed, but the committee has indicated that it is unable to agree on the policy recommended by the board in that it (1) disregards the principle of unification and economic utilization of existing means of transportation and (2) fails to consider the property rights of companies now operating. It says that it is in the interest of all the people of New York City that this ques-

Some of the Reasons for the Commotion

NEW YORK CITY is engaged on a program for the construction of subways intended to be operated by the city estimated by its proponents to cost $625,000,000. Other estimates of the probable cost place the sum at more than $1,000,000,000.

Real alarm is now being sounded by business bodies at the probable effect of all this on the credit of the city. These are some of the reasons for that alarm: So far contracts to the extent of about $100,000,000 have been awarded. In order to complete the system by 1931 estimated money requirements for 1925 and 1926 were set down at $238,000,000.

Mayor Walker has said that he "knew this traction thing would turn out all right." Comptroller Berry isn't so sure about it. As for Chairman Delaney of the Board of Transportation, he has recently had something significant to say on the matter of unification to include the existing carriers. Still more recently Chairman Dahl of the B.-M.T. has made public letters discussing the prospects.

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tion shall be settled along sound economic lines. It wants the public clearly informed that any attempt to develop a city-wide system of independent bus operation is a distinct movement away from the principle of unification. The committee agrees with the principle of the proposals before the Board of Estimate and Apportionment, the law-making body of the city, which provides for a zone system of fares on the proposed bus lines with a 5-cent charge for shorter hauls and higher charges for long hauls, but it says that it clearly recognizes that for longer distances in less congested sections it is impossible for buses to operate profitably at a straight 5-cent fare.

Why the Discrimination?

It contrasts this situation with the one under which present surface railways are forced to operate at a 5-cent fare, irrespective of distance, even though the actual cost of transportation on these lines is in most cases considerably in excess of 5 cents. It says that any further attempt to introduce competing bus routes would still further deplete the earnings of the surface lines and render more complicated the present transit situation. Its idea is that the existing transportation carriers should be encouraged to develop bus lines within their territories as auxiliaries and feeders, whenever circumstances render such action desirable or practicable. It says that any other method of handling the question of surface transportation will merely lead to increased costs and further complications which would inevitably postpone a solution of the transit problem in New York.

In a communication to the Mayor, the Merchants' Association contends that the plan of the Board of Transportation for a large number of segregated bus systems is economically unsound and adverse to the public interests. The association says that the plan should be abandoned and in place of the proposed fifteen unrelated systems in competition both with trolley and subway systems, there should be substituted four large systems based upon the principal existing facilities and fully correlated with such new bus lines as are required to meet the public needs fully.

A Bit of Bus Background

In contemplating this situation in its various aspects the tendency of the narrator unmistakably is to go too fast. It should, perhaps, be explained at this point that the proposal to issue franchises for additional bus routes in the city has been in the offing for many months past. Mayor Hylan, when he was in office, kept promising to do something about the matter, and Mayor Walker, who succeeded Mayor Hylan on Jan. 1 last, took up the talking where his predecessor had left off. Report has followed report on this matter, but there has as yet been no action. As late as Sept. 15 the Board of Transportation submitted a 1,088-page finding to a special meeting of the Board of Estimate on the proposal to award bus franchises to private corporations. The substance of the recommendations of the board was that the franchise be awarded only to a corporation of great financial ability and for city-wide operation only; that there be strict adherence to the 5-cent fare principle with a possible charge of 2 cents for transfers. On the basis of the present bids, the Board of Transportation indicated that the offer of the Equitable Coach Company was the most favorable in that it was the only one that came anywhere near meeting the rigid conditions set down. The way was left open, however, for further negotiations with other concerns eager to enter the bus transportation field. This report was referred to the committee of the whole of the Board of Estimate, without comment and there it has rested since, without action.

There has been a veritable avalanche of bus bids. In one form or another the proposals now exceed 100 in number. The local railways have expressed their willingness to run buses, and all the principal ones have made bids for the right to operate. Among these applicants is the C. I. & G. Bus Corporation, subsidiary of the Brooklyn-Manhattan Transit Corporation, and of the Brooklyn City Railroad. The proposal made in behalf of this company contemplates operation on a service-at-cost basis. In the hope that it will be useful in the final solution of the relief that can be afforded to transit and traffic conditions by auxiliary bus service, Gerhard M. Dahl, chairman of the Brooklyn-Manhattan Transit Corporation, has sent to the Board of Estimate and Apportionment a communication dealing with the fare conditions contemplated for inclusion in the bus franchises. Mr. Dahl's concern is with the reiteration of the statement made publicly about a 5-cent fare. The proposed form of franchise suggested by the Board of Transportation recommends that such fixed fare on each route or zone shall be 5 cents.

Similar statements by public officials have caused general public belief that the bus fare will thereafter be 5 cents. The question that arose in the minds of some was whether the city had the power to compel a fixed fare and to require the grantee of bus franchises to abide thereby, beyond state power to fix a reasonable fare higher or lower than such fixed fare. It was Mr. Dahl's thought that if the city does not have such power, the situation should be so thoroughly understood that the public will not be misled by repeated statements that all applications must be on a 5-cent basis, with consideration given only to other favorable conditions of proposed offers and with the final claim that the bus situation has been successfully "solved" on a "5-cent fare" basis. The position of the company which Mr. Dahl represents is that cost-of-service is the legal and sound basis upon which the city should consider the granting of bus franchises. It further believed that any effort to impose an arbitrary fixed fare was lacking in candor to the public in the light of the legal situation controlling the granting of franchises.

Here, indeed, was a mighty serious situation. If the city did not have the actual power to fix fares, the public would, by such claim, be further deluded for a time on the economic principles controlling permanent transportation service. Furthermore, any applicant with a knowledge of the possible limited power of the city to fix fares could afford to go far in its offer of routes, service and other matters. Thereafter, if it were granted franchises on such an apparently liberal offer, it could secure, by proper proceedings, the fixing of fares at the then cost of service. In order that the questions about fare fixation should be made as clear as possible, Mr. Dahl's company asked Charles E. Hughes to consider the matter and to express his opinion thereon. It will be recalled that the Public Service Commission law was passed when Mr. Hughes was Governor of the State of New York. Mr. Dahl on Dec. 1 transmitted to the Board of Estimate a copy of Mr. Hughes' opinion for its consideration. The question submitted to Mr. Hughes was:

"Would a bus franchise granted under the form of contract proposed in the second report of the Board of Transportation enable the city to terminate the franchise in case an increased rate of fare were charged under the authority of the Transit Commission?"

The opinion by Mr. Hughes is one of some fifteen pages.

The Senegambian in the Woodpile

Stated in other words, the question was whether the city, in granting a bus franchise, has authority to contract with the grantees that the latter shall not avail themselves of the exercise of the rate-making power vested in the Transit Commission. Mr. Hughes concludes that any attempt to create a contractual obligation on the part of the carrier to charge a fare which the Transit Commission finds to be unjust and unreasonable, or not to charge a fare which that commission finds to be just and reasonable, in the exercise of its jurisdiction under Sec. 49 of the public service commission law, would be abortive and that a stipulation to that end in the grant of the franchise would be null and void. Mr. Hughes says that the provisions of the public service commission law must be taken as read into the franchise, and the provisions of

Lessons in Subway Finance

GERHARD M. DAHL, chairman of the Brooklyn-Manhattan Transit Corporation, is engaged in writing a series of letters to New York City's Transit Commission and Board of Estimate which should, when the final one is drafted, be gathered together in a textbook for use by rising politicians. It is probably too late to teach the older generation of Tammany that no way exists for making a nickel buy as much transportation as it did a dozen years ago. They will live and die without discovering the truth, not because they are unable to grasp it but for the reason that they do not want to. But light will gradually break into the younger Tammany mind, and Mr. Dahl's letters are helping. — *Wall Street News.*

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that law contemplate the exercise of authority over fares or other rates on the part of the commission. And the Transit Commission, as the successor to the Public Service Commission for the first district of New York, is a creature of the state. There apparently is the Senegambian in the woodpile.

The first reaction in official city circles to this expression of opinion by Mr. Hughes was that further delay might result in the granting of the bus franchises. Mayor Walker was inclined to believe, despite the opinion of Mr. Hughes, that the provision in the proposed franchises which fixed the fares at 5 cents and binds the franchise holder not to appeal to the Transit Commission or to the courts for a higher fare, on the penalty of the forfeiture of the franchise, was legally binding. His idea was that if this were not the case, the law should be amended to give the city the power to make supervision of this kind binding.

Mr. Delaney, the chairman of the Board of Transportation, raised the point that if Judge Hughes were correct in the views that he held, the alternative would seem to be municipal operation. The city, however, would need legislation to empower it to operate a bus system and Mr. Delaney said that any franchise granted in the meantime should be for the shortest period possible and that any attempt by a franchise holder to increase the fare in accordance with Mr. Hughes' opinion should be tested in the courts.

Discussion of Unification Started

While all this was going on, informal discussions were held by the Board of Transportation with railway representatives on the matter of the possible unification somewhat in keeping with the suggestions contained in the plan advanced by the Public Service Commission about five years ago. This plan, it is understood, contemplates the formation of a new semi-public corporation, the only outstanding securities of which would be a small issue of stock so allocated between the two groups as to divide control evenly between the public and private interests. This corporation would take over from the public and from the city operating rights, but not the ownership of any property. It would assume the active management of all lines involved in the consolidation and run them as a unit in the interests of the traveling public. All of the subways and all of the elevated lines of the city, both those now in existence and the city lines under construction, and such other transit lines as would be vital to the city, would be under its control.

Thus the matter quickly became one for public discussion. All of the newspapers took it up according to their lights and leanings; the Transit Commission issued a statement of its position in the matter; Mr. Dahl of the Brooklyn company made the position of his company plain in several statements addressed to the Board of Estimate and Apportionment and the Transit Commission, and Frank Hedley, president and general manager of the Interborough Rapid Transit Company, also stated the position of his company.

The statement made by Mr. Delaney looking toward possible unification was presaged upon events at the conferences held with transit officials some time ago. These conferences were to have been resumed about July 1. The strike on the lines of the Interborough and other important matters delayed things, and the Mayor has not yet called the conference to reconvene. This conference, when it is reconvened, members of the Transit Commission expect to attend. The commission made it plain that in accordance with its desire to co-operate as much as possible with the city authorities, its policy has been in all cases to lend its friendly offices in the hope that an agreement can be reached between the city and the transportation interests, the expectation being that progress can be made in this way much faster than by formal proceedings.

The Stage Is Set for Action

EVEN the public authorities have been at outs with each other. Up to the first of last May the city administration would have no truckling with the State Transit Commission. First of all, the commissioners were Republican appointees. Then, too, Mayor Hylan conceived a bitter animosity for the chairman, George McAneny. The most friendly personal feeling existed between the Transit Commission (state) and Mr. Delaney's Board of Transportation (city), but only the most informal sort of co-operation was possible between them in such a rough set of partisan politics and personal feeling. Up to the first of January any constructive solution of the transit problem as a whole was obviously caught in an immense jam. But now the scenes have been completely shifted; the stage is set for action. In the first place Mayor Hylan is eliminated. With his going the emotional tension has almost disappeared. Officials of the railways no longer expect to have bad names hurled at them at long range from the City Hall.—*New York Times.*

Railway Man States Facts in Simple Terms

Mr. Dahl's communications have shed light on a situation complicated by many moves and made unintelligible to many people by the magnitude of the whole question, the stupendousness of the amounts of money involved, and the seeming conflict in authority between the Board of Estimate and Apportionment and the Board of Transportation, which are purely New York city bodies, on the one hand, and the Transit Commission, a state body which is really a court of last resort on fare and other matters, on the other. Mr. Dahl said in the first of his communications that the economics of the transit relief were comparatively simple, but that the politics of it were not so easy. He expressed confidence in the sound common sense of the people of the community and expressed the belief that if hostility were eliminated and the problem approached in the spirit of mutual consideration, fairness and patience, a solution could be provided which would meet with the approval of the public. He said that as differences of opinion might exist or arise in connection with the discussion of any complicated problem, any seeming criticisms were advanced in a friendly spirit for the purpose of arriving at the truth.

As has been indicated before in this review, the proposed new independent system of subways, conceived during the Hylan hierachy, was not planned with a view to its consolidation with the existing systems. According to Mr. Dahl, expert opinion bore him out in the statement that competition and consolidation are the opposite ends of the poles in subway policy. He did not subscribe to the idea that the completion of the proposed new municipal system was necessary because it would give the city a club to hold over the heads of the Interborough Rapid Transit Company or the B.-M. T. The question he asked was this: "Why assume that a club is needed until there is evidence that someone desires to act unfairly?" He said there had never been a time when the B.-M. T. was not ready and willing to enter into open conference with any public authority for the purpose of helping to solve New York's transit problem.

One of the things Mr. Dahl did was to go into figures to show that at the end of 1933, after three years of operation of the new system by the city, the city's deficit on the existing systems, at the present annual rate, will have reached the sum of $110,760,000 for the years 1926 to 1933 inclusive. This added to the $61,994,600 losses on the new city system will make the total deficit of $172,755,800, which the taxpayers in New York will be called upon to meet. At the end of the three-year period, the law requires that the city system must be self-sustaining, and the Board of Transportation's own figures from 8 to 10 cents.

Another question Mr. Dahl asked was this: "Isn't this rather an expensive club?" As a matter of fact, he wanted to know whether it really was a club at all. He said it should be borne in mind that if the existing contracts between the city and the companies continue, the city system will then be operating at a rate of fare ranging from 8 to 10 cents, while the Interborough and B.-M. T. are operating at a 5-cent fare. Another question he asked was: "Which line will then be patronized?" This was largely the burden of the remarks contained in Mr. Dahl's first statement. In subsequent communications addressed by him to the Board of Estimate he elucidated the figures, but that is neither here nor there so far as the purpose of this account is concerned.

In short, were the city to apply sound business principles to its rapid transit program, construct needed additional facilities and co-ordinate the operation of its facilities, its entire rapid transit investment could be put on a self-sustaining basis at once. According to Mr. Dahl, such procedure would

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release frozen city credits of $262,626,296 and make available additional city sums for subway construction, or private capital might be induced to provide for subway construction. He said that such a policy and program would mean rapid transit construction on a business basis in pace with the growth and business expansion of the city, not the feast and famine of the past.

WALL STREET REVELS IN RUMORS

Another question that is being asked is: "Will there be a consolidation of the transit companies, notably the Interborough and the B.-M. T., whether or not the unification scheme is adopted?" Financial circles believe there will. It is a vague unconfirmed rumor that is going the rounds about quiet acquisition on the part of the B.-M. T. interests of the stock of the Interborough Rapid Transit Company. Wall Street bases its conviction that there is something in the rumor on the fact that I.R.T. stock, which has not paid a dividend since 1919 and is apparently not likely to pay dividends in the near future, has risen from a low of about 24 to more than 52, the highest point reached since the voting trust now in control of the company was formed. This gossip is repeated for whatever it may be worth. The fact remains, however, that the voting trust certificates of the I.R.T., to which dealings are now confined, does not give the new holders an immediate voice in the management. The voting trust does, however, expire next October, and again Wall Street gossip, which is ever ready to find a way, says that the recent buyers will then have their say and that in the meantime they can make their ideas felt in any emergency that may arise.

This account does not, of course, run the gamut of all the recent moves, but the facts set down do show, as stated in the introductory paragraph, that the realization is being borne in upon the susbstantial interests in the community of the need for something constructive being done and done promptly to save the city from itself.

Shreveport Temporary Injunction Made Permanent

Three federal Judges have made permanent without any objection being offered by the Public Service Commission the injunction issued in June of this year restraining the Public Service Commission from interference with the Shreveport Railways, Shreveport, La., in the collection of a 7-cent adult fare and a 3½-cent school children fare, which was granted. In its application to the federal Judges for a permanent injunction, the company showed that under the above-mentioned rates it had not made a fair return on the value of its property, but the results of operation had changed from a constant loss to a small net profit.

Early in June of the present year the United States District Court, Eastern District of Louisiana, handed down a decision declaring null and void the order of the commission rendered on March 16, 1925, ordering the Shreveport Railway to offer seventeen tickets for $1 and four tickets for 25 cents. In the order the company was authorized to discontinue the sale of four tickets for 25 cents and seventeen for $1 and to charge 3½ cents a ride for school children during school terms and school hours. The court also restrained the commission from attempting to enforce the said order of March 16, 1925, or from interfering in any way with the plaintiff in charging and collecting the 7-cent fare. That decision in June ended the litigation which had been carried on for some three years between the Shreveport Railways and the court. The entire situation was reviewed in the ELECTRIC RAILWAY JOURNAL, issue of June 12, 1926, page 1025.

Chamber of Commerce Rejects Toledo Ordinance

The proposed new 25-year exclusive street railway and bus franchise for the Community Traction Company in Toledo, Ohio, already opposed by the Street Railway Board of Control, has been rejected by the Chamber of Commerce, representing the business interests of the city. The attitude of this organization was determined by an exhaustive study of the new ordinance by a committee over a period of nine weeks.

Many individual faults are found in the ordinance but the committee objects to it as a whole principally because of the granting of an exclusive franchise for 25 years with renewals which make it perpetual, and the provision that it can only be terminated by city purchase so as to guarantee the retirement of the outstanding securities of the Community Traction Company. The committee in its report favored a monopoly of the service provided the city had a method of withdrawing the exclusive feature by a reasonable procedure.

The independent group of business men who made the study of the transit problems did so in the light of existing conditions and recommended that capital value be maintained as at present, that the new capital of $1,051,600 for improvements be added, and that extensions be made, crosstown line developed, and new bus routes established as recommended by Prof. Riggs. These important recommendations with many minor suggestions were contained in the report made public by the Chamber of Commerce committee and unanimously approved by the trustees of the organization. The principal ones are:

1. To grant an exclusive franchise so that it may be terminated at the end of ten years to permit competition by two-thirds vote of City Council, street railway board of control, and 60 per cent of the electors.

2. To stop the payment of interest on bonds retired and canceled under sinking fund provisions.

3. To give Board of Street Railway Control power to approve contracts before instead of after execution.

4. To relieve traction company of paving obligations and in exchange ask the ownership to absorb the accumulated deficit of $850,000. Paving obligations run $100,000 or more annually.

5. To charge a maximum fare of 10 cents.

6. To give the traction company freedom to buy its power at best price, not limiting it exclusively to Toledo Edison company as source for power.

For some time now efforts have been under way between Frank M. Dotson, law director of the city, and Dewey C. Bailey, counsel for Henry L. Doherty & Company, to come to an agreement on some of the euggestions made by the Board of Street Railway Control in a letter which has not been made public but which was in answer to the request of Mayor Fred J. Mery for specific recommendations after the criticism of the board. It is understood the board of control referred the city authorities and ordinance conferees to a letter sent July 29 in which specific recommendations were made but apparently not followed in drafting of the ordinance.

The proposed ordinance which seeks to modify the Milner service-at-cost plan in conformance with proposals of Prof. Henry E. Riggs is now before the City Council. Indications are that it will have to be modified before it can be placed before the electors.

Final Fare Brief in St. Louis

An increase of fare by the United Railways, St. Louis, Mo., from 7 cents to 8 cents or two tokens for 15 cents would mean more passengers for the People's Motorbus Company. So Joseph H. Grand, city attorney for University City, St. Louis County, contended in a brief filed with the Missouri Public Service Commission on Nov. 30. In opposing the increase he held that no emergency exists which demands an advance in fares. If any increase is to come, he said, it can well await the completion of the audit of the railway's books.

In answering the argument by City Counselor Muench of St. Louis that the city should not be asked to make up the company's losses on its St. Louis county business, Mr. Grand contended that the United Railways is a single system and cannot be separated for the purpose of fare. He concluded his argument with the assertion that an increase would do the United Railways more harm than good.

St. Louis financial circles anticipate an increase in the fares. A decision to this effect by the commission would go a long way toward removing one of the few remaining obstacles to the reorganization of the system and the vacation of the receivership. It is believed that the decision when it is made will stipulate the rate of return to be allowed the new company on a fixed valuation of its property.

The belief is firm that the commission will reiterate its stand in the Laclede Gas Light Company case, decided on Nov. 20, when it said that a fair rate of return on public utilities was 7 to 8 per cent. That decision was also strictly in line with the finding of the United States Supreme Court, which held on Nov. 23 in the Indianapolis Water Company case that a utility is entitled to a return of at least 7 per cent.

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Additional Names Have Been Secured

Following the striking off of some 4,000 or 5,000 names from the referendum petition, filed in Kansas City, Mo., recently by a group of Republicans, asking a referendum on the twelve-year franchise extension granted the Kansas City Public Service Company, additional names have been secured and the supplementary petition filed with the city clerk. Alleging that many of the 13,238 names on the original petition were written by the same persons, officials struck off a large percentage of the names, making it necessary for the sponsors of the petition to secure approximately 4,000 additional signatures. Ten days were allowed the originators of the referendum petition in which to secure names to replace those cut out by the city clerk's office. The new list, filed Dec. 3, contained 7,386 names, more than sufficient to make up the deficit. The city clerk is allowed five days in which to make a canvass of the petition for errors.

Denver Changes Methods of Letting Utility Franchises

The City Council of Denver, Col., at its Nov. 29 meeting decided upon a change in the method prescribed by it for letting utility franchises. The regulation had previously required the petitioner to submit his proposition at least six months before the date the voters were expected to pass on it and to publish the terms and rates twice in newspapers of regular and large circulation. That portion of the law was killed. The Council stated it was superfluous and inactive and that the city charter and state laws were adequate to take care of such contingencies.

Changes in Honolulu to Prevent Fare Increase

Curtailment of service and extensive rerouting are included in the plans of the Honolulu Rapid Transit Company, Honolulu, Hawaii, designed to avoid for the time being an increase in the rate of fare and to approach more closely the fair return on the existing investment as computed by the Public Utilities Commission. An announcement to this effect was made recently by President Alfred L. Castle.

A petition requesting permission to reroute the company's cars over practically every line in the city and to eliminate certain phases of the service now furnished has been filed with the Utilities Commission. Statistics made public indicate that the company has suffered not only material decreases in passenger traffic, due largely, it is said, to the rapid increase in the number of automobile owners, but also decreases in its new revenues in spite of the recent increase in the fare. In addition to the rerouting and discontinuance, the company plans to purchase eight one-man, two-man cars at the cost of about $136,000 and a bus to operate in Kaimuki.

In his explanatory statement Mr. Castle said that the directors had studied the proposition from every angle and were making every effort to effect savings which would not mean an increase in fare. He said that in the internal organization the personnel had been materially cut down to a point beyond which it was not advisable to go.

In its decision of September, 1924, the commission found that the company had properties devoted to public service to a fair value of $3,250,000, on which it was entitled to a return of $260,000. New rates went into effect on Oct. 1, 1924. In 1925, with a full year of these rates, the company's net revenue was $198,654, which was about $60,000 less than the amount to which it was entitled by the decision of the commission. Mr. Castle said that this year, in spite of all the economies practised, the net earnings would probably run about $150,000. This is $110,000 less than the fair return allowed by the commission. Another basis of comparison was the first ten months of 1925 compared with 1926. In 1925 the net revenue for the first ten months was $162,584, compared with $133,054 for 1926. This was due, he said, to the falling off in the number of passengers carried. The figures of the first ten months of 1925 show 13,452,782 full-fare passengers and 1,147,502 half-fare passengers; for the first ten months of 1926 these figures were 12,710,246, and 1,123,652, respectively.

He claimed that the extensive rerouting could be done at very little expense and that the saving by the rerouting and by the installation of one-man operation on certain lines would total $50,000 a year.

In filing its petition the company has requested a public hearing on all proposals involved.

News Notes

Wages Discussed at Indianapolis.—Members of a committee recently selected by employees of the Indianapolis Street Railway, Indianapolis, Ind., to discuss a request for an increase in wages and a change in working conditions with company officials, met recently with James P. Tretton, superintendent, in a preliminary conference. No wage demand was presented by the committee and it was said that the wage changes would be advanced later at a meeting with other members of the company's official body.

Bulletins Link Old and New.—In order that the present generation of trainmen in New Brighton, Pa., may keep in touch with their Victorian ancestors the Beaver Valley Traction Company issues bulletins from time to time on the 25-year men who are now pensioned employees. Addressed "Dear Fellow Employee" and signed by General Manager Smith, these pamphlets disclose the whereabouts of an old employee, his date of entrance into service and the conduct of his service.

Collectors Expedite Traffic.—Eleven collectors have just been placed on duty at down-town street corners in Atlanta by the Georgia Railway & Power Company to aid in speeding up traffic during the rush hours. These collectors will be on duty every afternoon except Sunday from 4 o'clock until 6:30 and will accept fares, make change and collect tickets.

Tickets to Increase Earnings.—The Danville Traction & Power Company, Danville, Va., has announced that on Jan. 1 it will put on sale tickets for $1 permitting an indefinite number of rides. These tickets will be transferable. The new rate will be tried for an experimental period of eight weeks to determine the effect of the change upon earnings.

Must Arbitrate in Danbury.—A deadlock exists between the striking employees of the Danbury Power & Transportation Company, Danbury, Conn., and the railway management, with the company unwilling to recognize the Amalgamated Association under a similar working agreement to that in force with the Danbury & Bethel Street Railway. That was the old organization out of which the new company grew. The City Council has formally notified the company and the Public Utilities Commission that failure to arbitrate the dispute will mean the canceling of all existing franchises. The intention of the company to motorize the system brought about the present tense relationship.

Veterans Receive Buttons. — The Wheeling Traction Company, Wheeling, W. Va., now has 106 employees who have been in the service of the company for twenty years or more. Nine veteran workmen of the company were recently presented with service buttons, which automatically makes them members of the Veterans' Association. The service buttons were presented by A. C. Spurr, general manager of the Wheeling Traction Company. The Veterans' Association was founded four years ago. The oldest member is M. C. Marsh, who has been in the employ of the company for more than 38 years.

Hearing Held Over.—Rehearing before the Interstate Commerce Commission on the application of the Salt Lake & Utah Railroad, Salt Lake City, Utah, to participate equally with other roads in the hauling of transcontinental freight has been postponed from Dec. 3 to Dec. 11. The rehearing was deferred at the request of the railroad, as well as the opposing trunk lines.

Must Serve Sentence.—A petition to suspend the balance of his sentence of 120 days which he has been serving since Sept. 9 in the Marion County jail was recently denied Harry Boggs by Federal Judge Robert C. Baltzell. Boggs, former head of the union on the Indianapolis Street Railway, Indianapolis, Ind., was sentenced for contempt of court when he was charged with violation of terms of an injunction prohibiting interference with the operation of street cars during the strike last summer. Judge Baltzell maintained no substantial reasons had been presented to warrant a suspension of the sentence. Reference to the Boggs incident was made in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 23, page 778.

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Recent Bus Developments

St. Paul Admires Its Twin City

Inspired by the convenience and success of the new Hennepin Avenue 10-cent bus line in Minneapolis, Minn., from the heart of the city to 36th Street, operated by an auxiliary of the Minneapolis Street Railway, Commissioner C. J. McGlogan of the St. Paul City Council will present a resolution which will authorize taking up with the Minnesota Railroad and Warehouse Commission a request for similar service in that city. He is also taken with the Minneapolis system of crosstown bus lines on Lowry Avenue and on 38th Street, which connect with trolley lines at the same rate of fare and with transfer privileges. T. Julian McGill, vice-president of the Twin City Rapid Transit Company, said that the 10-cent bus line in Minneapolis was demanded and made possible by business men. The line is not in competition with the electric railway lines and pursues a devious course, crossing trolley lines at four points. Mr. McGill said that if St Paul would provide a profitable route that did not compete with street cars the company would be glad to operate a 10-cent bus line over it.

Hearing on Bus Specifications in New Jersey

The Board of Public Utility Commissioners of New Jersey has under consideration the amendment of the specifications applying to buses adopted on Dec. 29, 1924, and is also planning to adopt specifications relating specifically to buses of what is commonly known as the de luxe type.

With the end in view of obtaining the views of auto bus operators, manufacturers and others interested a conference between the board's transportation department and all parties interested will be held at the offices of the board in Newark on Dec. 21, at 11 a.m.

In anticipation of the hearing the board has transmitted to bus operators and others through Philander Betts, its chief engineer, a copy of the specifications intended to apply to the street car type of vehicle.

Cleveland Councilman Provoked at Bus Losses

Councilman Herman H. Finkle, Republican floor leader of Cleveland, Ohio, has raised the question of the losses alleged to have been sustained by the Cleveland Railway in the operation of its buses. He has suggested the abandonment of the bus lines. Mr. Finkle said that bus operation in Cleveland had, since its inception on Aug. 1, 1925, piled up a loss of $319,593. These are Mr. Finkle's figures. This total, it is said, does not include fixed charges of more than $200,000.

The position of the Cleveland Railway is that the bus lines it sought to operate are paying or virtually paying their own way. Such losses as are being incurred are piling up on the so-called feeder routes started at the behest of the Council. The position of Col. Joseph H. Alexander, president of the Cleveland Railway, is that the company, if the criterion sought now to be applied to the buses is to prevail, should abandon the operation of certain rail lines which have failed to pay profits for years.

Street Railway Commissioner Ballou is in accord with Colonel Alexander in this matter. He said that the Council ordered operation of the bus routes which are said to be losing money. It seems that under the provisions of the service-at-cost plan at Cleveland the Council holds the power to alter all schedules of the railway and that if the members of the Council see fit they have the power to direct the abandonment of operation of buses on any lines on which they may deem the suspension of service to be desirable.

Indeterminate Permits Suggested for Buses

The Public Utilities Commission of Massachusetts is seeking the passage of legislation to place buses in the same category as street railways with respect to licenses. At present licenses are issued to bus companies for only a short duration. The commission wants the period of the license indeterminate. The change is expected to improve service and stabilize investment in bus securities. The commission still favors licensing authority by cities and towns, but would appoint a state department to attend to the formulation of licenses.

Buses on Pennsylvania Line Increase Business

Since the Scranton Railway, Scranton, Pa., substituted a de luxe bus service for trolleys over the stretch from Carbondale to Forest City, Pa., there has been an increase of 130 per cent in the number of passengers carried. For the present three buses are operating. The Carbondale-Forest City line runs through Vandling, a distance of 7.2 miles. The right-of-way is through a very narrow valley which is practically owned by the Delaware & Hudson Coal Company, with which an agreement regarding operating rights was arranged in 1902.

The track has always been a difficult one to maintain for spring freshets frequently damage the roadbed. In recent months the difficulties became even more serious. It would cost $76,000 to restore the track to first-class condition. This, coupled with the fact that no permanent right-of-way could be secured, made the continued operation of the line practically impossible and hastened an application to the Public Service Commission for temporary abandonment and substitution of buses.

Would Increase Bus Service

The Lincoln Traction Company, Lincoln, Neb., has applied to the State Railway Commission for authority to abandon service on four car lines and substitute buses, in addition to the ones where buses give either supplemental or substituted service. If the permission is granted the company will have a total of fourteen buses in service. One of the lines upon which service will be abandoned is that operating between the city and farm campuses of the University of Nebraska. Buses will give more direct connection over paved streets and the service will be extended to include the suburb of University Place, 1 mile beyond. Another bus will supplant railway service to the more distant suburb of Bethany, reached from the center of the city by a circuitous route.

Bus Terminal in Philadelphia Under Consideration

The Public Service Commission announced recently that it would meet in the State Capitol in Harrisburg on Dec. 14 to consider the possibility of establishing an underground bus terminal to relieve traffic congestion in Philadelphia, Pa. The commission will receive the recommendations of its engineers and experts who have just completed a survey of bus operating conditions in New York, Boston and other metropolitan areas. The Philadelphia Rapid Transit Company, three railroads entering Philadelphia and independent operators of bus lines have been invited to attend and submit suggestions.

Wheeling Company Plans Bus Extension

If applications now before the Ohio Public Utilities Commission are granted the Wheeling Traction Company will more than double bus line mileage. The company now operates 65 miles of bus lines and has applied to increase this to 135 miles. This service is supplemental to its electric railway lines.

The company seeks a bus franchise between Wheeling and Steubenville by way of Warwood, Wellsburg and Follansbee, and a franchise between Wheeling and Moundsville by way of Benwood, McMechen and Glendale. The company proposes to operate special de luxe buses equipped with individual seats. In case the franchises are granted the company plans to extend service over Moundsville. It would give Moundsville a complete city service by creation of a route to the eastern part of the municipality, which is now without transportation facilities. The company has also asked for a franchise between Bellaire and Wheeling.

Bus Competition Threatened in Louisville

A new bus line is proposed for Louisville, Ky., to operate in competition with the Louisville Railway at a cash fare equal to that of the railway and a ticket fare three-quarters of a cent lower than the railway fare. The plans for the competitive service became known on Dec. 6 when an article was

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published in one of the local afternoon papers regarding the formation of the Peoples Transit Company. There is talk of starting the new service before the end of the year, possibly by Dec. 16.

James P. Barnes, president of the Louisville Railway and its subsidiary, the Kentucky Carriers, Inc., stated that his company knew nothing definite about the proposed line until the plan was announced in the local daily papers. He foresees higher street car fares with such a situation. The railway must have an income sufficient to cover the cost of operating its cars. If its income is curtailed by competition, higher fares are inevitable.

As another commentator saw it, the operators of the proposed bus line would have to be smarter than are the railway men if they can make a bus line pay, as the railway has had plenty of experience in the field and has been unable to make expenses.

Mayor A. A. Will stated that the proposal had been known by city officials for some time, but that there were no existing laws which could keep the competition off the city streets, the only requirement being that the operators pay their taxes and licenses, and protect passengers and the general public by adequate insurance.

Third Bus Auxiliary Service Started.—A new auxiliary bus service to the rapidly growing Center Hill suburb of Atlanta to supplement the service on the River Street car line has just been started by the Georgia Railway & Power Company. The bus operates on weekdays and a regular schedule, except during the noon hours, is maintained, connecting with the street car service on the River Line. The fare on this bus is 10 cents and entitles the passenger to continue his journey on the street car and transfer to any other line in the city. A transfer and 3 cents entitles the outgoing passenger to a trip on the bus line. The fare for passengers desiring to use only the bus service is 3 cents. This is the third auxiliary bus line put in service by the Georgia Railway & Power Company, the two others operating to Sylvan Hills and to Atlanta Avenue in the Grant Park section of the city.

Rerouting Serves New District.—The St. Louis Bus Company, auxiliary of the United Railways, St. Louis, Mo., has rerouted its Morganford-Loughborough Avenue line to serve a larger territory in Southwest St. Louis, and on Nov. 30 the Board of Public Service will hold a public hearing on the application of the company for a permanent permit to use the additional streets. Through this new connection the bus line gives the residents of one of the newer residential sections of the city a city-wide co-ordinated transportation service.

New Service Started.—The Canton, Akron & Cleveland Coach Company, a subsidiary of the Northern Ohio Power & Light Company, has started the operation of a new coach line between Canton and Cleveland, Ohio. Buses leave Canton every hour and consume about the same running time as interurbans.

Financial and Corporate

$18,000 Surplus in Phoenix

Surplus of approximately $18,000 is the result of the operation of the Phoenix Street Railway, Phoenix, Ariz., under municipal operations for one year ended Nov. 1. This fact was disclosed in a report submitted to the City Commission recently by City Manager Henry Rieger. In his report he recommends the rehabilitation of the line.

The report shows total receipts during the year at $160,896 and total disbursements, including expenses and other costs, $143,056. If the lines had been rehabilitated and up-to-date rolling stock secured it would have been possible to cut maintenance charges to $26,666. Added to the cash on hand, it would have made $44,506 cash on hand, and with a 7-cent fare the surplus for the year would have reached $75,000 under proper operating conditions, according to General Manager Rieger. He recommends complete rehabilitation "as a decidedly good paying investment for the city and for the citizens of the city at large." He stresses the need for new, up-to-date, light one-man cars, which would net a saving of at least 25 per cent on power bills and possibly give a six-minute headway service.

Another factor in lowering the surplus for the past year has been the change in status of the employees. When all employees were placed on an eight-hour basis, it was done without any loss in salary to the employees. Where men were working eight, ten and twelve hours a day, the eight-hour rate was computed so as to give them an amount of salary equal to what they had been drawing under the longer day plan. The placing of the men on the eight-hour basis necessitated the employing of additional help, which raised the payroll about 20 per cent over previous years.

The city of Phoenix acquired the properties of the street railway by purchase on June 4, 1925, for $20,000 and assumed direct operation and control on Nov. 1, 1925. Various circumstances leading up to the city's taking over the lines were reviewed in the ELECTRIC RAILWAY JOURNAL from time to time.

Plans Being Made to Refinance Michigan Interurban

The Grand Rapids Trust Company, receiver for the Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., has notified the Michigan Public Utilties Commission that plans are well under way by the trust company and a committee representing the bondholders to refinance the road and lift the receivership.

Sidney L. Vaughn, general manager of the road, and Peter Kline of the trust company appeared before the commission on Nov. 30 and sought a permit to operate bus service between Grand Rapids and Grand Haven and between Grand Haven and Muskegon.

The application was opposed by the Safety Motor Coach Company, now operating between Grand Rapids and Muskegon and Grand Haven and Muskegon. The coach company asked for a permit to operate between Grand Rapids and Grand Haven in opposition to the request of the railway.

Mr. Vaughn told the commission the railway planned to supplement the present interurban service with buses, giving hourly service to the three cities from 5 a.m. one morning until 1 a.m. the following morning. He said that back in 1920 the passenger revenue of the line was $486,780, compared with $186,540 last year and $122,965 for the first nine months of the present year. Both Mr. Vaughn and Mr. Kline denied that the Insull interests were back of the effort of the railway to get the bus permit.

The hearing was adjourned until Dec. 11.

Springfield Council Approves Agreement

The City Council of Springfield, Mass., on Dec. 6 approved the agreement between the city and the New York, New Haven & Hartford Railroad by which the railroad acquires the lines of the Springfield Street Railway. From $1,000,000 to $1,500,000 will be expended in improving equipment and service. This is another step in the plan for the restoration of certain electric railway lines in Massachusetts to New Haven ownership and for their physical rehabilitation.

Traffic Wage and Fare Figures

There was a slight decrease in the number of passengers carried during the month of October, 1926, compared with October, 1925. This can be traced partly to industrial conditions in certain sections of the country and partly to the fine weather which prevailed throughout the month, which tends to increase the use of private automobiles for transportation purposes.

The number of revenue passengers, including bus passengers, reported to the American Electric Railway Association by 207 companies for October, 1926, compared with October, 1925, is as follows:

October, 1926	807,623,596
October, 1925	809,134,380
Decrease, per cent	0.19

Average cash fares in cities of 25,000 population and over:

	Cents
Nov. 1, 1926	7.7423
Oct. 1, 1926	7.7056
Nov. 1, 1925	7.5996

Average maximum hourly rate paid motormen and conductors in two-man service by companies operating 100 miles or more of single track:

	Average Hourly Rate	Index Number 1913 = 100 Per Cent
Nov. 1, 1926	56.88	208.73
Oct. 1, 1926	56.87	208.70
Nov. 1, 1925	56.29	206.57

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$10,000,000 Virginia Bond Issue Approved

Stockholders of the Virginia Electric & Power Company, Richmond, Va., have authorized a bond issue of $10,000,000 to cover the expenditures contemplated in the 1927 program. Of the bond issue, $6,000,000 in first and refunding mortgage gold 5s were offered publicly on Dec. 10 and the accruing fund will be made immediately available for next year's elaborate improvement program. It has also been voted to place the company's authorized capital stock at $15,000,000 and to reclassify the $4,513,000 of unissued 7 per cent cumulative preferred stock to be issued as 6 per cent cumulative preferred stock.

As a result of this and other steps now being taken Richmond's unified bus and railway system is expected to be in full operation before the end of next year, dependent largely upon the opening of new streets to the intended bus lines. According to William E. Wood, vice-president of the company, this improved system will cost the company about $1,500,000. Several routes probably will be started in January on the receipt of buses now under construction. Tracks are also being extended and other similar work will be started as soon as practicable.

Approximately $15,000,000 of the $20,000,000 in the full 30-month program has been directed to new construction work and improvements on existing properties through Tidewater Virginia and eastern North Carolina.

Will Cease Cashing Warrants in Seattle

The Clearing House Association at Seattle, Wash., has unanimously refused to cash any more warrants for the Seattle Municipal Street Railway, declaring they are an illegal investment. The railway was slated to go on a warrant basis on Dec. 10 to pay labor and material costs for the last half of November. Mayor Bertha K. Landes advocates payment of warrants by city on date due, which will postpone warrant basis for two weeks.

Indiana Road to Start Afresh

The property of the Fort Wayne, VanWert & Lima Traction Company, Fort Wayne, Ind., has been sold at receiver's sale at Fort Wayne, Ind., to the bondholders for $150,000. The bondholders were represented at the sale by Edward Hopkinson.

The company will be reorganized in accordance with terms outlined at some length in the ELECTRIC RAILWAY JOURNAL for June 12, page 1030, under which it is proposed to create a voting trust to continue for five years.

Spokane Interurban Lines Sold

The sale of the interurban lines of the Inland System, operating 180 miles of active trackage between Spokane, Wash., and Cœur d'Alene, Idaho, and between Spokane and Moscow, Idaho, to the Great Northern Railways was announced in Spokane on Dec. 3. Report of the sale was confirmed by Major A. M. Anderson of the Great Northern staff. The sale will be subject to the consent of the Interstate Commerce Commission. The property consists of the Inland Empire Railroad, owning the Moscow line and the Spokane & Eastern Railway & Power Company, which leases the Cœur d'Alene line from the former company. M. J. Costello, western traffic manager of the Great Northern, is arranging with the city to make physical connections of the properties in order that Inland operations may center at the large Great Northern depot.

If the permission of the commission is secured the deal will be made retroactive to Dec. 1, with actual operating management beginning about Dec. 10.

Street railway properties of the related "Inland" and traction companies were merged three years ago into the new Spokane United Railways, and the power station at Nine Mile was sold last year to the Washington Water Power Company. The Great Northern purchase will complete the transfer of all the former properties of the system.

Engineers Public Service Reports on Financing

In a report sent recently to stockholders the Engineers Public Service Company outlines its progress and gives data on the results of the financing effected by the sale of allotment certificates.

To provide a portion of the funds necessary to acquire more than two-thirds of the common stock of the Virginia Electric & Power Company, Richmond, Va., and finance the acquisition of other properties operating in the Virginia district common stock and 50 per cent paid allotment certificates were sold in July, 1925. The company issued 109,957 shares of 7 per cent preferred stock and 500,000 shares of common stock and had a floating debt of $3,500,000 on July 31, 1925.

Since that time the company has acquired nearly all the minority common stock of the Virginia Electric & Power, the controlling interest in the Eastern Texas Power & Light Company, the El Paso Electric Company, the Savannah Electric & Power Company, the Baton Rouge Electric Company and the Key West Electric Company. The company now has no floating debt and has about $5,000,000 additional assets in securities and cash.

Outstanding stock at the close of business Nov. 20, 1926, totaled 204,297 3-12 shares of 7 per cent preferred and 778,938 shares of common stock.

Changes Effected in Alton Properties

The St. Louis & Alton Railroad, which has taken over the old Alton, Granite & St. Louis traction line, extending from Alton, Ill., to St. Louis, Mo., with a branch line from Mitchell to Edwardsville, Ill., has been granted a charter to do business by Secretary of State Emerson of Illinois.

The Alton Railway, Alton, Ill., which has taken over the Alton city lines, has increased its capital stock from $500,000 to $750,000.

Detroit Street Railways Must Pay Income Tax

Notice has been received at the office of the Detroit (Mich.) Corporation Counsel that the Department of Street Railways must pay federal income taxes as a corporation and that employees of the department must pay income taxes as individuals. The ruling was forwarded to the municipal office by the local collector of internal revenue.

A test case was started in 1923 when the government contended that Department of Street Railways employees must pay federal income taxes. The judge in the local federal court held that the municipal railway was exercising a governmental function and that the income tax law did not apply to its employees.

The case was appealed to the U. S. Supreme Court by the Department of Internal Revenue, but before the Supreme Court could act the provisions of the income tax law as it applied to such employees were rescinded by an act of Congress. The case was then considered closed, but the act of Congress applied only to taxes to be paid prior to 1925. The Commissioner of Internal Revenue has recently ruled that municipally owned public utilities were proprietary functions, and not governmental, and as such were taxable the same as any private business, and that employees of such utilities were subject to income tax. This ruling applies for 1925 and 1926.

The local collector has been instructed by the Internal Revenue Department to collect the taxes from city employees and the city. The collector cited that if the city and its employees show a willingness to co-operate an early collection of the taxes for 1925 may be anticipated. In case of failure to comply with the regulations on the part of the city or its employees procedure will be as in the case of other income tax payers. A reasonable time will be allowed in which to pay taxes.

Rate of Return a Stumbling Block in St. Louis

The reorganization committee of the United Railways, St. Louis, Mo., which has formed the St. Louis Public Service Company to take over the property when the receivership ends, seeks a 7 per cent return on the valuation fixed by the Public Service Commission, while Mayor Miller has expressed the belief that 6 per cent is enough under the service-at-cost franchise arrangement intended to be put into effect.

This point and the question of how the company should liquidate the old mill tax judgment and the current mill tax and existing franchise taxes are apparently the only things really in the way of an immediate termination of the receivership.

In a talk before the St. Louis Chamber of Commerce on Nov. 24 Mayor Miller declared that he was anxious to have the railway problem settled by completion of the reorganization so that the city could obtain the kind of service to which it is entitled. He refrained from further mention of the points at issue.

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The valuation of slightly more than $51,000,000 as of 1919 set by the state commission brought up to date would entitle the company to earn a net return on approximately $56,000,000.

Foreclosed Ohio Interurban to Continue

Property of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad Company, offered for sale at foreclosure on Dec. 1, was purchased by the Union Trust Company, as trustee for the bondholders, for $205,000, which was $5,000 in excess of the upset price fixed by the Common Pleas Courts of Hamilton County, Ohio, and Dearborn County, Indiana. C. H. Deppe, president of the trust company and one of the two receivers for the interurban company, said that operation would continue under the supervision of the bondholders. Mr. Deppe also said that a new corporation would be formed before the first of the year. The interurban operates between Anderson's Ferry and Aurora, Ind., a distance of 57 miles.

Would Abandon Portion of Line

The Lewiston & Frontier Railroad, leased by the Niagara Gorge Railroad, filed a petition recently with the Public Service Commission asking for the approval of declaration of abandonment of portions of its electric railway in the village of Youngstown, Niagara County, and adjoining towns in New York.

The petition states that for more than two years passenger service has not been furnished to and into the village of Youngstown, such service having been discontinued with the consent and approval of the village officials on the commencement of operations by the Gray Bus Line.

The right-of-way of the electric railway has been used occasionally for operating freight cars for the delivery of coal to the U. S. Government Reservation. Such operations, however, the company states, have been at a loss. In addition, the pavement on Main Street is in need of reconstruction and when done, would impose a large capital expenditure on the railway thus increasing the value of its property devoted to public service without prospect of any return being realized from the operation of the road.

Key Route to Issue $1,500,000 in Bonds.—The Key System Transit Company, Oakland, Cal., plans the issuance and sale of $1,500,000 of first mortgage 6 per cent bonds to the National City Company partially to finance a $9,000,000 reconstruction and improvement program, provided approval is obtained from the State Railroad Commission.

Dividend Deferred.—The directors of the Interborough Rapid Transit Company, New York, N. Y., deferred action on the quarterly modified guaranteed dividend of $1.25 of the Manhattan Elevated owing to the fact that it was not earned in the September quarter. This disbursement is determined by the earnings for the third quarter of each year under the terms of the Interborough-Manhattan readjustment plan of 1922.

Book Reviews

Arc Welding—The New Age in Iron and Steel

By the Lincoln Electric Company, Cleveland, Ohio. 160 pages. $1.50.

Devoted largely to the use of arc welding in general production manufacturing, but giving knowledge of arc welding principles and equipment now available, the new book on arc welding by the Lincoln Electric Company is most comprehensive. It contains more than 200 illustrations of products which are manufactured by arc welding. In addition there are numerous diagrams and charts showing welding speeds and costs.

The use of arc welding in place of riveting is discussed thoroughly, and a chapter is devoted to the field for arc welding by substitution of arc welded steel for cast iron. The discussion shows how to go about redesigning cast iron for manufacture in steel and illustrations are given to show where this is being done commercially.

The opening chapter discusses the superiority of steel over cast iron from both the standpoint of strength and economy. One chapter is devoted to automatic arc welding and there are numerous illustrations showing products welded automatically.

The book is 6 in. x 9 in. It is bound in imitation leather.

Trade Agreements 1925

United States Department of Labor, bureau of labor statistics, Washington, D. C. 152 pages. 25 cents a copy.

This pamphlet devotes eleven pages to extracts from certain agreements between electric railways and the Amalgamated Association. The properties mentioned are the Community Traction Company, Toledo, Ohio; Memphis Street Railway, Memphis, Tenn.; Illinois Power & Light Corporation applicable to its railway department in Bloomington and Normal, Ill.; Trenton & Mercer County Traction Corporation, Trenton, N. J.; Chicago, Aurora & Elgin Railroad, Wheaton, Ill., and the Salem and Amesbury divisions of the Massachusetts Northeastern Street Railway.

Guiding Principles of Public Service Regulation

Henry C. Spurr. Public Utilities Reports, Inc., Rochester, N. Y., and Washington, D. C. 919 pages.

Under the heading "Returns to which Utilities are Entitled" Mr. Spurr begins the third volume of his work on the principles involved in the laws affecting utilities. He then takes up the subject of fair or reasonable return, attraction of capital, efficiency in management and service, miscellaneous factors affecting returns. From the broad subject of a consideration of factors in rate making he shows these factors in specific utilities—water, gas, electric, street railway, interurban railway and telephones. A discussion of street railway rates consumes 47 pages, dealing principally with electric railway apportionment in general and then taking up the apportionments between different branches, different lines, interurban and suburban business and freight and passenger business. There is included a discussion of the 5-cent fare, the 6-cent fare, the 7, 8 and 10-cent fare. In connection with fares reference is made to the statistics furnished by the American Electric Railway Association on average cash fares in American cities. The book also explains the status of interurban railway rates. The text is based on court and commission decisions and is elaborated by a table of the various cases cited. Some 52 pages make up a carefully prepared index.

Business Annals

By Willard Long Thorp. National Bureau of Economic Research, Inc. New York. 380 pages. $4.

Particularly at this time, when so many persons hold to the view that the present is a period of inordinate prosperity in the United States, is this sobering volume of interest not only to manufacturers but to railway men. Economic changes that affect the one affect the other despite the fact that the extent of the consequences of any change in the economic status may vary greatly as between two lines of business activity.

Problems are not solved by shutting the eyes to them. Yet that is done far too often in the case of economic questions despite the professed desire to be fortified with the facts for dealing with each occasion as it arises. And here are the facts. They should not be ignored just because they are likely to be sobering in their influence by restoring a sense of perspective. In this work of 380 pages the author has presented in descriptive form the business cycle history of seventeen countries in all quarters of the world for periods ranging from 36 to 136 years. It is probably the most comprehensive survey of the world's experience with business booms and depressions which has ever been made. In the report are answers to such questions as: When have periods of depression begun? How long have they lasted? What brought the depressions? When have revivals of activity occurred? How have these revivals progressed? How are the different branches of business related? How are different countries related?

Simultaneously with their collection, these facts have been anlyzed by Dr. Wesley C. Mitchell. His deductions are contained in the introductory section, entitled "Business Cycles as Revealed by Business Annals."

The information is believed by the publishers to be the latest and most authoritative on the occurrence of business cycles and on the duration of periods of prosperity and depression. It is the first collection of its kind assembled for Dr. Mitchell's use since publication of his first studies in 1913.

It is expected that "Business Annals"

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will be followed at short intervals by other reports under the direction of Dr. Mitchell. These reports will provide a thoroughgoing analysis of the facts regarding fluctuations in business.

The bureau is its own publisher. It aims to distribute its reports at prices just sufficient to cover publication expenses, all the research costs being defrayed from contributions to the bureau's general funds.

Mundy's Earning Power of Railroads, 1926

Compiled and edited by Floyd W. Mundy. J. H. Oliphant & Company, New York, N. Y. 535 pages.

In this 21st issue of this annual publication data and statistics are given on 127 railroads relating to their earning power and to their securities arranged in convenient form for ready reference. Practically all the important railroads in the United States are included. Some introductory chapters explain to the investor general principles which must be applied in determining the value of the stocks or bonds of any railroad. The many tables with data on mileage, expenses and other items afford ready comparison and notes expand the information.

The Indeterminate Permit, In Relation to Home Rule and Municipal Ownership

By Delos F. Wilcox, Ph.D. Published by the Public Ownership League of America, Chicago, Ill., as "Bulletin 35." Paper, 99 pages. $2.

The thesis on which this book is written is that when the indeterminate permit for utilities was invented in 1907, and for some years later, it looked like a very desirable plan, but that experience shows it is not so desirable as it at first appeared to be. The only safe policy is municipal ownership and operation. The trouble with the indeterminate permit, in the opinion of Dr. Wilcox, is that it depends ultimately for success on satisfactory public control and the right of the public to terminate the permit for cause. The author believes that both state regulation and the right to terminate a terminable permit have broken down, and this form of franchise now gives utilities "an indefinite lease of life without requiring them ever to come back to the municipality for an accounting of their stewardship and without giving the municipality any effective power to cut their lease of life short. Under the indeterminate permit, the companies are in to stay, and their good or ill behavior has little or nothing to do with it." This theory is developed in the 99 pages of the book.

Railway Statistics of the United States of America

Prepared by Slason Thompson, Bureau of Railway News and Statistics, Chicago, Ill. Tucker-Kenworthy Company, Chicago. 148 pages.

Here is a comparison of steam railway statistics for the year ended Dec. 31, 1925, with the official reports for 1924, as well as recent statistics of foreign railways. This is the 23d year of the publication of this booklet. The usefulness of this pamphlet is enhanced by maps, tables and illustrations.

Personal Items

F. S. Elliott to Superintend Inland Empire for New Owners

F. S. Elliott, general superintendent of the western division of the Great Northern Railway, has been made general superintendent in charge of operation of the Spokane & Eastern Railway & Power Company and the Inland Empire Railroad, electric interurban properties in the Spokane district purchased by the Great Northern. Mr. Elliott and M. J. Costello, traffic manager of the Great Northern, western division, are engaged in the negotiations incidental to merging the former Inland system into the Great Northern organization. So far Mr. Elliott is the only Great Northern official designated for appointment to the Inland System by the new owners. The personnel of the Inland will not be merged into the Great Northern system until the Interstate Commerce Commission approves the transfer of the interurban properties to the transcontinental line, an action hoped for late this month.

Following the war Mr. Costello was operating head of the Inland, but the property was returned to the bondholders in 1919. In fact, the Great Northern owned the Inland system jointly with the Northern Pacific from 1911 to 1918, during which time it was under the Spokane, Portland & Seattle, in which both the steam railroads were interested. The Inland is now purchased by the Great Northern alone. W. P. Johnston has been general manager. He succeeded F. E. Connors and Waldo G. Paine, both deceased. With permission of the Interstate Commerce Commission the sale will be effective as of Dec. 1.

C. M. Griffith Made Vice-President of Wharton Company

Charles M. Griffith, long associated with William Wharton, Jr., & Company, Easton, Pa., has been elected vice-president of the company. Mr. Griffith has back of him a wealth of experience in railway work, but counts as his choicest experience during his long association with the company his acquisition of so many good friends and acquaintances. He has looked with more or less composure on the rise of the bus recently, for years ago, when he was just cutting his experience teeth in business, he was secretary of the Omnibus Company, General, Philadelphia. This was in the day of the three-horse, double-deck passenger buses on Broad Street. With him recollections of these days, remote now to many others who lived through them, remain alive as reminiscences of history in the process of repeating itself.

Mr. Griffith has served in various capacities with William Wharton, Jr., & Company, Inc., and its associated interests since the days of flat tram rails and cast iron special work. When the Wharton company rolled its own girder rails and T rails at the mills of the North Branch Steel Company at Danville, Pa., Mr. Griffith acted as secretary and buyer of that company. More recently he has been sales manager of the Wharton company as well as a member of the board of directors of that company, the Philadelphia Roll & Machine Company and the Tioga Steel & Iron Company.

Melvin A. Traylor Elected to General Electric Board

Melvin A. Traylor, president of the First National Bank, Chicago, was elected a director of the General Electric Company at a meeting of the board in New York on Nov. 24. He is well known to electric railway executives, particularly in the Central West, and was one of the speakers at the convention of the American Electric Railway Association in 1923.

In addition to his executive position with the First National Bank Mr. Traylor is a director of the Stock Yards National Bank, Chicago; of Fairbanks, Morse & Company, Chicago, and of Austin Nichols & Company, New York. He is also a member of the advisory committee of the Central Manufacturers District Bank of Chicago and chairman of the finance committee of the National Wool Warehouse & Storage Company.

Mr. Traylor was born in Breeding, Ky., on Oct. 21, 1878. He studied law at night and was admitted to the Texas bar in 1901. In 1922 the honorary degree of master of arts was conferred on him by the University of Illinois. He is a trustee of Northwestern University and the Newberry library, and during the war served as director of sales of United States treasury certificates of indebtedness for the seventh federal reserve district.

He is a member of the American Bankers' Association, the Illinois Bankers' Association, the American Economic Association, Southern Society of Chicago and Art Institute of Chicago.

Changes in Staff of California Commission

Charles Grunsky has been appointed gas and electric engineer of the Railroad Commission of California, to succeed A. V. Guillou, promoted to be assistant chief engineer. J. G. Hunter, transportation engineer, has been appointed to succeed A. C. Mott, who has been appointed chief engineer of the commission to succeed Lester S. Ready. The new officials will assume their positions immediately.

Mr. Grunsky has been with the commission since 1914. He was employed on valuation work up to 1922, and, for the major portion of the time since 1922, as an assistant engineer in the gas and electric division. He is a graduate of the University of Califor-

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nia and engaged in construction work for a year before entering the employ of the commission. During the World War Mr. Grunsky went overseas and, after the armistice, he returned as a captain in the engineer corps.

J. G. Hunter entered the employ of the commission in April, 1920, worked as an assistant engineer part of the time in the hydraulic division and, since 1923, in the transportation division. Since 1924 he has represented the transportation division in the Los Angeles office of the commission. Mr. Hunter is a graduate of the University of Utah, was employed for a number of years in the office of the city engineer at Portland, Ore., and, later, in the U. S. Geological Service.

As noted recently in the ELECTRIC RAILWAY JOURNAL, Mr. Ready has been made president of the Key System Transit Company, Oakland, Cal.

D. A. Smith Assistant General Manager at Detroit

Del A. Smith, general superintendent of the Detroit Department of Street Railways, Detroit, Mich., was appointed assistant general manager by the Street Railway Commission on Dec. 7, and will assume the title of acting general manager after the resignation of H. U. Wallace as general manager becomes effective on Jan. 1. Mr. Smith will be acting general manager until a new general manager is appointed.

The appointment of the new assistant general manager was made at a meeting in the Mayor's office at which G. Ogden Ellis, president of the commission, and Commissioners John J. Barlum and H. H. Esselstyn were present. Mr. Smith succeeds as assistant general manager H. M. Gould, who resigned about a year ago.

It has been announced that several applications have been received for the position of general manager from men not now employed by the department. This fact will not bar men already in the service from receiving consideration in filling the vacancy made when Mr. Wallace's resignation goes into effect.

Mr. Smith started his 22 years of experience in the train service of the Chicago, Milwaukee & St. Paul Railroad in Chicago in 1904. The following year he became a conductor on the Jackson Division of the Detroit United Railway. He was made a carhouse foreman in 1907, and since then has occupied the positions of assistant division superintendent, night superintendent, division superintendent, assistant superintendent of transportation and general superintendent. At the time the Detroit United Railway lines were purchased by the city, Mr. Smith was taken into the employ of the municipal system.

Charles L. Sheldon, formerly chief engineer at the power plant of the Holyoke Street Railway, Holyoke, Mass., has entered the employ of the Holyoke Water Power Company. Electric energy to operate the Holyoke Street Railway system was supplied for the first time by the Holyoke Water Power Company on Dec. 5.

W. G. Gove Railroad Club President

Superintendent of Equipment at Brooklyn Third Electric Railway Executive to Hold This Office

William G. Gove, superintendent of equipment of the Brooklyn-Manhattan Transit Lines, has been elected president of the New York Railroad Club. He is the third electric railway man in the history of the organization to be elected to that post. The two others who have served in that capacity are H. H. Vreeland, now of the Interborough Rapid Transit Company and formerly president of the Metropolitan Street Railway, New York, and Frank Hedley, president and general manager of the Interborough Company.

Mr. Gove became connected with the companies in Brooklyn in 1903. Since then the character of much of the service rendered over the lines there has changed tremendously. At the time he went to Brooklyn steam train operation on the elevated had just been replaced by electric and the equipment offered a large field for the standardization of parts on the electric trains. In fact, the standardization of widely varied equipment was the first object of his work in Brooklyn. It was accompanied by drastic changes in the organization whereby the all-around shops intended for territorial operation were replaced by specialty shops for the entire system. This work of standardization of the elevated cars and equipment was undertaken on Jan. 4, 1904, but was preceded by a six months study of the problem and much preliminary work. The task was practically ended in 1906. Mr. Gove's next important work was to standardize the cars of the surface lines. This phase of the work was completed in 1910. During this time 3,425 cars were reconstructed at a cost of more than $4,000,000 and 626 cars were purchased at a cost of $10,000,000. During this interval 704 single-track cars were withdrawn from service.

W. G. Gove

This was a gigantic task. Its completion with the celerity with which Mr. Gove carried out the work would have been impossible to any man less capable as an organizer. In prosecuting the work Mr. Gove assembled one of the finest maintenance organizations in the world. It was here that the man's organizing ability asserted itself. He knows how to delegate authority, but he also has the faculty of keeping closely in touch with all that is going on. His work is directed through his various assistants.

In a changing world, Mr. Gove was not content with revamping equipment and keeping things going. He threw himself into the field of development and original design, and was responsible, among other things, for developing, with the assistance of his associates, the present New York municipal subway and elevated cars, copied throughout the world as models for equipment intended for use in rapid transit service. Articulated units for train operation were a later development. In them novel features never before attempted in car construction were embodied. The low-level center-exit and entrance cars, so long a standard on the Brooklyn surface lines, were also brought out. In addition to all this, Mr. Gove was a pioneer in adopting steel wheels for electric railway service. More recently he has been engaged in directing plans for equipping the new Coney Island shops, the largest of their kind in the world and certainly the most completely equipped. His record in association work, particularly his work in the interest of the American Electric Railway Association, is well known, he being a past-president of the Engineering Association.

Before he joined the Brooklyn Rapid Transit system in 1903 Mr. Gove was with the Boston Elevated Railway. He was born in Cincinnati on Feb. 24, 1874, and was educated in the Cincinnati schools and at the Cincinnati School of Technology, which is now a part of the University of Cincinnati. Immediately after leaving the university he began work in a civil engineer's office and later was engaged in an irrigation project on the Pacific Coast. In July, 1896, he became assistant engineer of roadway for the Cincinnati Street Railway. His connection with the Boston Elevated Railway dated from March, 1899. His title at Boston was assistant engineer. From January, 1900, to May of the same year Mr. Gove had charge of reconstructing the equipment of the trial trains in competitive tests in the old Tremont Street subway, used by the elevated railroad, and by surface cars during the early morning hours when traffic was light. These tests of train operation marked an epoch in electric railway development, as they pointed the way to train operation with multiple-unit equipment. After the tests had been completed and a decision reached as to the type of equipment to be tested, Mr. Gove was associated with Messrs. Winsor and Lindall in constructing and equipping additional cars for this service. As noted previously, he went from Boston to Brooklyn in 1903.

J. Paul Thorne has assumed his new duties as safety director of the Monongahela West Penn Public Service Company, Fairmont, W. Va. Since the resignation of the former director, James E. Hendry, the assistant director, has been in charge of the movement.

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William B. McKinley

Former Head of Illinois Traction System Dies at Age of Seventy—Had Lately Been Illinois Power & Light Chairman

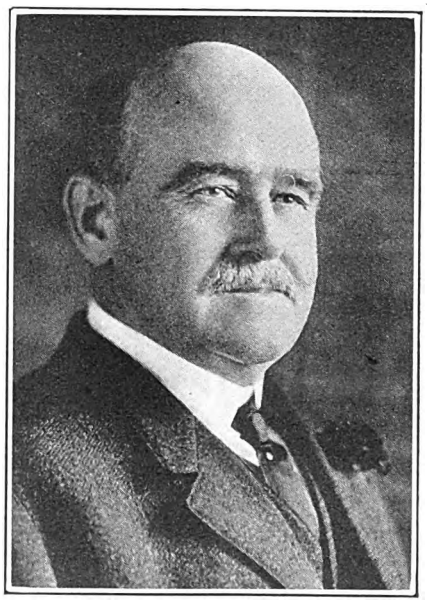
SENATOR WILLIAM B. McKINLEY, utility magnate, banker, world traveler, economist, philanthropist and politician, died at the Homelawn Sanitarium in Martinsville, Ind., on Dec. 7. Mr. McKinley's death had been expected for several weeks as he had been suffering with an incurable illness for many months. The remains will be taken to Indianapolis and sent to Champaign, Ill., his former home, for burial.

Though known to many for his charity and for the influence he wielded in politics, he was especially prominent in business circles for his activities in various utility enterprises. One of the most noteworthy of these was his affiliation with the Illinois Traction Company, whose many subsidiaries cover Illinois, Iowa, Kansas and Missouri. A few years ago he disposed of a large part of his holdings in the company, but was made chairman of the board of the Illinois Power & Light Corporation. The McKinley interests, of which he was the head, controlled 500 miles of track, with its own bridge across the Mississippi River at St. Louis and a terminal in the heart of the city. This was the high spot in a utility career which began in 1884, when Mr. McKinley was 28 years old. He saw great possibilities in the mule car line operating between Banner and Champaign, a distance of 2 miles, and interested Eastern capitalists in the matter and bought the road. Under his auspices the property was electrified and extended. Later he bought the interurban line between Springfield and Defiance, Ohio, and still later the utility property at Bay City, Mich. Then he turned his attention to the Danville system. These properties became the nucleus around which grew the powerful Illinois Traction System, one of the most important of the early utility groups with properties in several states serving a vast population with electric railway, electric light and gas service.

MAN OF WIDE INTERESTS

In addition to his utility endeavors, he had been for a number of years a deep student of political questions and of economics and had made himself an authority on matters involving foreign relations. He had traveled very extensively and had gained an accurate conception of conditions in various parts of the world. Some years ago, accompanied by a party of friends, he went on a trip around the globe, spending a considerable time in each of the principal foreign cities.

Senator McKinley had been frequently before the limelight in spite of his quiet ways. In 1920 he scored an overwhelming victory over his Democratic rival for United States Senator from Illinois. His election and nomination were a great personal triumph for he was the only opponent of the state political machine of Mayor Thompson of Chicago to win a nomination at the primary election held some time before that. This election came as a climax to a long political career. He was elected to the House of Representatives in 1904 and served continuously until 1912. He was returned to the House in 1914, where he continued until 1920, when he was elected to the Senate. In the primaries this year he was defeated by the present Senator-elect, Col. Frank L. Smith, over whom he had triumphed six years ago. He entered this contest with his accustomed vigor, but the strain of the campaign is believed to have enfeebled him greatly. His defeat in the primary came on the heels of the Senator's vigorous stand in favor of American adherence to the world court protocol and brought to a close a Congressional career of twenty years, fourteen of which were spent in the House of Representatives.



William B. McKinley

Mr. McKinley was born in Petersburg, Ill., on Sept. 5, 1856. When he was a very young lad his family moved to Champaign, where his father was the pastor of a small Presbyterian congregation. He entered the University of Illinois, but after two years left to become a clerk in a drug store. Later he worked in a similar capacity in a real estate office. Following a short banking experience, he became associated with his uncle, J. B. McKinley, in the farm loan business, branching out in 1884 to enter the utility field.

At the time of the panic in 1893 Mr. McKinley had considerable money invested in farm mortgages in Kansas and disposed of most of the utilities which he had bought. Three years later, however, he re-entered the public utility field by building an 11-mile electric railway to Joliet. Within the next three years he bought and modernized the street railway lines in Quincy and Galesburg and constructed an interurban railway to Knoxville. Having accumulated a large fortune after knowing in his youth and boyhood the hardships of life and later the uncertainties of all forms of business, Senator McKinley was very generous in the time of his prosperity to educational and other institutions designed to assist struggling youth. Nor were his benefactions confined to the large gestures of philanthropy. According to C. A. Willoughby, his secretary, in the last eight or ten years he probably donated between $10,000,000 and $12,000,000 to public and private charities. This takes no account of his personal generosities.

T. W. Shelton

Thomas William Shelton, general manager and purchasing agent of the Illinois Central Electric Railway, Canton, Ill., died on Nov. 15. He had been affiliated with the Canton properties since 1918, when he resigned as general superintendent of the Kankakee & Urbana Traction Company, in Urbana, to accept the general superintendency of the Canton road.

Mr. Shelton had been engaged in electric railway and electric lighting work for approximately 38 years. His first railway connection was with the old Brooklyn Street Railway in Cleveland, where he remained ten years. Two years service followed with the Indianapolis Street Railway. Next he became associated with the Northern Ohio Traction & Light Company, now the Northern Ohio Power & Light, where he served from 1900 to 1904. He aided in the construction of the line of the Fort Wayne & Springfield Traction Company between Fort Wayne and Topeka and served the company both as mechanical and electrical engineer. In 1908 he went to the Indianapolis, Columbus & Southern Traction Company, Columbus, Ind., as master mechanic. Two years later he entered the service of the Illinois Traction System under E. D. Bell, general superintendent of the St. Louis business of the company. Thence it was he went to Urbana, where he was to remain about five years. Mr. Shelton was born in Ontario, Canada, in 1861.

Thomas C. Coleman, head of T. C. Coleman & Son, railway supplies, died recently in Louisville, Ky.

Henry J. Arnold, one of the organizers of the Durango Street Railway and a promoter of the western slope's first electric railroads, died at Denver on Nov. 22, aged 60. Mr. Arnold was a native of Clinton, Mo. He settled in Colorado in 1880. He was a director in many business concerns and an untiring worker for the advancement of the civic beauty of Denver, of which he was at one time Mayor.

Charles F. Morse, identified with the promotion of the Kansas City Belt Railway, died in Boston, Dec. 1. Mr. Morse was a former officer of the Metropolitan Street Railway, Kansas City, Mo., a predecessor of the Kansas City Railways and the Kansas City Public Service Company. He was 87 years old.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

It Isn't Too Early to Think About the Cleveland Exhibit

Plan now for your convention exhibit at the A.E.R.A. show in Cleveland next October! Freddie Dell, director of exhibits, is already under way on his program. His first release was issued under date of Dec. 4. Next October may seem to be a long way off, but the present is budget time for 1927, and to be forewarned is to be forearmed.

While exhibit facilities at Cleveland last year far surpassed those available in other cities, the Cleveland convention committee, Col. J. H. Alexander chairman, has assured the association that these facilities will be much improved for the coming convention.

The fact has been stated before, but it might be well to reiterate, that the exhibit will take place in the Cleveland Public Auditorium and the Auditorium's west wing, both buildings being required to accommodate the display.

The exhibit feature of the convention has grown in importance each year. The space occupied by exhibits at the last convention totaled more than 119,000 sq.ft. Ninety-seven buses and chassis were on display. Forty-one street and interurban cars were shown, and in addition many important accessory concerns displayed products of interest to the transportation industry. There were 271 exhibitors in all.

Diagram of the exhibition spaces will be available for distribution to the membership on June 1, 1927, together with applications for space.

The dates of the convention, by the way, are Oct. 3 to 7.

New Coaches in Service in Atlanta

Ten new single-deck de luxe coaches were placed in commission on Nov. 29 to supplement the present coach service to Morningside and the Virginia-Highland Avenue sections of Atlanta by the Atlanta Coach Company, a subsidiary of the Georgia Railway & Power Company. The new coaches seat 21 passengers, and as they are smaller than the double-deck coaches now in use and considerably more flexible in traffic they are expected to provide improved service for patrons on the two routes.

The color scheme of the new coaches is flamingo red and cream, with black trimming, similar to the double-deck coaches in use. Entrance and exit are from the front of the coaches and they are equipped with a six-cylinder, sleeve-valve motor. Each coach is upholstered in real brown leather and finished in the interior with mahogany. The floor is covered with green battleship linoleum and each coach is equipped with four hydraulic brakes, as well as an emergency hand brake. A feature of the new coaches is the lighting system, consisting of eight dome lights. A heating and ventilation system forms a part of the construction.

The new coaches were manufactured by the Yellow Coach Manufacturing Company.

Jury for Harvard Advertising Awards

Dean Donham of Harvard Business School Names Twelve Jurors to Make Awards for Year 1926

The jury to decide the 1926 winners of Harvard Advertising Awards, the series of annual prizes founded in 1923 by Edward Bok, has been announced by Dean Wallace B. Donham of the Harvard Business School, through which the awards are administered. The jury will convene in Boston the middle of January to make the awards for the year 1926.

The following awards for 1926 will be made: Prizes of $2,000 each, for the most excellent national campaign, for the most excellent campaign of industrial products, for the most excellent local campaign, and for the best campaign executed locally in cities of 100,000 population or less; a prize of $2,000 for the advertising research most conspicuous for bringing about economy or precluding waste; four prizes of $1,000 each for the advertisements most effective in the use of text, in the use of pictorial illustration, in the combination of text and illustration, and in the use of typography, respectively.

In addition a gold medal will be awarded to the individual or organization deemed by the jury of awards to merit recognition for distinguished contemporary services in the field of advertising.

All material to be submitted for the awards for 1926 must be in the hands of the Harvard Business School on or before the last day of this year.

Those who will serve on the award jury are: John Benson, of Benson & Gamble, Chicago, advertising agency; S. E. Conybeare, assistant sales manager of the Armstrong Cork Company, Lancaster, Pa., and president of the Association of National Advertisers; F. C. Kendall, editor of *Advertising and Selling Fortnightly*, New York; W. D. Moriarity, professor of economics University of Southern California, Los Angeles; A. C. Pearson, treasurer of the United Publishers Corporation, New York; Harford Powel, Jr., editor of the *Youth's Companion*, Boston; Louis Wiley, business manager of the New York *Times*, and Prof. Melvin T. Copeland and Assistant Prof. Neil H. Borden of the Harvard Business School.

A special jury to make the award for the advertisement most effective in the use of typography has also been appointed, to consist of Joseph M. Bowles of the William Edwin Rudge Company, New York printing house; Everett R. Currier, president of Currier & Harford, Ltd., New York, and D. B. Updike of the Merrymount Press, Boston.

Efficient Track Switch Heater Developed

A new track switch heater, developed and placed in service by the Westinghouse Electric & Manufacturing Company, is said to aid greatly in helping to solve the problem of keeping the switches open on steam railways and rapid transit systems during severe winter weather.

The heaters are dropped between the ties close about the switch so that there is about 1 in. to 1½ in. between bottom of rail and top of heater, one heater being placed in front of the switch blade. After once installed they can be left for the winter in continuous service with only occasional inspection. They may be hooked up 14 in series across 660 volts, or coupled

Switch Heater Operating Under Severe Weather Conditions

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in other arrangements depending upon voltage.

This switch heater is easily accessible for maintenance and installation and is so designed as to prevent moisture from entering the interior of the heater.

Bids for Philadelphia Car Equipment Opened

Three bids were opened on Dec. 3 by Director Ehlers for electrical equipment of cars for the Broad Street subway, Philadelphia, Pa. There are 312 separate equipments for the 150 cars being built by the J. G. Brill Company.

The American Brown Boveri Company, Camden, N. J., was low bidder at $741,000. Next to it was the Westinghouse company, $776,566, and the high bidder was the General Electric Company, $811,200. Director Ehlers said he would announce the award later.

Sesqui Medals Awarded Westinghouse Company

The executive jury of awards of the Sesqui-Centennial International Exposition at Philadelphia voted to the Westinghouse Electric & Manufacturing Company nine awards for its exhibits, including a grand prize for "Excellence of products and service to humanity." Other than the grand prize, the awards include one medal of honor, four gold medals and three silver medals.

$500,000 Seattle Terminal Approved

The City Council of Seattle, Wash., has passed, without a dissenting vote, the ordinance granting the Pacific Northwest Traction Company the necessary franchises to move its Everett interurban terminal to a new location on Stewart Street, where a $500,000 building will be erected. A. W. Leonard, president of the Puget Sound Power & Light Company, parent concern, states that work will begin at once. The traction company operates an interurban line from Seattle to Everett, a bus line from Everett to Mount Vernon and another interurban line connecting Mount Vernon and Bellingham, all of which will be served in the new terminal building.

Metal, Coal and Material Prices

Metals—New York	Dec. 7, 1926
Copper, electrolytic, cents per lb.	13.35
Copper wire, cents per lb.	15.75
Lead, cents per lb.	7.90
Zinc, cents per lb.	7.35
Tin, Straits, cents per lb.	69.50
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$7.00
Somerset mine run, Boston, net tons	3.00
Pittsburgh mine run, Pittsburgh, net tons	2.20
Franklin, Ill., screenings, Chicago, net tons	1.75
Central, Ill., screenings, Chicago, net tons	1.525
Kansas screenings, Kansas City, net tons	2.30
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, N.Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.4
White lead in oil (100-lb. keg), N. Y., cents per lb.	14.75
Turpentine (bbl. lots), N. Y., per gal.	$0.90

The franchise ordinance has been pending in the City Council since July 19. Some weeks later the project was delayed when the City Council returned the matter to the committee on franchises. It extends from Dec. 31, 1934, to Dec. 31, 1950, and authorizes the company to build a double track extending from its present terminal on Stewart Street to the new building site, two blocks away. Under the present franchise the company pays the city 10 cents a car-mile for use of the tracks. Under the new franchise the minimum charge will be 10½ cents and the maximum rate 15 cents during the period of the sixteen-year extension. An amendment to the bill provides for an additional car-mile charge in the event the city builds either an elevated or subway line over any of the route used by the railway.

Car Contracts Awarded in San Francisco

Contracts for the construction of fifteen new cars for use on the lines of the Municipal Railway have been let by the Board of Works of San Francisco. These cars are to be delivered in six months time and are to cost, exclusive of engineering and inspection, $18,500 each.

At the office of the city engineer it was said that the cars are badly needed, as the number of passengers is increasing daily. Present cars will not be retired as none of these has as yet outlived its usefulness.

The Municipal Railway management requested the new cars more than a year ago, but it was not until Nov. 26 that the final approval of the request was granted.

These fifteen cars will be of the modified California semi-steel type, each with a seating capacity of 52. Contracts for the new cars have been let as follows: Brakes, Westinghouse Traction Brake Company; motors, Westinghouse Electric & Manufacturing Company; trucks, J. G. Brill Company, and bodies, St. Louis Car Company.

Weight, total	51,250 lb.
Bolster centers, length	20 ft. 10 in.
Length over all	47 ft. 1 in.
Truck wheelbase	4 ft. 10 in.
Width over all	9 ft. 3 in.
Height, rail to trolley base	11 ft. 5½ in.
Body	Semi-steel
Interior trim	Birch
Roof	Arch
Air brakes	Westinghouse SML
Armature bearings	Plain
Axles	Standard EB
Bumpers	Cast anti-climber
Car signal system	Hand-operated bell
Car trimmings	Bronze and aluminum
Center and side bearings	Brill type roller
Compressors	Westinghouse 16 ft
Conduits and junction boxes	Westinghouse
Control	Westinghouse HLC
Destination signs	Hunter
Fare boxes	Johnson
Fenders	Eclipse life guard
Finish	Paint and varnish
Gears and pinions	Westinghouse
Headlights	Golden Glow
Journal bearings	Plain
Journal boxes	Brill
Motors	Westinghouse 306, outside hung
Sash fixtures	Stationary
Seats	Heywood-Wakefield
Seating material	Outside, slots; inside, veneer
Slack adjuster	Westinghouse type J
Step treads	Cast
Trolley base	US-20
Trucks	Brill 76-EZ
Ventilators	Garland
Wheels	Rolled steel, 34 in.

Rolling Stock

Honolulu Rapid Transit Company, Honolulu, Hawaii, has changed its plans on a prospective order for twelve one-man cars, recommended by Richard Sachse, traffic expert, and referred to in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 23, page 792. Instead, the company plans now to purchase eight new one-man, two-man cars at a cost of approximately $136,000. This is in connection with its proposed rerouting and curtailment of service.

Rockford & Interurban Railway, Rockford, Ill., purchased recently at foreclosure by Milton Ellis, who had previously bought all the bonds in default, plans to buy five new cars as one of the first steps in a program of improvement intended to restore the earning power of the road.

Track and Line

Tampa Electric Company, Tampa, Fla., has started the work of constructing its double car lines on the newly acquired right-of-way for the extension of the Bay Shore Drive.

Memphis Street Railway, Memphis, Tenn., will extend the Faxon Avenue line, which at present is single track. It will be extended 2,000 ft. and double tracks will be put in.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has extended its Holton-Mitchell Street line on Forest Home Avenue from 26th Avenue to the city limits near 29th Avenue at a cost of $21,086.

New Advertising Literature

Mine Safety Appliances Company, Pittsburgh, Pa., has issued bulletin No. 231 on the M.S.A. paint respirator, a complete protection for paint sprayers.

American Brown Boveri Electric Corporation, New York, N. Y., has issued descriptive circular No. 702 on quick-acting automatic generator voltage regulators.

Ohio Brass Company, Mansfield, Ohio, has issued a folder called "Lighting the Way." It describes the Imperial headlights for electric railways.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has just released three new railway catalog sheets, Nos. 6, 7 and 8, containing descriptions and data on the latest types of railway motor covers, axle shields, gear cases and armature shafts, respectively. Leaflets 20,300 and 20,-301, containing specifications for railway motors, have also been published. These motors are No. 510-E and 508-E, respectively, the first two standard railway motors on which dual ventilation has been used. In addition to the above publications, two folders, F-4,728 and DMF-5,005, have been issued describing the new type of compensating controller fingers designed to give maximum contact between finger and segment on type K railway controllers, with minimum failure from burning.

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, December 18, 1926 *Number* 25

Devices for Rapid Machining Require Careful Checking

ACCURATE machining of wearing parts is being given more attention by electric railway shopmen than ever before. This is encouraging, as it shows that the revised standards of machining tolerances made by association committees, together with various recommendations for reducing noise by maintaining closer fits, are receiving consideration by the maintenance departments. One railway reports that its stepping for the bearing fits of armature shafts has been reduced one-half. Where previously $\frac{1}{32}$-in. wear was permitted and then the shaft was turned down $\frac{1}{16}$ in. to the next standard undersized diameter, now but $\frac{1}{64}$-in. wear is allowed and the shafts are reduced in diameter but $\frac{1}{32}$ in. to the next step. This practice not only keeps the fits much closer but results in considerable saving in the amount of metal that is turned off to reduce a shaft bearing to the next size.

On another railway property, in checking the accuracy to which armature bearings were being machined, a somewhat surprising fact was disclosed. The bearings were first finished on the outside and the boring was done with the bearing held in a self-centering chuck. It had been assumed that this insured accurate centering of the bore in relation to the outside fit. The checking disclosed bearings with the inside bore out of center from 0.005 to 0.01 in. A bearing that had just been finished in the chuck was marked so that it could be reinserted in the same position. It was then removed and immediately put back in the chuck. Upon starting the boring bar the tool began a cut of about 0.005 in. on one side of the bore.

Use of the self-centering chuck had reduced the time of machining bearings to about one-third that taken when bearings were held in the three-jaw chuck of the lathe. It permitted a slight misalignment, however, so that the bore was not centered accurately. With the old method the machinist did not depend on the holding device for accurate centering and so each bearing was tested carefully for alignment before the boring operation was started. Too great dependence had been placed on the new chuck and inaccurate machining resulted.

Railway Holds First Place in Automobile Manufacturing Center

MORE automobiles are manufactured in Detroit and its environs than in any other city in the world. The employees of this industry far outnumber those of any other industry in the district. On account of the freight differential, automobiles are somewhat cheaper there than elsewhere. Consequently, the automobile has reached the zenith of its popularity in Detroit. It is the more remarkable, therefore, to find that public transportation vehicles are carrying more than 80 per cent of the city's traffic, as was indicated by a recent investigation made by the Retail Merchants' Association.

Street cars were found to be the most important means of transportation, being used by some 56 per cent of all customers at 27 downtown stores. Buses carried slightly more than 24 per cent, while only about 19 per cent came by private automobile. Details of this traffic count appeared in last week's issue. No marked differences from trends indicated by similar checks in other cities are to be seen in the Detroit figures, nevertheless it is interesting to note that the electric railway holds the place of first importance even in the heart of the automobile manufacturing district.

Pull-In Comparisons Not Always Reliable

DISCUSSION to no avail arises from data relative to pull-in records for the simple reason that a pull-in in one city is not so counted in another. Then, too, some companies eliminate from the record pull-ins due to service causes such as broken windows, minor damage because of collision, etc. Master mechanics on other properties that are doing a good job of maintenance may have their records subjected to an invidious comparison because of their companies' policy of counting all pull-ins, whatever the cause, as a basis for determining the pull-in records.

At the meeting of the Iowa operators in Omaha last month the question of car-miles per pull-in was often referred to, the values, however, varying from a few thousand to 20,000. Last summer at the Chattanooga meeting of the Southern Properties' equipment men records of car-miles per pull-in were reported and published in the JOURNAL varying from 5,000 up to 98,000. It seems reasonable to suppose that the methods of determining pull-ins must vary widely in order to obtain such different results.

Comparative records are always of value when made on the same basis. When such a basis does not exist such records are worse than useless. It is far from a simple matter to determine a standard basis for counting pull-ins. On some properties cars are turned in for the slightest failure, while on others repair men fix damaged parts on the road. This difference may even exist on various divisions of the same property. There is also considerable variation due to the character and condition of the equipment and the type of service in which it is used. Old cars manifestly will be expected to give more trouble than new ones. Four-motor cars would be expected to develop more defects than two-motor cars. Such differences as these are

This is the issue in December that is devoted essentially to maintenance and construction subjects

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likely to overshadow variations in operation by the individual motormen.

For determination of the total record there is some background of opinion for counting every pull-in without reference to cause. These pull-ins can be analyzed to determine those arising from traffic accidents, shop failures or inspection failures. Even on this basis there will be some difficulty in determining a standard, although if no attempt be made to use the figures as a means of discipline much valuable information may be obtained from them.

Robbing Peter to Pay Paul Is an Expensive Proposition

FEW will deny that a broad and intelligent program of improvement in shop practice must carry with it an equally comprehensive modernization of shop equipment. But, having agreed on this central thesis, any given number of individuals will at once split asunder upon the rock of accomplishment. Those there will be who favor encouraging the local inventive talent to be found within the ranks of their own shop forces—in other words, the home manufacture of machines and devices which are at all within the range of the shop equipment at hand.

Some almost uncanny fascination seems to invest this doctrine of self-sufficiency; it grows upon one. Soon the shop superintendent who started out to build a machine or two for some specific purpose will find himself exercising much ingenuity in devising equipment which at best will accomplish nothing more than any one of a number of machines already on the market. This is assuredly left-handed economy. By far the greater number of progressive mechanical men recognize it as such. Yet in an astonishing number of shops throughout the country one finds the "home-made prodigies" continuing to blossom out with distressing frequency.

Shop forces and shop equipment have certain inalienable duties to perform. Their existence is justified only on the score of their ability to keep the rolling stock in a condition as efficient as possible. Diverted into channels of competition with established equipment manufacturers, they are shooting far from the mark. True, there are isolated instances where a special type of machine has been needed to accomplish a certain function and where such a machine has not been available, nor have there been sufficient funds at hand to purchase it. Here the home-made device has played a valuable rôle. It should be obvious, but apparently is not, that local talent cannot hope to turn out equipment for standard purposes that will function as efficiently as machines which have been produced by manufacturers after large sums have been expended in research and development work.

It should be possible to determine quite accurately the economies which the introduction of new shop equipment will effect in any given service. Minute operating data have been compiled by the manufacturers and are available to railway executives. These, in comparison with records which are generally kept on existing machines, will give the desired information. On the other hand, it can scarcely be determined in advance whether a contemplated piece of home-made equipment will actually save money, or simply will serve to gratify the ego of its proud inventor.

$10 for Improved Car Appearance May Result in $100 Increased Income

FROM the animated discussion given to the subject of improving car appearance at the recent meeting of the rolling stock committee of the American Electric Railway Engineering Association it is evident that increased attention is being given to car cleaning and painting methods. The general opinion expressed was that cars can be painted much more cheaply if the work is done at frequent intervals and that the added attractiveness of cars which results from frequent painting increases car riding to a marked extent.

As an example of what can be done through shortening painting intervals one superintendent of equipment stated that from 1923 to 1925 his company has increased the number of revenue cars painted annually from 33 per cent to 82 per cent of the total and at the same time the cost of painting has been reduced 75 per cent. Cars on this system are now painted every ten to twelve months. Of course not all of this decrease in painting cost is the result of more frequent painting. The painting system has been changed, the number of coats has been reduced, the spray is used wherever possible instead of the brush method, a simplified color scheme has been adopted and the schedule of painting operations has been standardized. However, the decreased time between paintings has made it possible to use more economical painting methods and still keep the cars in a more attractive condition.

Improved car cleaning methods help to keep the painted surface in good condition. Certainly there is no feature that will add more to the appearance of car interiors than cleanliness. Spray washing and high pressure washing are being used more extensively than ever before. By giving particular attention to car cleaning problems cars are cleaned now at much shorter intervals without increasing the total cleaning cost. Many railways clean their cars thoroughly every night, while there is a periodical cleaning once a month, at which time particular attention is given to upholstered seats and parts that are somewhat inaccessible.

It thus appears that a considerable increase in attractiveness of cars can be produced without an increase in maintenance costs. Certainly the added revenue that is sure to result will warrant expenditure of modest sums for more modern painting and cleaning equipment. Added attractiveness to cars will aid materially in winning back former patronage and the visual invitation of clean, well-painted cars will create an instinctive desire to ride.

What Are Our Future Equipment Executives Doing Today?

HOW may we gain recruits for our equipment forces —particularly from among the younger generation who later must provide the group from which the equipment executives of the future will be selected? This is indeed a problem which is facing not only electric and steam railroad companies, but many industrial organizations as well.

With the present general prosperity, all evidence goes to show greatly increased desire for higher education among the youth of the country, with consequent later inclination toward "white-collar" jobs, in spite of the fact that the average mechanic of today makes considerably more money than the average clerk. Social

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conditions, therefore, are tending, probably more than in the past, to reduce the quota of young men, both of high school and of college education, who turn to mechanical pursuits as a life career.

Electric railways are intimately concerned with this fact, not only because of the constantly increasing need for better men and better minds to cope with the ever-increasing engineering problems in the electric railway industry, but because equipment work furnishes one of the very best training schools for the offices of president, vice-president and general manager on an electric railway system. This may seem strange to some, but the fact is, the equipment department has been the training school of many of the most successful operating railway executives—both steam and electric—of the present day. A man who has had this training has a knowledge of the fundamental mechanical principles of railway operation that he who has not been actively associated with the equipment department hardly, if ever, is able to acquire. This basic knowledge of the tools which a railway has to use in its daily service—cars, track and power—stands the mechanically trained executive in good stead when he has to pass on those questions of labor and finance which are concerned with daily car and train operation.

A Remedy for Congestion Is Known, but Courage Is Lacking to Apply It

CONGESTION of traffic exists today in the streets of many of our large cities because the municipal authorities do not dare take the steps necessary to afford relief. This was brought out clearly at the December meeting of the A.E.R.A. Metropolitan Section. General agreement that automobile parking is the chief cause of congestion was expressed by the deputy chief inspector in charge of the traffic division of the New York Police Department, by the vice-president of one of the principal street railways in the city and by an executive of a large department store. Notwithstanding this unanimity of opinion as to the cause of the trouble, there was no intimation that action would be taken to relieve the situation.

Many thoughtful retail merchants in New York and elsewhere are awaking to the possibility of decentralization. Because of the difficulty of reaching the downtown shopping district, business is steadily slipping away to the neighborhood stores. These downtown merchants realize that for every customer accommodated by liberal parking rules a dozen, or a score, or hundreds are inconvenienced. They see that the salvation of the big stores lies in the efficient operation of public transportation systems which are used by the large majority of their customers.

The surface transportation systems, which carry 40 per cent of the total traffic in New York City, cannot function efficiently when anywhere from a quarter to a half of the available roadway space is devoted to parking. There is not sufficient room left for moving vehicles. Yet his Majesty the automobilist continues to be allowed to do as he pleases about obstructing the street.

From the remarks of the deputy chief inspector it appears that the evils of present conditions are well understood by the Police Department. But the police are powerless to do anything about it. "Unless help comes from some source, and comes quickly," the inspector said, "we will see traffic completely tied up in certain parts of this city." What a confession to come from the head of the traffic division of the largest city in the United States! The seriousness of the situation is recognized, the remedy is known, but the municipal authorities have not the courage to put it into effect.

Political Bungling Jeopardizes Chicago's Transportation

EVENTS in the Chicago situation have been moving so rapidly in recent weeks that it is difficult to predict what the next development will be. One thing, however, stands out and characterizes the entire series of proceedings. No cleaner-cut example of political inefficiency can be found than in the present Chicago transit situation. Here is a group of companies comprising the largest surface lines system in the world. It has continued to rise in the very face of expiring franchises and maturing bonds, to the highest state of perfection in its history.

Despite the political situation, the service has been improved by the purchase of 445 new cars within the last four years. The companies under the operating agency of the Chicago Surface Lines have shown progressiveness in modernization programs that have relieved traffic congestion in the famous Chicago Loop, and otherwise have rendered a service generally proclaimed to be the best in the country. Both earnings and wages have been increased, and instead of allowing an atmosphere of discouragement and despair to prevail, the business has been conducted in an orderly manner and with that quiet efficiency that has met with the popular approval of the patrons served.

In fact, all of the elements necessary for adequate transportation are within easy reach. Only the handicap of expiring franchises hampers the economic growth of this great group of properties. Capital and management have done their best; but the evils of the short-term franchise, with the management harassed by self-seeking politicians, threaten the continuance of this valuable public service.

The city of Chicago has not shown a lack of interest in the situation. Many reports have been made, much testimony has been listened to, innumerable committees have been appointed. By referendum vote two proposed solutions of the difficulties have been defeated. The fact remains, however, that Chicago to-day is without a plan of settlement, and the franchises have but one month to run in the coming year. With their expiration the underlying bonds fall due with no basis on which to refinance. So also the agreement of joint management of the four underlying companies comes to an end.

It is useless to predict the future. The protection of the courts has been invoked. That is only a temporary expedient. Whether or not a plan can be worked out depends on co-operation by the city and a change in attitude, not yet in evidence. At best the management and capital that performed with such faith the service so necessary to Chicagoans will be jeopardized.

The real contribution that makes for success or failure is one of management. Any one can provide transportation, but only the trained management with adequate protected capital can provide the kind of transportation that will meet with success in present day life. Certainly justice and common sense alike demand the support of operators who have had a record of accomplishment like those in Chicago.

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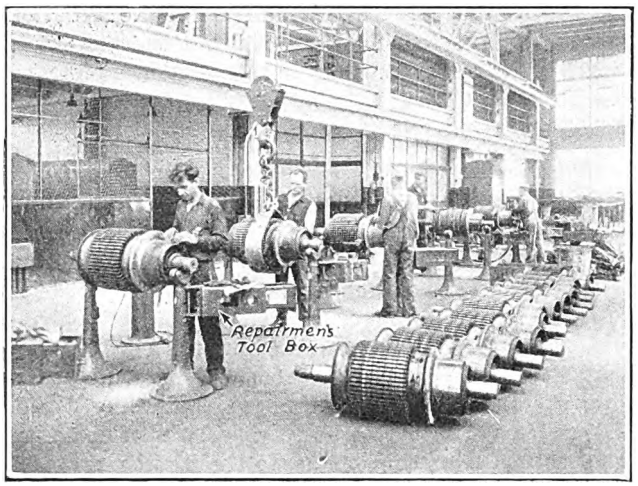
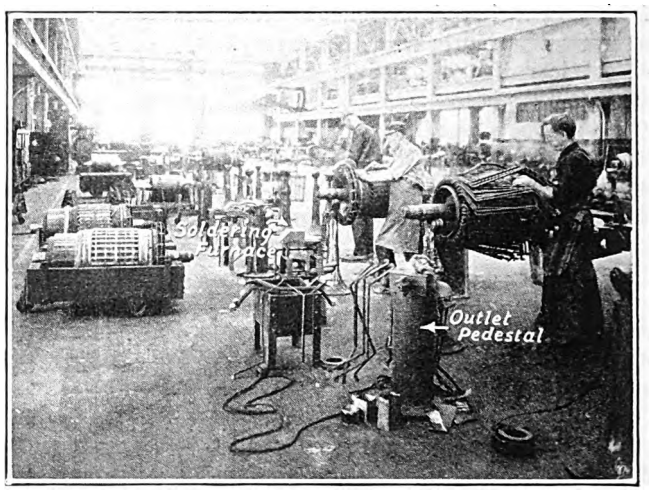
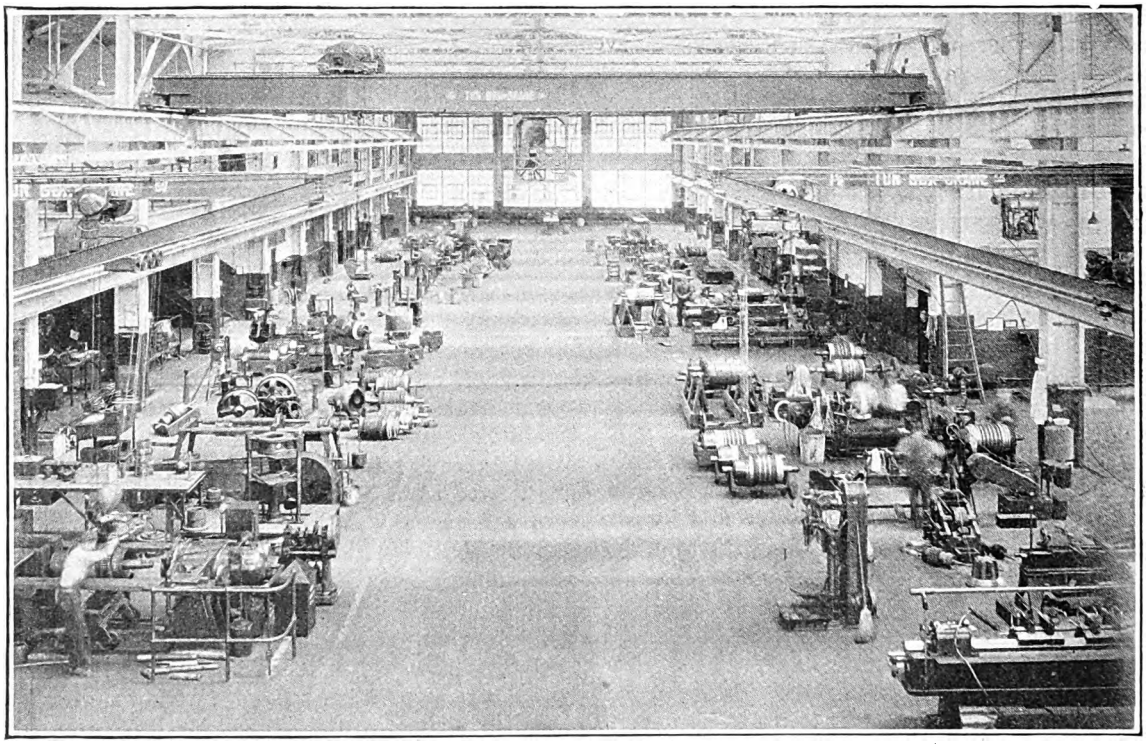
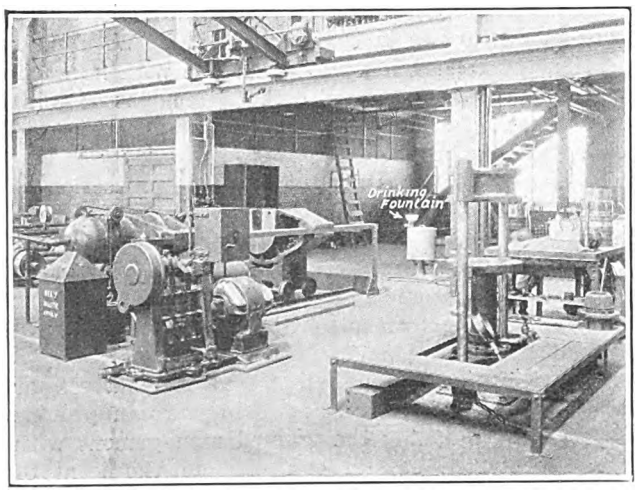
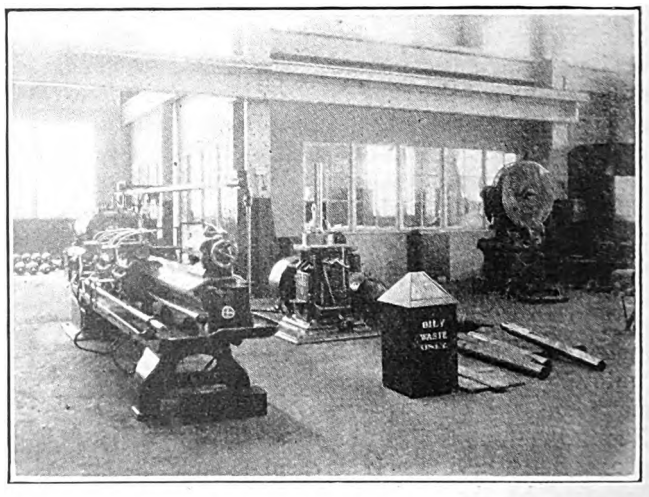
The Central Bay of the B.-M. T. Electrical Repair Shop and Four Departments in It











The four small pictures show close-ups in the corresponding corners of the bay, which is spanned by a 5-ton traveling crane and two traveling wall jib cranes. Upper left—Armature core and commutator repair department. Upper right—Armature winding; outlets for gas, compressed air and testing current are provided. Lower left—Horizontal and vertical hydraulic presses for forcing operations. Lower right—Modern axle lathe, vertical key seater and punch press, superintendent's office.

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Progressive Routing of Work Features New B.-M.T. Shop

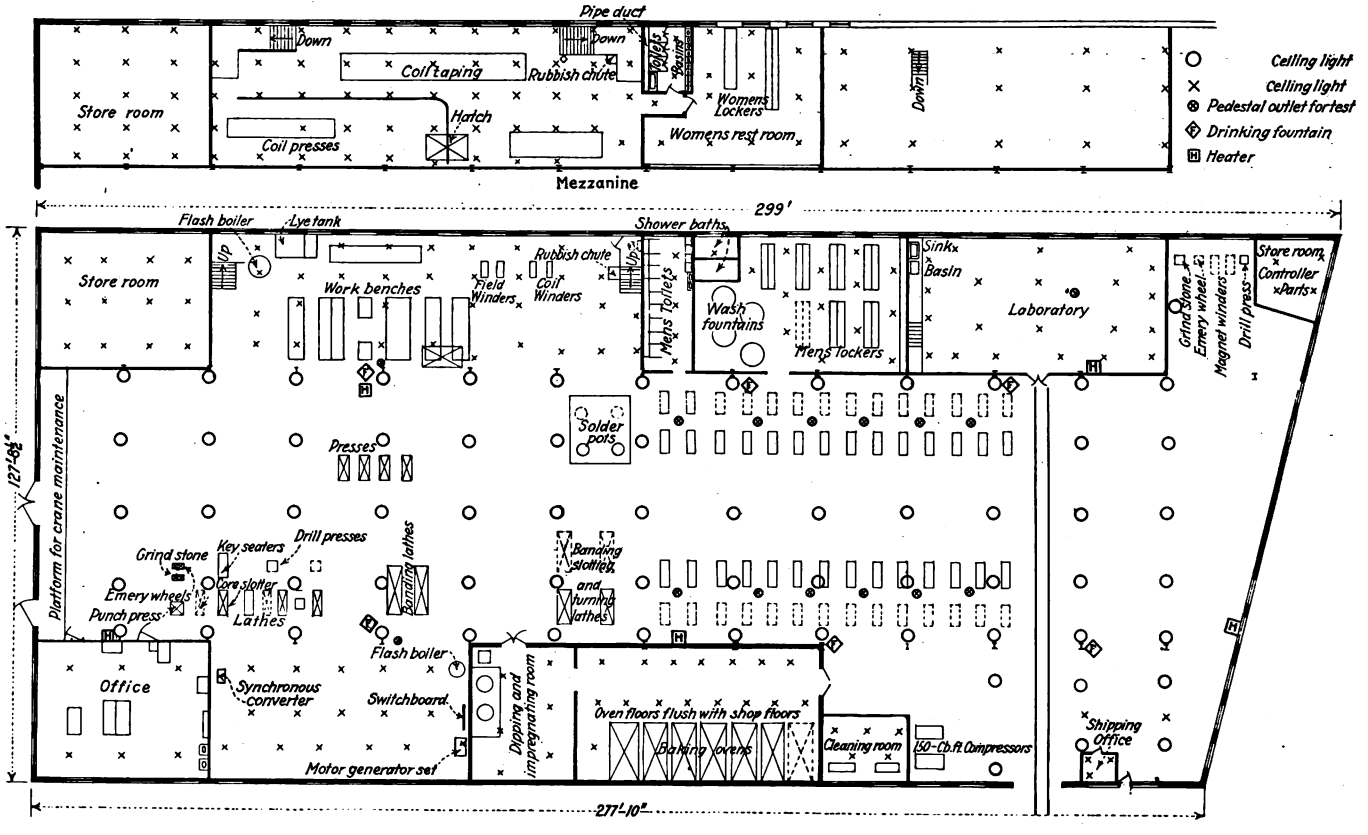
FIRST ARTICLE

The Electrical Repair Building Is the First of the New Coney Island Repair Shops to Be Used by the Rapid Transit Division of the Brooklyn-Manhattan Transit Corporation — Ultra-Modern Equipment Installed for Making Repairs Quickly and Efficiently

CAREFULLY fitted out with the latest types of machine tools and other equipment needed for electrical repairs, the first unit of the new Coney Island repair shops of the Brooklyn-Manhattan Transit Corporation is in use. When completed the entire group will form the largest and best equipped electric railway inspection and repair shops in the world. Seven buildings are now in the course of erection, with a total floor area of nearly 13 acres. They comprise a main repair shop, an inspection shop, the electrical repair shop, which is the subject of this article; a two-story storehouse, a two-story office building, an oil house, and a boiler house. The total floor area of the seven buildings is 546,000 sq.ft.

The buildings themselves are being built by the city of New York under subway contract No. 4, while the railway company provides the equipment, including heating, lighting, power, machine tools, cranes, elevators, etc. The building now used for the department of electrical repairs is the first one to be completed and the city is now proceeding with the construction of the remainder of this comprehensive group of repair and inspection shops. The yards for these shops occupy the entire space between the Sea Beach and Culver lines of the railway at Avenue X and extend south to Coney Island Creek. The electrical repair shop occupies the northeast corner of this area immediately adjacent to the Avenue X station of the Culver line and but a short distance from the 86th Street station of the Sea Beach line. The shop building is 300 ft. long and 127 ft. wide. The central portion is open from floor to roof and a mezzanine floor 32 ft. wide extends along one side of the building with a space for a similar mezzanine to be built later on the opposite side. Particular attention has been devoted to providing large central sawtooth skylights and an unusual amount of wall space for windows so as to make the interior of the shop exceptionally light throughout the daylight hours and a most attractive place in which to work.

The framework of the electrical repair shop is of steel and the walls of tapestry brick with a concrete foundation. The building presents a very pleasing



Provision Has Been Made for Expansion and Installation of Additional Equipment to Meet Increased Requirements. The Equipment Indicated by Means of Dots Has Not Been Installed

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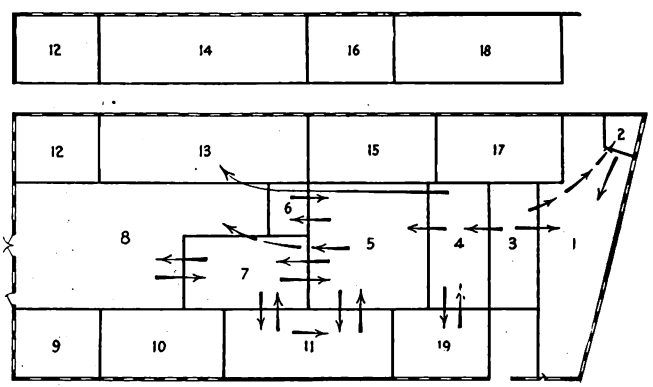
appearance with little attempt at ornamentation. The coping is of terra cotta and window sills are Rowlock brick. Windows are all fitted with steel sash. Ventilating panels in the exterior steel sash are glazed with ¼-in. rough wire glass. Other glazing in the first story is ¼-in. rough glass and the second story exterior steel sash is glazed with clear glass except in the ventilating panels. Roof lights are glazed with ¼-in. rough wire glass. The roof over the center bay is of sawtooth design which furnishes abundance of interior light. The backs of the sawtooth section are of precast interlocking cement tile with glass inserts. The roof over the mezzanine floor and side bay is built of concrete slabs on steel with asphalt surfacing. The floor of the mezzanine section is of cement with an asphalt finish. The ground floor is of Carter Bloxonend flooring on a concrete base.

Unit heaters are located at intervals around the shop and wall radiators where required in rooms, etc. The heating system is of low-pressure type with vacuum return, steam at about 5 lb. pressure being used. Steam is now supplied from a temporary boiler, but



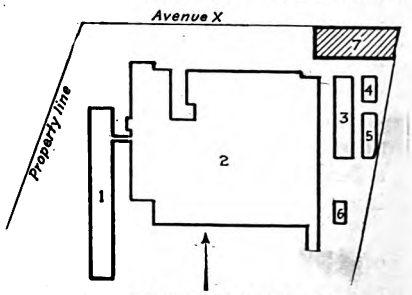
Departments Are Grouped so that Work Moves Progressively. Operations Performed in the Various Sections Are Given in the Table Below

as soon as the main boiler house is completed connection will be made to this.

All electric lighting fixtures are arranged to conform to the latest practice in shop lighting. The central bay is lighted from five-light clusters about 30 ft. above the floor and spaced on 20-ft. centers, each cluster consisting of five 94-watt lamps with porcelain reflectors. Side bays are supplied from single 94-watt lamps 10 ft. above the floor, with porcelain reflectors spaced on 8-ft. by 10-ft. centers. In the washroom and locker rooms 56-watt lamps are used. There are also separate circuits for watchmen's lights, fire apparatus, fire alarm and hydrant designation lights. The 600-volt direct-current system of the railway is used for lighting, five lamps being connected in series across the line.

All wire is run in conduit in the ceilings, floors and walls with pull boxes at convenient intervals. A general lighting and power switchboard is located on the south balcony of the shop. From this the circuits run to separate lighting and power panels at convenient points in the shop. These control panels are provided with Westinghouse safety switches mounted in steel cabinets with hinged doors.

Pipe trenches are provided for the distribution pipes for steam, air, gas, electricity and water. Pedestals are placed along each side of the central section of the shop devoted to stripping and winding of armatures. These pedestals include connections for gas, air at 90 lb. pressure and electricity at 110 volts a.c. and 600 volts d.c. Some further details as to the construction of these stands and the convenience for various classes of work will be given in connection with the shop equipment.



General Layout of Shops

The department of electrical repairs, shown as No. 7, is the first building completed. Others in the group are: 1, Inspection shop. 2, Main repair shop. 3, Storehouse. 4, Office. 5, Oil house. 6, Boiler house.

Electric railway maintenance men will find the new electrical repair shop of the Brooklyn-Manhattan Transit Corporation of particular interest because of the modern equipment provided. The shop is arranged to handle the largest as well as the smallest item of electrical repair work rapidly and efficiently. Quick repairs to electric car equipment are necessary, not only to keep the maximum number of cars in service continually, but also to minimize the number of spare parts that must be stocked.

In planning the department of electrical repairs, particular attention was given to grouping departments and equipment so that the part being repaired will

Schedule of Work in Various Departments of B.-M.T. Electrical Repair Shop

(Figures after section numbers are approximate areas)

Section 1—3,480 Sq.Ft.
For repairs to controller equipment, contactor boxes, switch groups, line switches, magnets and door equipment.

Section 2—277 Sq.Ft.
Control storeroom. Material necessary for repair parts made up in Section No. 1.

Section 3—2,093 Sq.Ft.
Shipping department.

Section 4—1,798 Sq.Ft.
Armature stripping department. Stripping of armatures. Rewinding and repair of coils.

Section 5—3,306 Sq.Ft.
Rewinding of heavy armatures. Soldering and banding of armatures previous to baking.

Section 6—450 Sq.Ft.
Soldering pots. All armature windings above 10 hp. are dipped.

Section 7—1,944 Sq.Ft.
Banding department. Armature banders. Armatures cleaned and slotted.

Section 8—5,466 Sq.Ft.
Machine shop.

Section 9—1,287 Sq.Ft.
Shop offices.

Section 10—1,980 Sq.Ft.
Testing department. Motors and control equipment are tested with high potential apparatus and certain types are given an actual running test.

Section 11—2,040 Sq.Ft.
Dipping and baking room. Impregnating tanks for field coils and all dipping and baking requirements.

Section 12—2,500 Sq.Ft.
Storeroom for insulating material, wire and complete coils.

Section 13—3,170 Sq.Ft.
Field coil work.

Section 14—3,170 Sq.Ft.
Mezzanine floor. Winding room for armatures, magnets and all other small coils, steam coil presses installed so that armature coils can be completed except for dipping and baking.

Section 15—1,920 Sq.Ft.
Men's room.

Section 16—1,280 Sq.Ft.
Women's room.

Section 17—1,920 Sq.Ft.
Laboratory. Tests of all material for electrical, maintenance and general repair shops for physical and chemical properties.

Section 18—2,528 Sq.Ft.
Storeroom for laboratory.

Section 19—1,490 Sq.Ft.
Cleaning room for various motors and control before dismantling.

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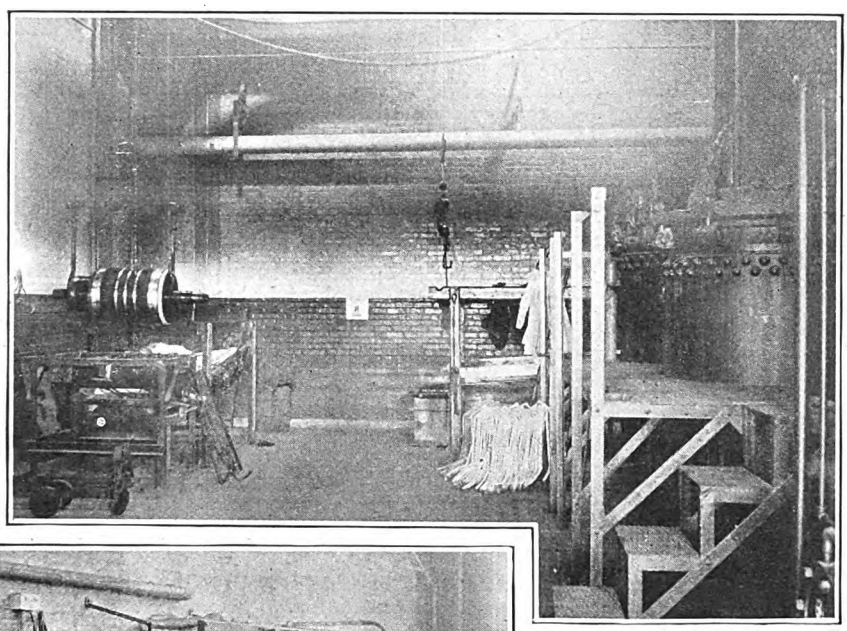
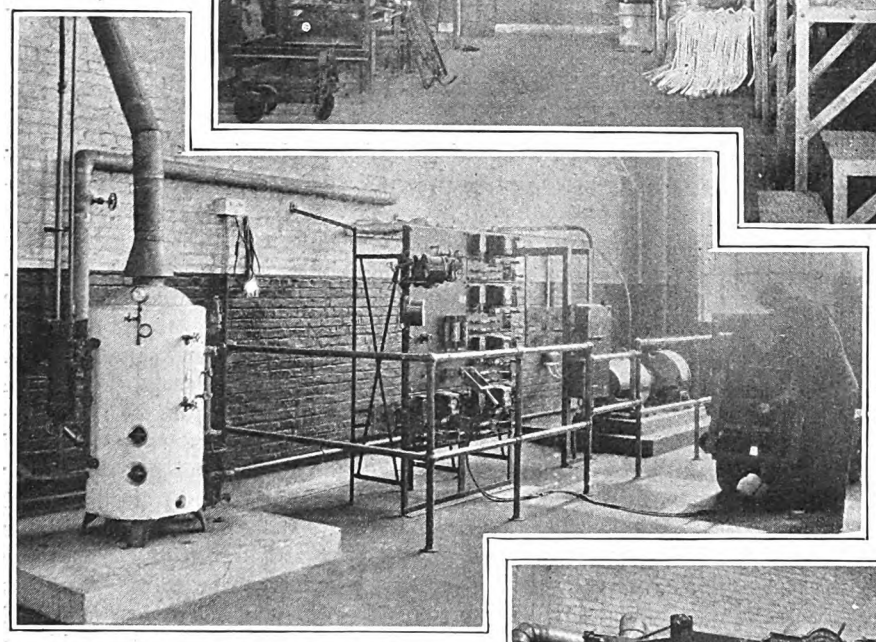
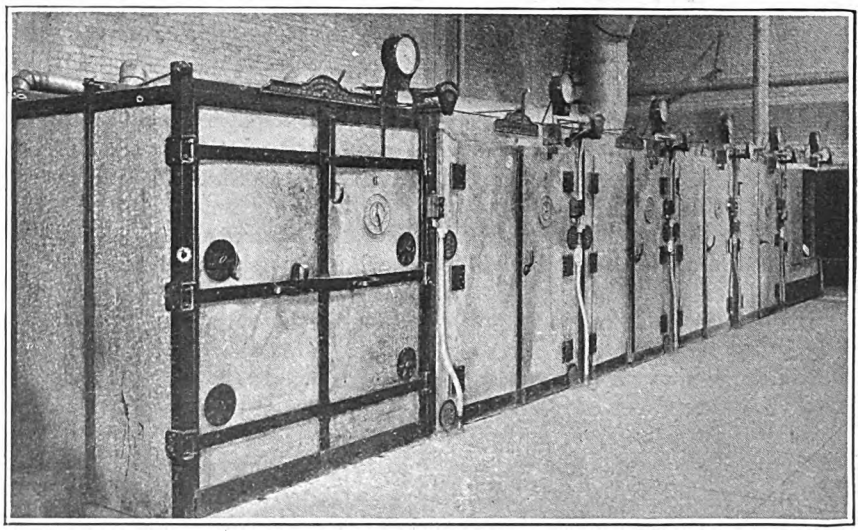
move progressively from one operation to the next and all interference, cross-routing and back-tracking of parts will be eliminated. Provision for expansion and installation of equipment to meet future increased requirements has been made. Plenty of space has been left around machine tools so that equipment can be handled efficiently without interference. Speed in making repairs with an economical shop force has been sought. Quick movement of heavy parts is taken care of by a 5-ton Box traveling crane which spans the central bay and traverses its entire length, by two 1½-ton Box traveling wall jib cranes, operated from the floor, and by several small storage-battery trucks. The wall jib cranes serve the machine tools so that the traveling crane can be used for longer movements and for placing material conveniently to machines.



Equipment for Rolling Armatures in Insulating Varnish Is Shown at the Left and the Impregnating and Mixing Tanks at the Right



The Flash Boiler at the Left Supplies Steam for the Impregnating Room—Batteries of Shop Trucks Are Charged from a Motor-Generator Set with Convenient Switchboard Shown in the Center



Automatically Controlled Drying and Baking Ovens Are Important Parts of the Equipment

An accompanying plan shows the shop divided into sections so as to illustrate the efficient manner in which work of similar character is grouped. A table lists the work done in each section. Lines with arrows show progressive movement of parts during repairs.

Section 3, with a track over which cars can be brought into the shop, is used for the receipt and shipping of all equipment and material. Armatures, the repair of which constitutes a large part of the work done at this shop, are inspected as they are received and are divided into two general classes—first, those that require complete rewinding, and, second, those that can be repaired without rewinding. All armatures are moved into section 4 by cranes or trucks and are placed on adjustable stands manufactured by the Columbia Machine Works. These have a large steel bell-shaped base with roller-bearing cradles at the top. Two such stands support an armature. One is bolted securely to the floor, while the other is left free to be moved so that adjustment can be made to take care of various lengths. The head with the cradle has a screw bottom with square threads to provide a 10-in. height adjustment. A convenient height used for repair of armatures is with the roller bearings 36 in. above the floor level. In grouping the stands, the stationary ones are spaced 6 ft. apart. A winder's tool box and material stand of sheet steel is attached by hinged supports to the stationary armature stand. This is 15 in. wide, 18 in. long and 8 in. deep. It is provided with a sheet-steel drawer which can be locked. Space is provided in the armature repair section for a double row of winding stands on either side. But one row on each side is in use at the present time.

The armature rewinding and repair section is provided with twelve outlet pedestals. To these are brought pipes containing gas and compressed air and

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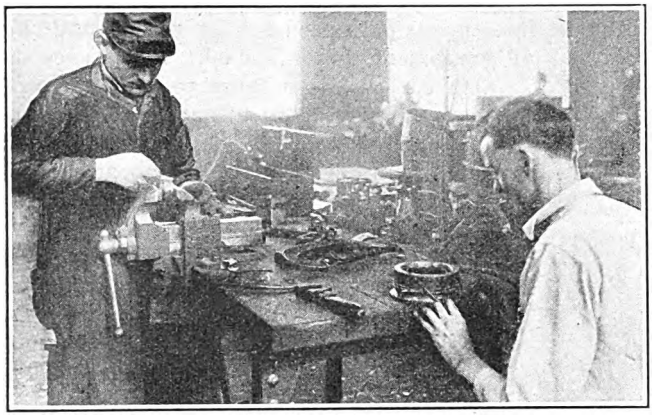


Short Circuits or Grounds Inside or at the Rear End of Commutators Are Repaired at the Bench

the conduit with wires for connection to both alternating and direct-current supply sources. Each pedestal has an upright circular steel base of 8 in. diameter and 29 in. high with a cast steel bottom. On top of the pedestal is mounted a square outlet box, 8½ in. x 8½ in. x 4 in. deep. The four sides are provided with proper fittings so that connection can be made quickly for gas, air, direct current and alternating current. Small brass plates on top of the cover indicate to the workman just which connection is to be used for each supply. There are six of these outlet pedestals, spaced 12 ft. apart, on each side of the armature rewinding and repair section.

Three soldering furnaces mounted permanently alongside the winding stands are used to heat irons for soldering the rear ends of some types of armature windings which cannot be dipped for soldering. Each soldering furnace has a gas connection and burner of sufficient size so that two soldering irons can be heated at one time. The furnaces are made by Charles A. Horn. They are mounted on a strap-iron stand which brings the furnace 2 ft. above the floor.

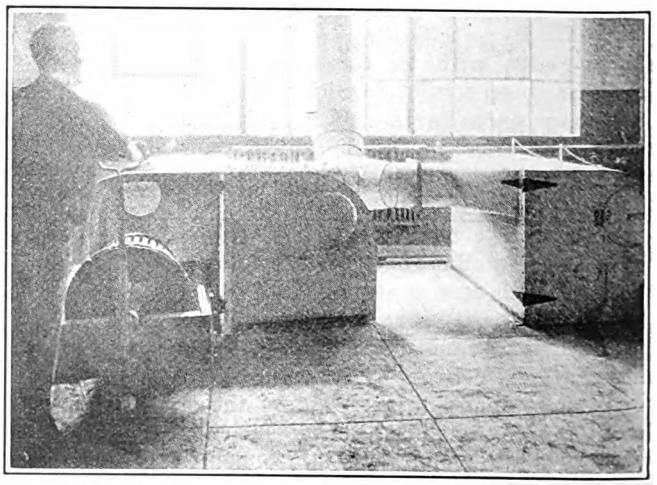
A Special Room for Cleaning

Armatures sent in for repairs usually need rebanding or new mica V-rings. Some single coils are replaced. If it is evident that an armature can be repaired without rewinding, it is sent to the cleaning room before dismantling. This room, shown as section 19 on the accompanying plan, is 19 ft. 6 in. x 14 ft. 9 in. and has two galvanized iron housings, 3 ft. x 3 ft. x 5 ft. long, into which the largest size railway armature as it rests on a truck can be rolled and be closed in completely during the cleaning operation.

Dust and grease caked solidly are loosened by scraping. Compressed air is played on the armature and a vacuum system sucks away all loose particles. The two receptacles are connected by 12-in. diameter pipes to a 16-in. diameter vertical pipe. The pipe from each receptacle has a damper so that one can be shut off while the other is in use. A hinged door the full size of the front of each receptacle is provided and to support the door as it is being opened a castor is fastened to the bottom corner farthest from the hinged side. The large front door is also provided with a small circular 15-in. door, and there is also a similar circular door in the opposite end of the receptacle. Another rectangular door 12 in. x 36 in. is provided in the side. These openings are for inserting the nozzle of an air hose to blow out the armatures. These cleaning receptacles are also used for cleaning numerous parts of electric car equipment, such as motor parts, controllers and the like.

Suction to remove the dust and loose particles is provided by a motor-driven fan mounted on the balcony, which serves as a roof for the cleaning room. The refuse material is drawn from the receptacles up through the vertical pipe to a Cyclone separator, in which large particles and any heavy material drop down and through an 8-in. pipe to a steel drum 24 in. diameter by 3 ft. high, which is placed in one corner of the cleaning room. The hood from the pipe fits over the top of the steel drum and is held in close contact by a large steel ring so that there is no tendency for the dirt to fly about the room. The top of the Cyclone separator is connected by a large pipe to a large dust chamber. Light particles are drawn through this and to the exhaust side of the fan, where they are blown outside the building.

After cleaning, armatures which are to be repaired are tested at 1,400 volts a.c. with a Westinghouse por-



The Cleaning Room Has Two Large Galvanized Iron Housings Into Which Armatures on Trucks Are Rolled for Cleaning

Machine Tool Equipment in Shop Devoted to Electrical Repairs for B.-M. T. System

One 26-in. lathe, Monarch Machine Tool Company.

One Peerless universal slotting, banding and commutator turning lathe.

Two Le Courtenay Company's banding and slotting lathes.

One Peerless slotting and banding lathe.

One banding tension machine.

One 15-in. lathe, Sebastian Lathe Company.

Two drill presses, W. F. & John Barnes Drill Press Company.

One commutator slotter, Electric Service Supplies Company.

One 8-in. Lo-Swing lathe.

One No. 3 Little Giant horizontal key seater, Mitts & Merrill.

One No. 5 Little Giant vertical key seater, Mitts & Merrill.

One punch and shear, Ferracute Machine Company.

One double-spindle grinder, Ransom Manufacturing Company.

Two motor-driven grindstones.

One 200-ton horizontal press, Hydraulic Press Manufacturing Company.

One 50-ton vertical press, Watson Stillman Company.

One 60-ton horizontal press.

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table transformer box which is arranged to give testing voltages up to 6,000 in steps of 200. The box is brought to the armature to be tested.

Repairing and Rewinding Armatures

With all coils removed, the armature core is repaired. Any sharp corners or rough edges in the slots that might cause damage to the coils are filed and the slots are cleaned carefully to receive the insulating material for the core. The armatures are next moved to section 5 and the commutators are tested with 3,000 volts to ground and 550 volts between bars. Where repairs to the commutator are necessary these are made and the commutator is tightened carefully. Should there be short circuits or grounds inside or at the rear end which cannot be repaired properly with the commutator in place it is pressed off. This is done in section 8. A 200-ton horizontal-hydraulic press made by the Hydraulic Press Manufacturing Company and a Watson-Stillman vertical press of 50 tons capacity do most of this work. A 60-ton horizontal hydraulic press is used for tightening collars, putting tension on commutators while the nuts are tightened and for removing pinions. These presses are also used for pressing shafts in and out and other forcing operations.

Repairs to commutators removed from the armatures are made in section 13. Unless a commutator is in very bad condition it is the practice to replace the same one on an armature. The armature under repairs is set aside meanwhile. With the commutator again in place, the armature is brought back to section 5 for rewinding.

To show the particular uses to which the various pieces of equipment are put in the department of electrical repairs would require a detailed description of each maintenance operation. The principal repairs made to an armature, however, will illustrate the need for much of the equipment. While armature repairs constitute a large part of the work done, the different steps in rewinding and the order in which the work is completed differ somewhat with the various types of armatures. For a large Westinghouse type 300 armature rewinding operations are as follows:

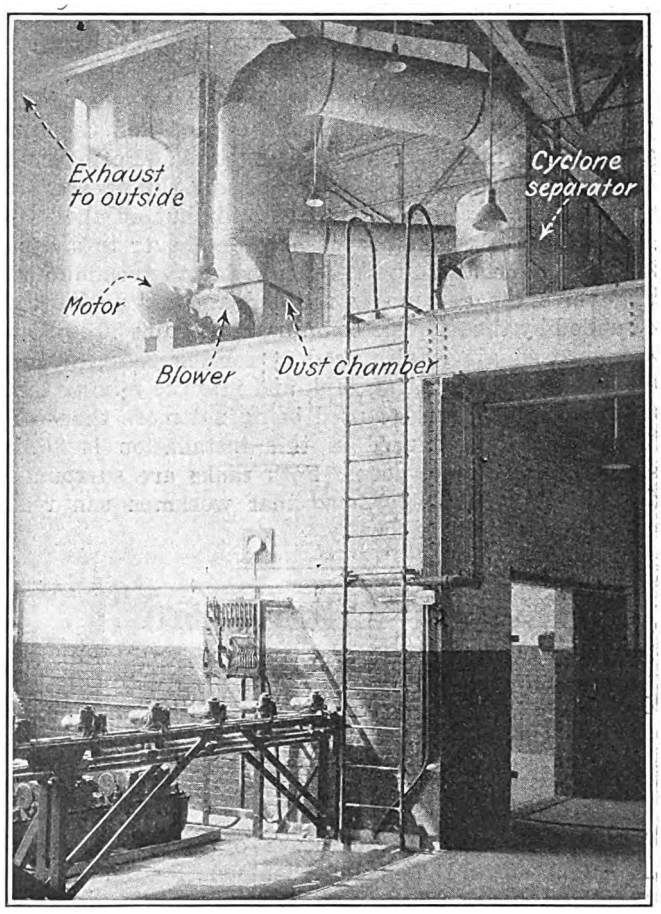
Armature Repair Work Outlined

The winder puts in the bottom coils and tapes them down to hold them in position, properly lined up. The armature is then placed in one of the baking ovens for two or three hours, in order to heat it up. Sticks are then put in on top of the coils and temporary bands are applied while the armature and coils are hot. After cooling, the armature is again placed on a stand in the winding section. The winder cuts the temporary bands and removes them, together with the sticks. Insulation is then inserted above the bottom coils and the top coils are placed in position. The armature then goes into the oven a second time for heating up and again sticks are placed over the coils and temporary bands force the coils down into position. When cold, the armature is again placed on stands and the temporary bands are cut and the sticks taken out. The winder then does the finishing work on the armature and it is given a buzzer test. The armature then goes to the solder pot for the dipping to solder the leads into the commutator neck. After a bar-to-bar test permanent bands are put on and the armature is again submitted to a buzzer test. If this latter test shows trouble in the winding, a bar-to-bar test is made to locate definitely the point of trouble.

The armature then goes into one of the lathes for turning and slotting the commutator. The slots are raked out and the commutator is polished. The armature then is sandpapered and another buzzer test is given it. The core of the armature is then painted and the tape band is given its final coat of varnish. A pinion key is put in the armature shaft and the pinion nut applied. The armature is then ready for service.

Drying and Baking Ovens Important Pieces of Equipment

From the foregoing outline it will be seen that drying and baking ovens are used extensively. These are located in a separate room in section 11, adjacent to which is another room with a complete dipping and impregnating installation. At present six ovens have been installed and there is space for an additional one when the volume of work demands it. Five of the ovens are 10 ft. x 6 ft. 6 in. x 6 ft. high. Their floors are arranged to come flush with the shop floor so that trucks can be rolled directly inside. A sixth oven is arranged for baking coils and small parts. It is 6 ft. x 5 ft. x 34 in. in size. The opening in this oven does not extend to the floor. This oven, together with four of the others, is of Gehnrich Indirect Heat Company's type. The sixth oven, formerly used at the railway's 52d Street shop, was made by the Oven Equipment & Manufacturing Company. The heating and control equipment for all of the ovens was furnished by the Westinghouse Electric & Manufacturing Company. The control boxes are installed on an angle iron framework along the wall



A Motor-Driven Fan and Cyclone Separator Mounted Above the Cleaning Room Remove All Dust and Loose Material

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of the oven room, directly in front of the ovens. A regulator, used in connection with an indicating and recording meter which is set for definite temperature limits, gives automatic heat control and eliminates the personal element.

The impregnating room has a mixing tank and an impregnating tank, supplied by the P. J. Devine Company, also equipment for dipping armatures by the rolling method and a very complete overhead I-beam hoist system for handling heavy pieces of equipment. Steam at 60-lb. pressure for heating the compound is furnished by a 4-hp. flash boiler made by P. M. Lattner Manufacturing Company. The mixing and vacuum tanks are jacketed for the steam. No pipes are in sight to become covered with compound and make cleaning difficult. The compound is heated in the mixing tank and a partial vacuum is obtained in the impregnating tank by means of air pumps. The equipment to be impregnated is then subjected to a 28-in. vacuum before the impregnating compound is admitted.

With the compound properly heated and mixed, the valve between the two tanks is opened and the compound runs into the impregnating tank. Peepholes in the top covers of these tanks permit the operator to watch the compound as it rises and shut off the valve when the equipment has been covered over to a depth of from 18 in. to 24 in. After closing the communicating valve the vacuum is relieved and air pressure is supplied by the shop air compressor at from 50 to 55 lb. Compressed air is also used in forcing the compound out of the impregnating tank and into the mixing tank, the maximum pressure used being not more than 5 lb. The vacuum tank used in this installation is 36 in. diameter by 56 in. deep. Both tanks are surrounded by an elevated platform so that workmen can reach all parts without difficulty.

Lehigh Valley Transit Modernizes Cars

Interior of One City and One Interurban Car Remodeled to Increase Comfort and Attractiveness —New Seats, Improved Lighting and Pleasing Decorative Scheme Adopted

HAVING faith in the future of trolley transportation within the city of Allentown, Pa., and the surrounding communities, together with a desire to exploit an idea of making the interior of cars more comfortable and attractive induced the Lehigh Valley Transit Company to remodel the interior of two of its cars.

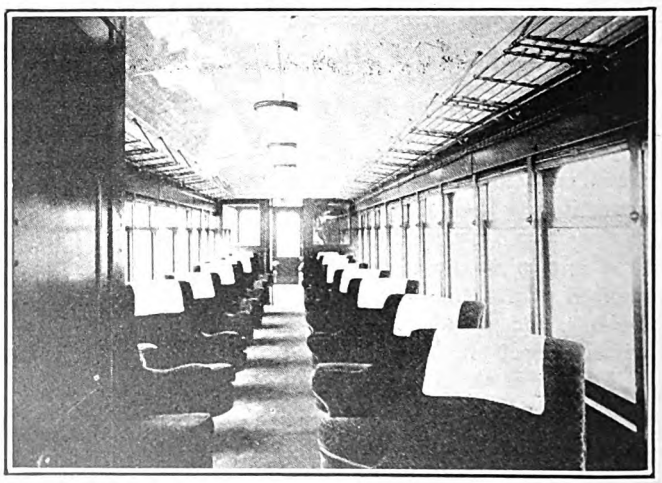
The interior of the chair car which operates between Allentown and Philadelphia was completely renovated. The bell cord traversing the center of the car, which always presented a rather unpleasant appearance, was moved to the side and the many individual ceiling lamps were replaced with five 94-watt compensating dome lights giving a softer and more even light distribution. The compensating panel is located neatly and conveniently in the bulkhead. The fixed fiber chairs were removed and more comfortable green plush upholstered revolving chairs were substituted in the main section, as well as comfortable genuine leather upholstered swiveling chairs in the smoking compartment. A floor covering of green plush carpet with a center runner of Kemi-suede and an interior finish of walnut grain with buff headlining blend with the upholstery and create an atmosphere of attractiveness and cleanliness.

Interior changes of the center-entrance 900 type city car were of a somewhat broader nature. Removal of the rattan seats and the installation of deep-pitched extra comfortable seats, covered with genuine Spanish grain

One of the 900 Type City Cars Has Been Remodeled to Give Greater Comfort

leather, have not only made riding a pleasure but have impressed the riding public. The register rods and pull cords are conspicuous by their absence since their replacement by the electric register system. The dull buff headlining and the five 94-watt compensating dome fixtures give the ceiling a very neat and pleasing appearance. Covering all platform apparatus and piping with metal paneling and camouflaging the bells, buzzers, sign box, reset switch, etc., into the walnut grain finish are other attractive features.

The coal stove has been replaced by electric heaters of the Railway Utility Company's type. Window curtains, which invariably showed signs of rain discoloration, were removed and the top half of the sash glass were



An Appeal to the Car Rider Is Made by the Attractive Appearance of This Remodeled Chair Car of the Lehigh Valley Transit Company

painted brown, giving the external appearance of partially drawn curtains.

The interior of the car, with its walnut grain finish, comfortable seats and the dark tan painted stanchions, metal work and seat ends, presents a very harmonious arrangement and coloring and should act as a stimulant to intensify the riding habit.

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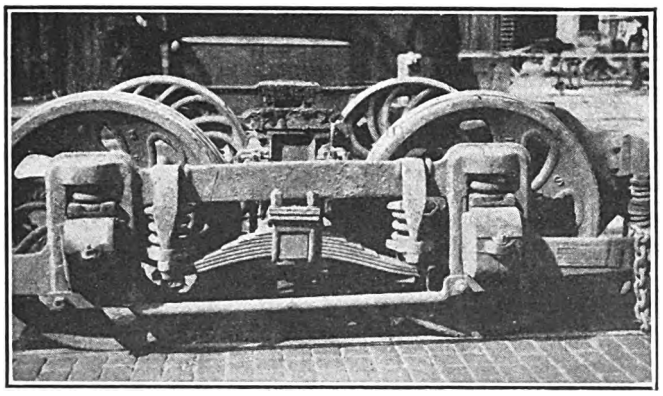
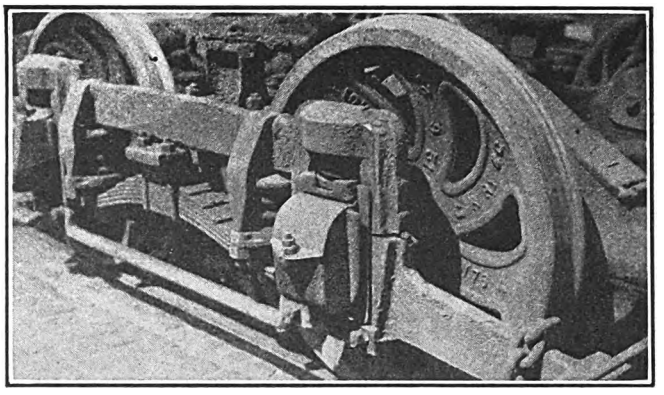


Side View of Brill 27-G Truck Purchased in 1900 Before Rebuilding



This Truck Has Side Frame Broken at Pedestal Jib

Excessive Noise Eliminated by Rebuilding Trucks

Worn Frames Were Built Up by Welding—Pedestal Jaws Were Strengthened and New Type Journal Box with Longer Bearing Was Installed

BY REMODELING and rebuilding some Brill 27-G trucks the Grand Rapids Railway, Grand Rapids, Mich., has decreased troubles in service and eliminated excessive noise. The trucks were standard equipment on cars purchased in 1900 and 1906 and had seen severe service.

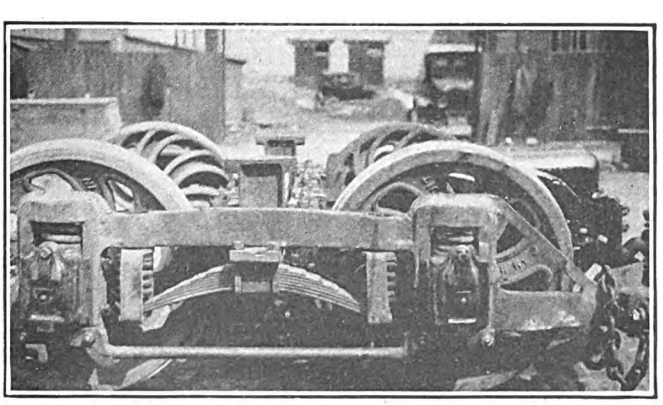
In rejuvenating the trucks they were entirely dismantled and the side frames were carried to the welding department, where all worn or cupped portions were filled in and ground off. Considerable trouble had been experienced with these frames breaking through the pedestal guides at the outside end. The driving motors were outside hung and their weight on the extreme end of the truck end frame undoubtedly contributed to this breakage.

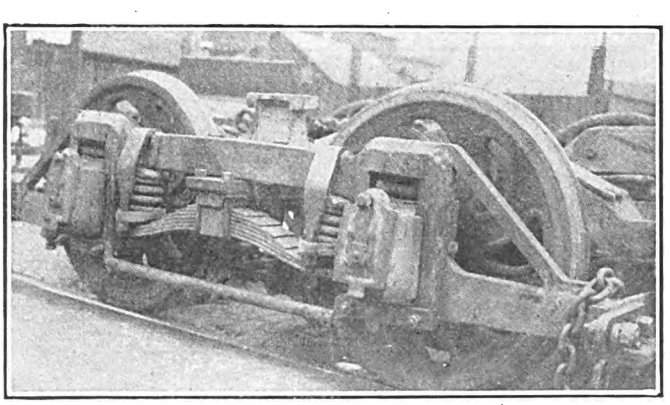
To strengthen the side frames at the outside pedestal jaws a piece of 1½-in. square bar steel was welded to the frame so as to form a diagonal brace. This brace extended along the top of the truck pedestal and then diagonally to the outside edge of the side frame, it being fastened securely by welding. Its installation has eliminated breakage at this point.

The cost of welding braces on the side frames of a two-motor truck was as follows:

Material:	
9-lb. Banox welding steel	$2.25
6 gal. kerosene for preheater	.78
226 cu.ft. oxygen	3.05
237 cu.ft. acetylene	6.16
16 lb. of 1½-in. square steel	.53
Total cost of material	$12.77
Labor:	
Preheating welds, five hours	$3.50
Welding, five hours	4.00
Blacksmith work, one hour	0.65
Total cost of labor	$8.15
Total cost of labor and materials	$20.92

In some cases old type motors were replaced by a more modern type where these were available. One of





At Left—Side View of Brill 27-G Truck After Being Rebuilt. At Right—Truck with Diagonal Brace and New MCB Journal Boxes. The Brace Extends Entirely Across the Top of the Journal Box Pedestal and Along the End of the Truck Frame. Crack in Frame Has Been Welded

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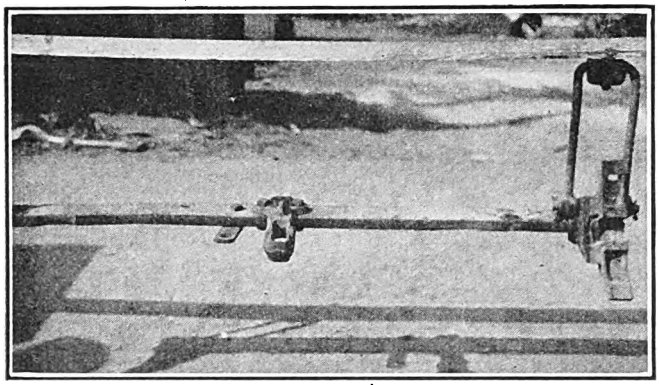
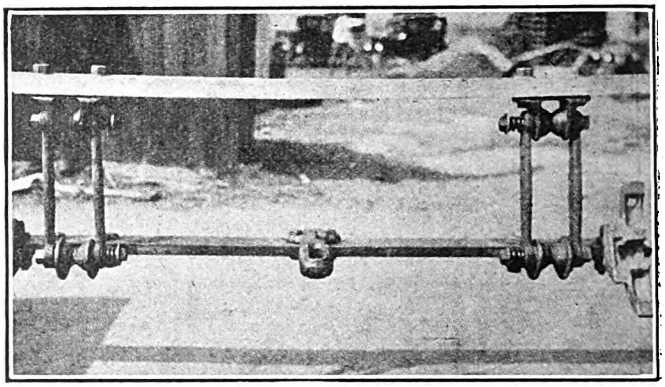


Old Type Brake Hanger and Brake Hanger Carrier

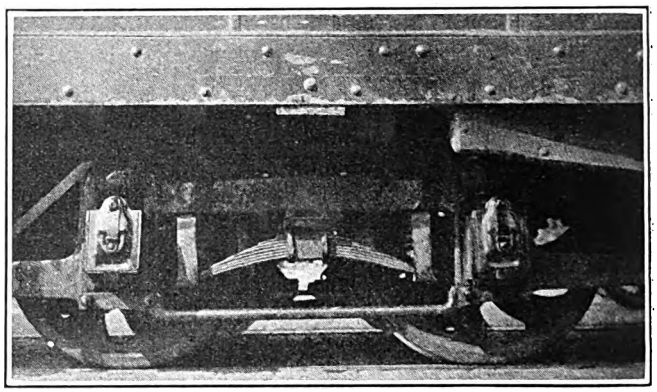


New Type Half Ball Brake Hangers as Installed

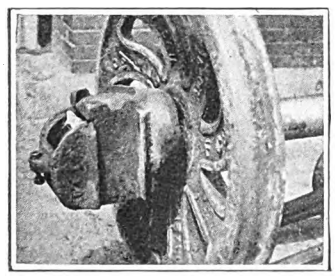
the illustrations shows a truck strengthened and rebuilt, with GE-203 motors installed in place of GE-57 motors. This change, of course, required some changes in the type of motor suspension. In order to decrease the vibration and do away with excessive noise fiber insulation was inserted wherever steel is laid on steel. Old type brake hangers and brake hanger carriers were also removed and replaced by half-ball brake hangers with 12-in. centers.

New Journal Box Permits Use of a Longer Bearing

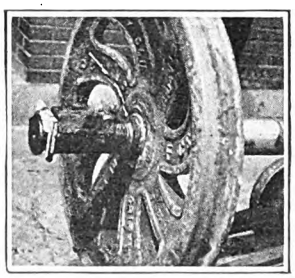
At the same time as the other remodeling was done a new type journal box was installed. With the old type box a 2¾-in. length journal brass was as long as could be used. This type required a check plate. The new journal box permitted the use of a journal brass 7½ in. long. Breakage and troubles from hot journals were done away with due to the increased length. The new journal box also made inspection and lubrication easier and cheaper. The new journal box is No. 333-MCB and it fits into the pedestal jaws without change. With the old type of brass wear was excessive at the end next to the check plate and this resulted in a tilting up of the end. With the new brasses a full length bearing is obtained so that there is much less wear and the results obtained indicated an average of 2½ times as much service from the new bearings as from the old. Strengthening of pedestal jaws has eliminated breakage, new journal boxes and brasses have stopped hot bearings and the fiber insulation has reduced noise.



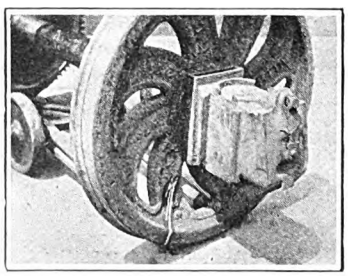
Brill 27 Truck After Being Rebuilt



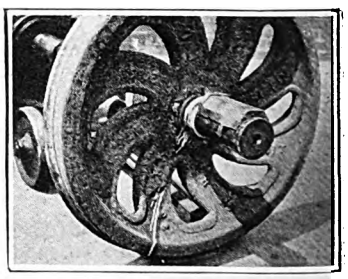
Old Type Journal Box Which Was Discarded



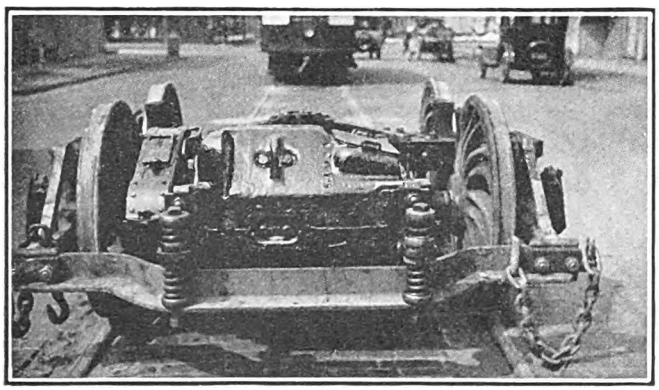
Old Type Journal Brass with Check Plate

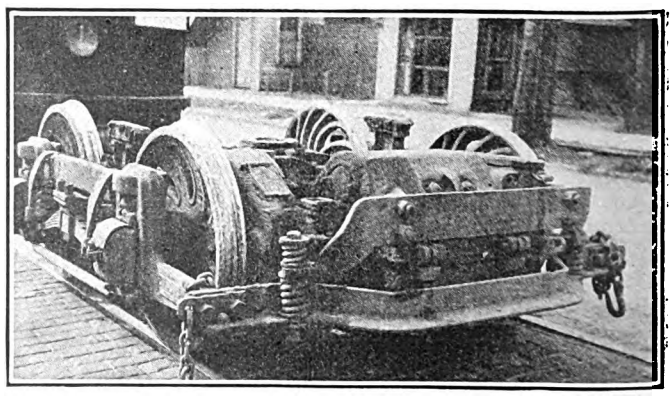


New Type 333 MCB Journal Box



New Journal Brass 3¾ in. x 7 in.





At Left—End View of Overhauled Truck as Equipped with GE-203 Motors. At Right—One of the Rebuilt Trucks Equipped with GE-57 Motors Which Require a Suspension Bar Above the End Frame

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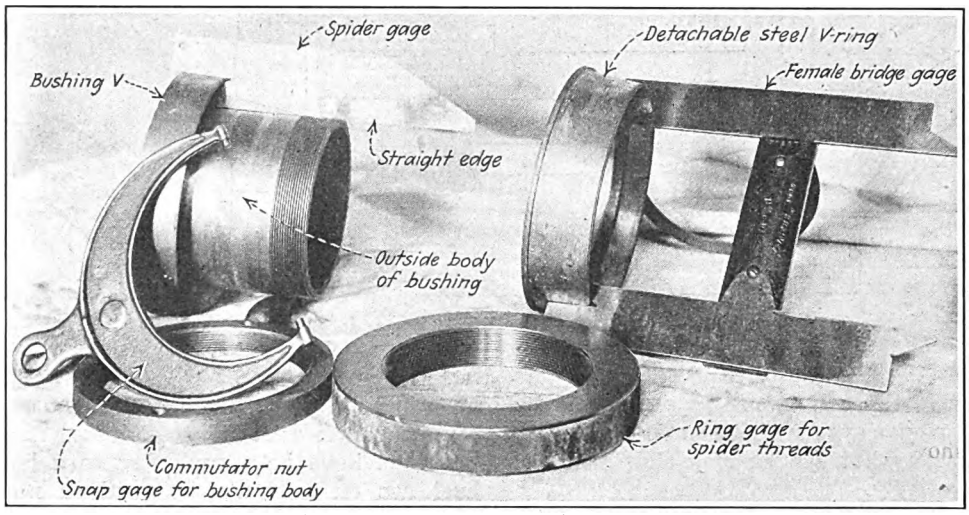

Details of the Commutator Spider for a Westinghouse 514-A Commutator with the Necessary Gages for Machining and Measuring the Different Parts

Mica V-Rings and Bushings Have Important Functions in Commutators*

The V-Rings Must Be Made of a Bond Which Will Not Squeeze Out Under Pressure, but Which Will Soften When the Commutator Is Heated so the Ring Will Be Plastic

By Jesse M. Zimmerman
Renewal Parts Engineering, Westinghouse Electric & Manufacturing Company

THE mica V-rings used in commutators are different from the mica strips in bond characteristics. Mica used for making V-rings must be made with a bond which is not seasoned completely. The ring must remain plastic to a certain extent in order to give yielding effect to the commutator when it passes through the alternate cycles of heating and cooling.

The shape and size of a mica V-ring are very important features in a commutator. The mold upon which it is made must conform accurately in dimensions to the steel V. If the mold is too large the outer surface of the molded V-ring will wrinkle between the bars, leaving an opening. If the mold is too small the V-ring will break when the commutator is assembled.

Mica V-rings were originally made in one piece the shape of a V, as illustrated in form I of an accompanying illustration. This shape of V-ring did not give sufficient creepage distance from the commutator to the spider for 600-volt railway motors. By making a flange on the ring the creepage distance was greatly increased. But at this stage of development it was impractical to mold this type of ring at a reasonable cost. This led to the development of the two-piece ring as shown by form II.

The two-piece mica V-ring consists of a 3-deg. tape bushing and a 30-deg. molded V-ring with a bent flange. The longer the flange the greater was the creepage distance. The copper V's are machined with a groove at the bottom of the V to allow an opening for the joints of the two rings when the commutator is being assembled. Theoretically the joint of the two rings makes a perfect seal. On high voltage motors this joint does not permit sufficient creepage distance. Some trouble was experienced with grounds at this point and this led to the development of a one-piece mica V-ring with a flange, which is being used on all modern railway motors. These are shown as forms III-A and III-B. In molding mica V-rings of this type fingers are cut to enable the mica to be molded around the bends of the flange. Several layers of these strips are staggered accurately in order that the openings between the fingers will be covered by the next layer.

The two-piece mica V-ring was easier to make in small sizes as it was molded from a mica plate which was the exact thickness of the finished ring. These rings have a small variation in thickness of ± 0.001 in. A one-piece ring may have a maximum variation of ± 0.005 in. The reason for this is that the one-piece ring is made of several layers of mica each 0.010 in. thick. Each layer has a variation of ± 0.001 in.

Accompanying illustrations show two mica V-rings, which had been in the same commutator, heated to 150 deg. C. and assembled with 25 tons pressure. A 500-watt lamp was placed back of each mica V-ring. The opening around the flange of the rings was sealed with black paper to keep all light of the lamps from the picture except the light which penetrated the mica V-ring. The views were taken looking directly at the 30-deg. face of the rings. The mica V-ring which has a light circle shows clearly where the pressure of the copper and steel V squeezed the bond out of the mica. The light color shows that the thickness of the ring

*This is the fourth article in this series on commutators. Others were: Choosing Materials for Railway Motor Commutators, published Aug. 8; Important Considerations in Replacing Commutator Bars, published Oct. 23, and Accurate Machining of the V's of Assembled Commutators Is Essential, published Nov. 20.

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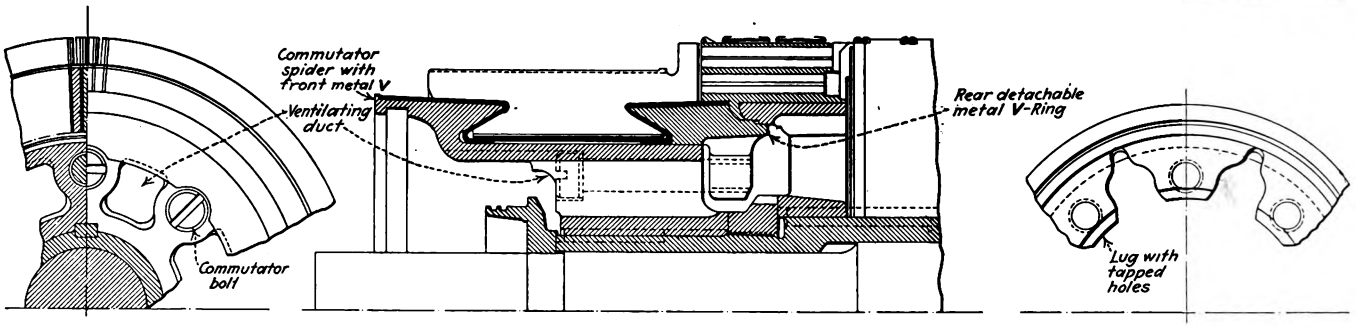


Bolted Type Commutator with Rear Detachable Metal V-Ring

has been reduced by the shifting of bend and mica. At one point the mica in this ring was less than 0.010 in. thick. The other ring shows no signs of light at all. These rings represent what a mica ring should not be and should be respectively.

Important features of mica V-ring construction include: (1) Accurate staggering of the fingers, (2) a bond which will not squeeze out under pressure, (3) a bond which will soften when the commutator is heated so the ring will be plastic, (4) a ring of the same size as the steel V-ring so that the mica will not wrinkle and (5) no slippage of mica in front of the copper or steel V's.

The mica bushing is probably the least thought of in a commutator, yet it has a very important function to fulfill. In order to decrease the diameter of a commutator it is essential that the commutator bars fit close to the spider. By placing an insulating bushing over the spider the distance between the segments and the spider body can be made smaller.

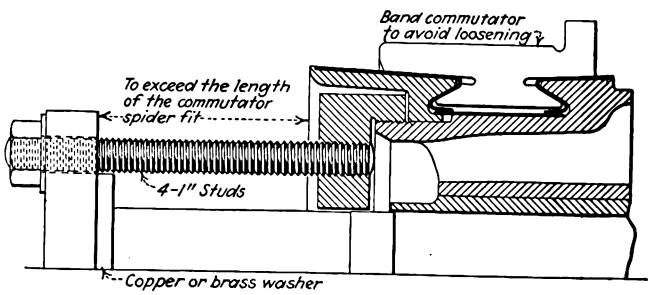
This bushing is sometimes placed inside of the flange of the V-ring, as shown in form III-B, or the flange of the V-ring may fit in the bushing, as shown in form III-A. Either construction will give the same results and is equally accessible in assembling. The bushing is omitted on low-voltage motors where dirt and moisture are not prevalent.

It has been the practice in the past to make these bushings out of mica plate. In later years micarta bushings have been found to be just as serviceable and can be supplied at a lower cost. Therefore, micarta bushings have been replacing to a large extent mica bushings on commutators used on motors up to and including 600 volts.

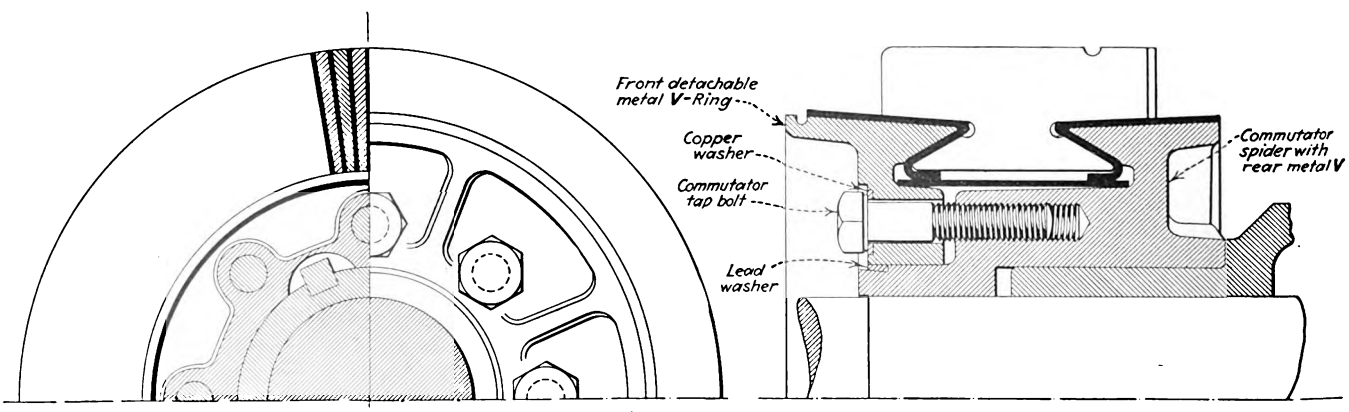
The chief consideration in the design of commutators is to keep the parts together while in service and prevent high bars. This is accomplished by the commutator bushing, which is the foundation. For small commutators the ring-nut type of bushing is used very extensively. However, in larger commutators of this type some difficulty is experienced in railway shops in obtaining a tight commutator, due to the fact that a pressure is not applied to the steel V-ring before the ring nut is drawn tight. Some believe the bolted type of commutator can be tightened without applying a pressure to the steel V-ring. This is not a good policy to follow, as the assembly will not be as tight as it should be unless pressure is applied to the V-ring after the assembly has been heated.

The bushing consists of three parts, the spider, which contains one of the metal V's; the detachable metal V-ring, and the commutator nut or bolts for holding the detachable metal V-ring under pressure. The original commutator spiders were made of cast iron. A great deal of difficulty was experienced with breakage. This difficulty was eliminated by making them of malleable iron or cast steel.

A building without a good foundation is undesirable. A commutator without an accurately machined bushing is just as undesirable. The accuracy of the machining is the most important part of any commutator, as the mechanical stresses can be taken care of by changing to metals which have higher mechanical strength. The first machining operation on the spider is the surfacing of the outside of the body. This surface must be machined to a very accurate dimension, as it is from this surface that the attached metal V's are machined and gaged. The body is measured by a snap gage. The attached metal V is then machined, after which it is



Method Recommended for Pulling Off Commutators with Ring Nut Construction



Bolted Type Commutator with Front Detachable Metal V-Ring

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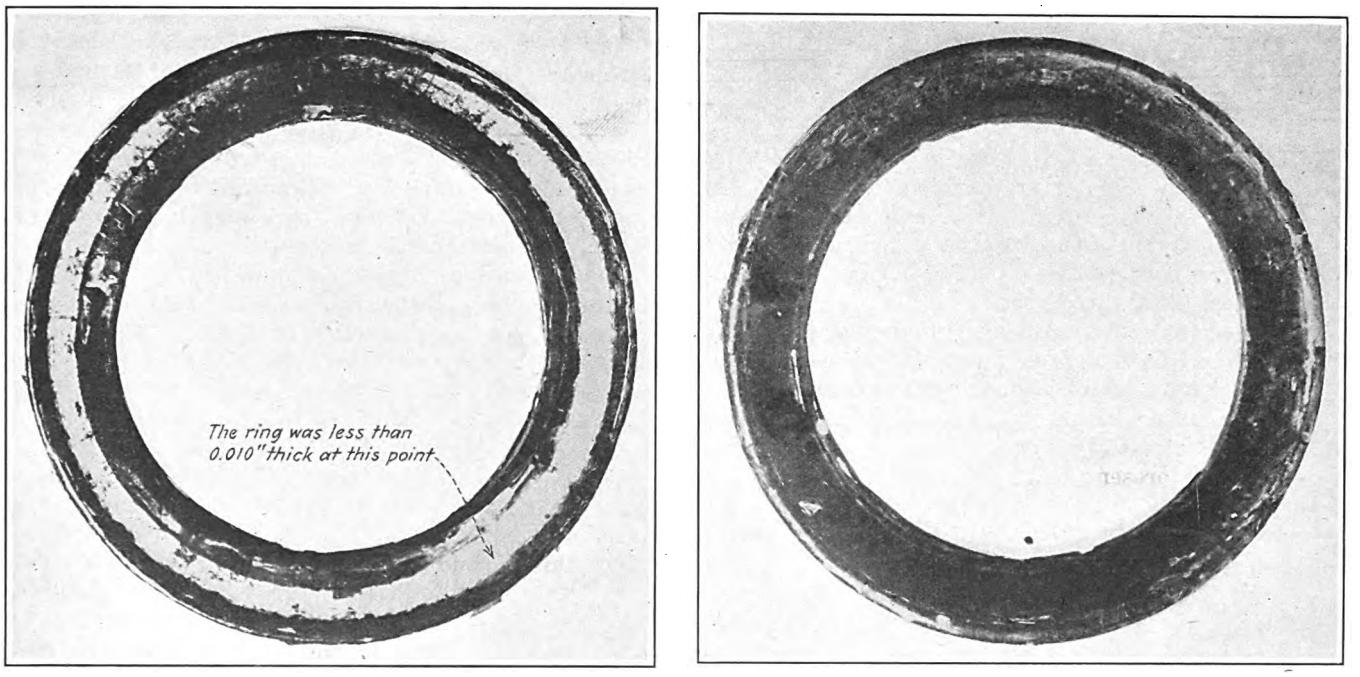


Two Mica V-Rings Which Were Placed in a Commutator Under Identical Conditions, Such as Same Pressure and Temperature
The light section of the ring in the illustration at the left shows squeezing of bond and the slippage of mica due to the pressure of the copper and metal V's. No slippage of mica or squeezing of the bond occurred with the ring shown at the right

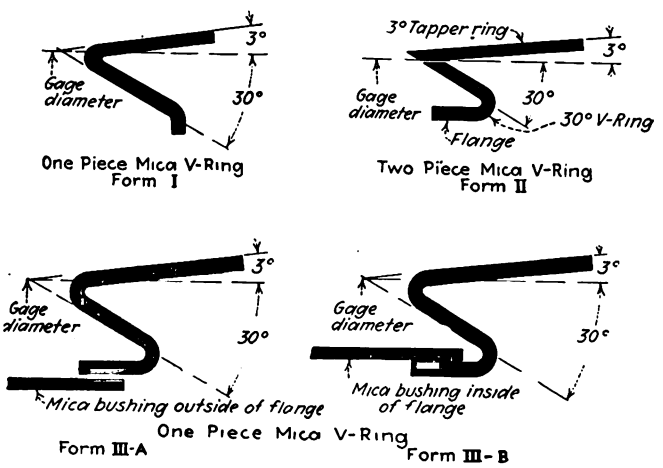
gaged by a spider gage in the following manner: The straight edge of the spider gage is laid upon the body so that the 3-deg. and 30-deg. angles of the V will fit in the V of the spider gage. The depth to which the V is bored is measured from the intersection of the extended side of the 3-deg. and 30-deg. angles of the gage to the rear of the spider by a steel scale. It is very important that the depth of this V be machined accurately, for the rear V must locate the assembled segments accurately.

On most commutators the detachable metal V-ring is the front V-ring. However, some commutators have this detachable ring at the rear. The detachable metal V-ring is gaged by a female bridge gage, which determines the accuracy with which the 3-deg. and 30-deg. faces are machined. The detachable V-ring must fit over the body of the spider with an "iron to iron" fit. It is important that it must not have any more clearance than is necessary for it to slip along the body during the assembling process of the commutator. This will prevent any movement of the detachable V-ring, thus throwing the commutator out of line. The V of the detachable V-ring is measured by a permanent female bridge gage. The ring nut type of commutator has the threads machined on the spider. They are gaged by a ring gage. It is important that the threads be accurately machined so that the ring nut will turn true on the bushing, thus giving equal pressure at all points of contact between the commutator nut and the detachable V-ring when they are assembled.

The bolted type of commutator has been very popular in the railway field, because it is easier to assemble and tighten. However, the use of the bolted construction is confined to the larger types of commutators. This is made in two designs, one with the metal V-ring detachable at the front, the other at the rear. The front ring is more common. It is held to the spider by eight or more tap bolts, equally spaced. A groove is machined in the spider to make the commutator oiltight. After assembling a lead washer is swaged in the groove to close the joint. A copper washer under the tap bolt head keeps out oil at that point.

Where it is necessary to have the large overhanging front metal V, it is a better mechanical design to cast the front metal V as part of the commutator spider. The detachable metal V-ring is at the rear of the commutator; this ring has eight or more tap lugs for the commutator tap bolts, the spider being drilled. This design, in addition to increasing the mechanical strength, lends itself more readily to an increase in the size of the ventilating ducts without increasing the diameter of the commutator.

A method used effectively for pulling the spider of the bolted type commutator from the armature spider is that of placing a steel plate with four equally spaced stud bolts against the end of the shaft, as shown in one of the illustrations on page 1090. By tightening the nuts on these bolts sufficient pressure will be exerted by the bolts to pull the commutator spider off the armature spider. This same method can be applied to the ring nut type of commutator by making a special ring nut as shown in an accompanying line cut. The four equally spaced holes are drilled and tapped in the ring nut for the pulling off bolts to be screwed into. This type of puller is very simple and can be made in any railway shop.



Cross-Section of Different Types of Mica V-Rings

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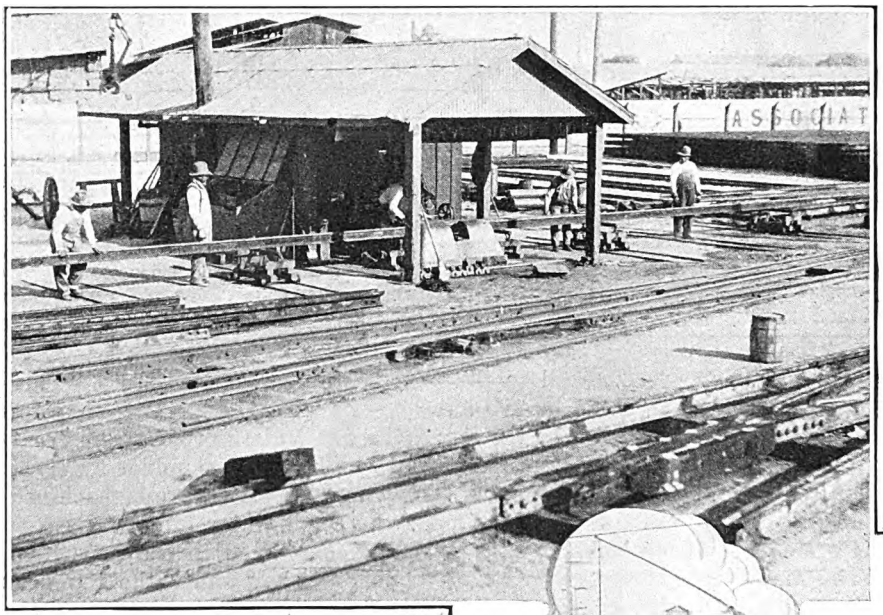
Heavy Track Built in Los Angeles

DURING the past seven years more than one-third of the track mileage of the Los Angeles Railway has been rebuilt according to an extensive program adopted immediately following the period of the war. This work has been carried on since, but not intensified as during the first three years.

Each year finds the company with better track, the new having a life of approximately twenty years built into it. The company's standard construction specification calls for 116-lb. girder rail, with continuous joints, carried on creosoted pine ties. As this property is 3-ft. 6-in. gage, 6-ft. ties are used. The track is laid on a 6-in. concrete base supported by a 6-in. sub-base of tamped and rolled crushed stone, with a 2-in. asphalt wearing surface on top. This latter construction is standard for all streets in the city.



Laying Out Rail Construction

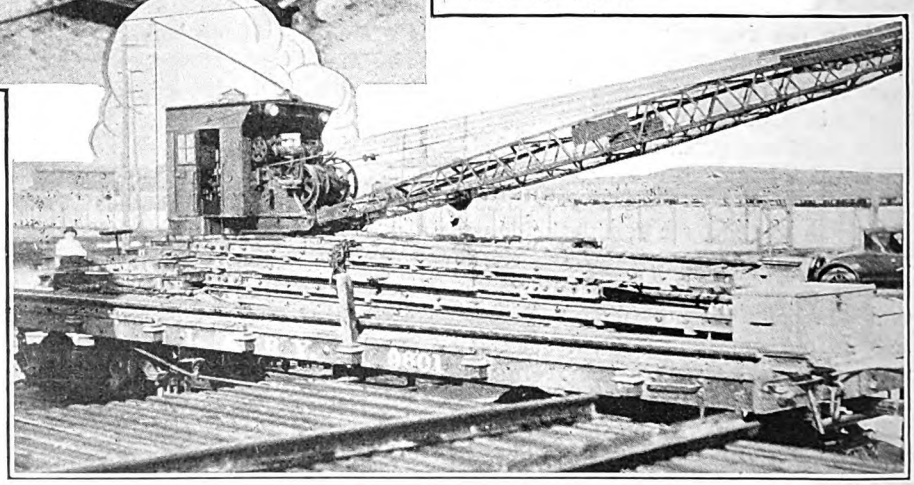
The material yard of the way and structures department of the Los Angeles Railway is used for the laying out of special work and the stocking of materials. The 350-ton hydraulic rail bender forms all curves used. A set of 100 radius boards furnish patterns for every curve used on the system.

The practice of placing rows of brick on both sides of the rail was discontinued after comparative tests were made between track so constructed and track without such protection. The need for the bricks having gone with the disappearance of steel-tired vehicles, the former construction has been adopted at a saving of approximately 5 cents per square foot.

Trackwork is carried on each year in an intensive way between April and October. Although climatic conditions in Los Angeles permit outside work during the winter months, the rainy weather which prevails during November, December, January and February hampers the outdoor gangs. In any other city this rainy weather would not be considered an obstacle to outside work. However, between April and October it seldom rains in Los Angeles and it is therefore possible for the outdoor track gangs to work every day. During this season the department places about 700 men on the work and in that way clears it all up in a very short time.

Two types of trackwork are done. One is the rebuilding of old track which has been in service for such a period as to require new rail and new roadbed. The other is reconstruction work necessary because of the change of street grades by the city. Much of this is now being done by the city in providing storm sewers. In some places a change of grade of 12 ft. has been necessary. As such work cannot be anticipated in advance, it is not included in the budget prepared by the department. However, all reconstruction of old track is prepared for in advance and carried in the budget.

Reconstruction work must be done under traffic. A short period in the early morning hours can be utilized for cutting out of certain portions of the track. However, it is impossible, due to the automobile congestion, to keep a track or portion of the street out of service during the day. In some locations, work can be done on one side while a single track movement can be maintained on the other. For this purpose portable crossovers are used. These are not only valuable for this purpose but also for the single-tracking or rerouting of cars during the rainy season when the streets become flooded.



Flat Car Provided with Cross-overs

A set of portable cross-overs are kept on a flat car ready for an emergency call because of the heavy floods encountered in the rainy season.

A large yard is maintained by the way and structures department where special trackwork is laid out and rails are bent to curvatures. The company purchases its special work from trackwork manufacturers, the type used having hard centers. Curves are formed out of the 62-ft. lengths of rail with a 350-ton hydraulic rail bender. Of the 700 or 800 tons of rail stocked at the yards, approximately 250 tons is of the guard rail type to go with the 116-lb. grooved girder rail. In the construction of track no special problems are encountered because of the narrow gage.

Electric welded, continuous joints are standard. An accompanying illustration shows a typical joint with the plate welded at the head and base of the rail. One bolt in each rail is spot welded to the plate at the head-end, the nut is welded to the plate on the other side and the bolt welded to the nut. This precaution tends

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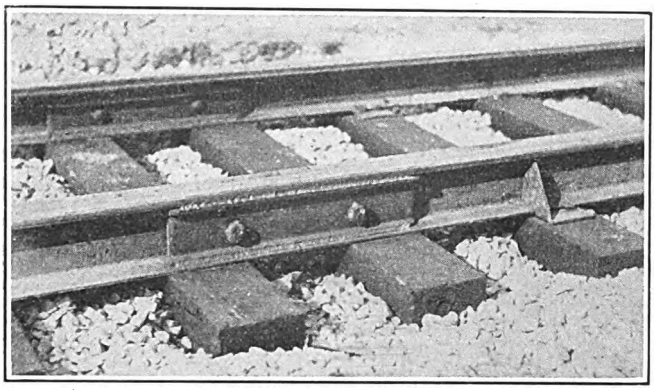
to eliminate loose bolts. In lining up track preparatory to welding, advantage is taken of the difference in temperature between day and night to secure a tight joint. The open end of the rail length is blocked each night when the temperature is low. The heat of the day then expands the rail, causing the joint to close up.



Type of electrically welded continuous rail joint used in Los Angeles with the 116-lb. grooved girder rail. The plate is electrically welded at the head and base of the rail while the bolt and nut are spot welded.

This is done for several days and then the plates are welded in position.

All sub-base work is tamped with air tampers and then rolled with a 5-ton steam roller. The concreting and surface paving are let out on contract. With an asphalt surface as specified, it requires an extensive asphalt plant and all of the equipment which goes with it to do this work. The railway, not having enough of it to warrant such an investment in plant and equipment, has the work done by an outside contractor.

The Readers' Forum

More Data on Paris Type L Car

THE J. G. BRILL COMPANY

PHILADELPHIA, PA., Dec. 8, 1926.

To the Editor:

I was very much interested in reading in your issue of Oct. 23 the editorial on "Changes from Conventional Truck Design Are Attracting Increased Attention," particularly with reference to reduction of unsprung weight. You are, of course, familiar with the fact that when electricity was first used as motive power for street railway transportation the motors were mounted on the car body and much difficulty was encountered. When John A. Brill, formerly vice-president of this company, developed the first system of electric car trucks in 1887 his mounting the motors on independent trucks, instead of the body as had been attempted, was considered a very progressive step, which fact is attested to by the general adoption of this practice.

Your reference to activities in Europe interests me very much, and I have made a very careful study of the articles published in the JOURNAL on the European cars where some experimentation has been made with the shaft type of transmission. I have not only read the article in your issue of Sept. 11 on the Paris cars, but also have read the article in the May (not May 26), 1926, issue of *L'Industrie des Voies Ferrées et des Transports Automobiles* referred to in the JOURNAL article, and also the Proceedings of the Nineteenth International Congress, held in Paris June 16 to 22, 1924, which contains the details of the Paris tramways type "L" car referred to, in a report by H. Dubath, ingenieur de la Société Industrielle Suisse, Neuhausen.

In your Sept. 11 article you give the seating capacity of the Paris type "L" car as 49 passengers and the complete weight empty as 28,380 lb., while the weight per seated passenger is given as 580 lb. Reference to the above-mentioned proceedings, page 579, reveals:

"Les nouvelles motrices légères, type 'L,' de la S.T.C.R.P., tare 12.5 t., places assises 30, total des places 49, transportent elles, un poids mort de 415 kg. par place assise et 255 kg., par rapport au nombre total des places offertes."

According to our interpretation this reads that "the new light-weight motor cars for the Paris tramways, type "L," tare weight 12.5 metric tons (27,500 lb. and not 28,380 as given in your article); seating capacity 30 (instead of 49); total capacity 49; carry a dead weight of 415 kg. (913 lb.) per seated passenger and 561 lb. in relation to the total capacity."

There have been built in this country many four-wheel cars that seat more than 30 passengers and have a total carrying capacity greater than 49, the unsprung weight of which has often been several hundred pounds lighter than the 4,100 lb. given for these Paris cars, which are only light in respect to the former cars which the railway system operated. As your editorial apparently features the matter of unsprung weight I do not feel that these cars bear out your contentions and both the article and editorial lose much of their significance.

WALTER S. ADAMS,
Designing Engineer.

EDITOR'S NOTE: Mr. Adams is correct in regard to the passenger carrying capacity of the type L car of the Paris system. In the magazine article abstracted, no division was given as to seated and standing passengers. The latest information on this car is given in a paper presented at the international convention at Barcelona, Oct. 10-16, 1926, by Paul Mariage, commercial manager of the Paris system. He gives the capacity of the car, when used as the head car in a train, as 30 seated and 19 standing. When used as the second car there is room for four more standing passengers. As to total weight empty, different figures have been published from time to time, due possibly to slight changes in the methods of construction or more probably to the equipment included. The paper by Mr. Dubath at the 1924 Paris convention, quoted by Mr. Adams, gives "tare" weight 12.5 metric tons, or practically 27,500 lb. The magazine article abstracted in the JOURNAL gives for the latest type at that time 12,900 kg. or 28,380 lb. This was the figure published. Mr. Mariage's 1926 report, mentioned above and just received, gives 12,800 kg., or approximately 28,160 lb., as the total weight, empty, with complete tool equipment, full sand boxes and windows in place. According to American standards most continental European cars are not particularly light per seat or per passenger carried, due to two causes. One is that many cars are narrow so that only three instead of four passengers can be seated across the car on cross seats. This is true in all Paris surface cars. The other is that the number of standing passengers is limited. Thus, in the car in question, no passengers are allowed to stand in the aisles, but only on the end platforms and in the center well. The point made in the editorial was that changes from conventional practice in the direction of the European experiments mentioned may offer the opportunity of reducing upsprung weight. The editorial also commended the value of this research work being carried on in Europe. The entire art of gear and transmission design and manufacture has made long strides since the early days of body mounted motors mentioned by Mr. Adams.

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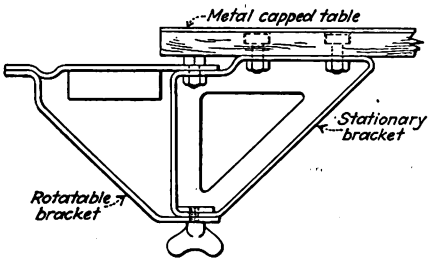
Maintenance Notes

Disappearing Armature Winding Stand

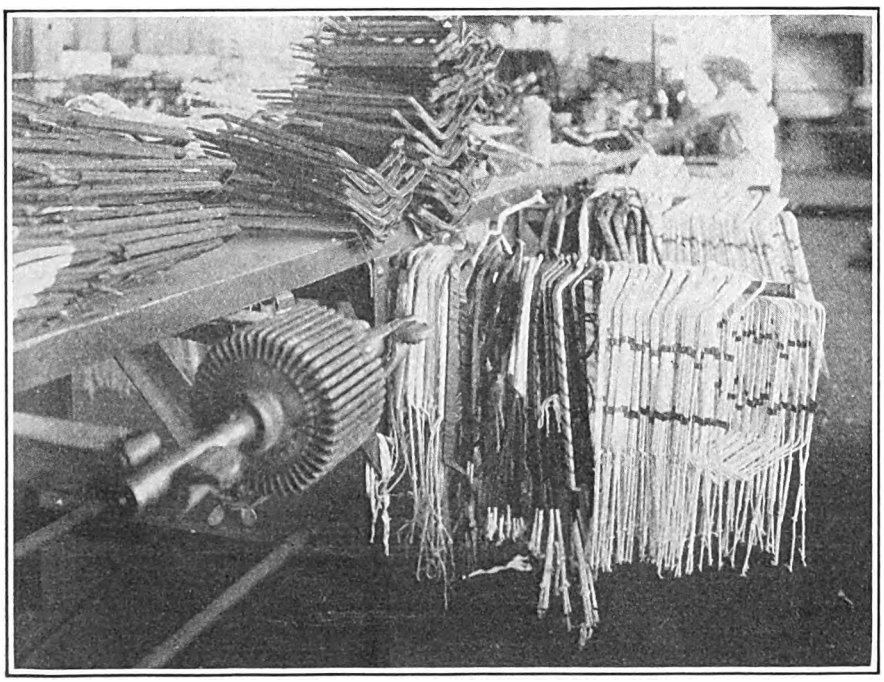
THE accompanying illustrations show a disappearing type of armature winding stand used while rewinding the smaller sizes of armatures such as are used in compressor motors in the department of electrical repairs of the Brooklyn-Manhattan Transit Corporation. The support consists of two hinged



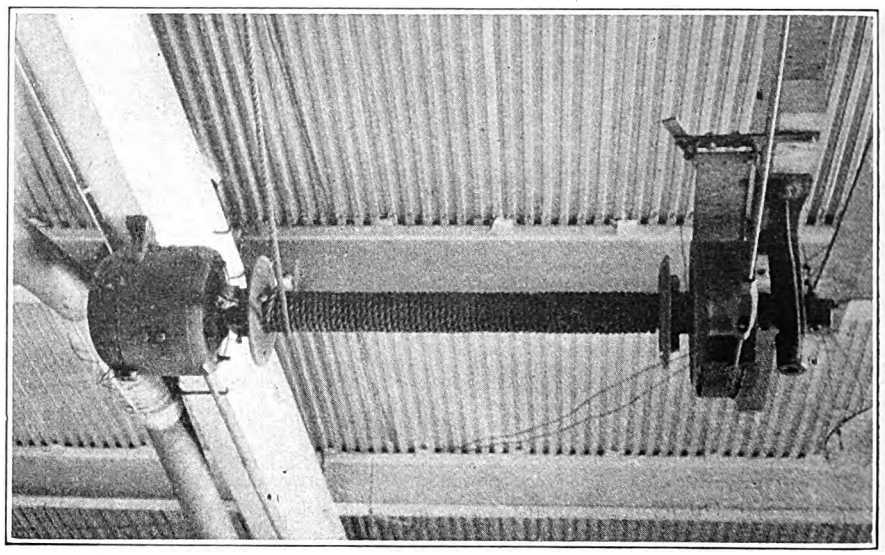
Construction of Disappearing Armature Winding Brackets

brackets which can be swung under the bench when not in use. In the illustration showing the construction only one bracket is shown. In case the armature shaft should be too short to span the distance between the supports small lengths of pipe are used to increase the effective length of the shaft. These are slipped over the ends of the original armature shaft.

In the construction used a stationary bracket is bolted to the underside of the winding bench. The bracket which supports the armature is hinged at the top and bottom of the stationary support so that it rotates readily and can be swung out of way or adjusted to convenient positions.



Armature in Position for Rewinding Supported by Two Disappearing Brackets at the Winding Bench



Motor-Operated Hoist Ready for Service

Air Compressor Motor Used for Lumber Hoist

HANDLING of light incoming lumber from the ground floor of the shop to the storage space located in the balcony of the Jamestown Street Railway shop in Jamestown, N. Y., is done by a motor-operated hoist installed in the balcony. Certain parts needed for the hoist construction were on hand, and as the cost of assembling these parts was much less than a manufactured product, K. L. Connor, master mechanic, decided to build the hoist in the shop. Material used included an Allis-Chalmers air compressor motor, a 5-ft. x 1½-in. shaft, a 12-in. pulley with a 6-in. base, a standard line shaft bearing and a 6-in. leather brake.

The armature of the Allis-Chalmers air compressor motor was pressed onto the end of a 1½-in. round shaft about 5 ft. long. A 12-in. pulley with a 6-in. face was keyed securely to the shaft 1 ft. from the other end. The assembled unit was installed and lined up on the ceiling of the gallery. The extended armature shaft with auxiliary parts is supported at one end by the

"Rattles and bumps" will accelerate your cars over the dumps.

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motor end bell bearing and at the other by the line shaft bearing.

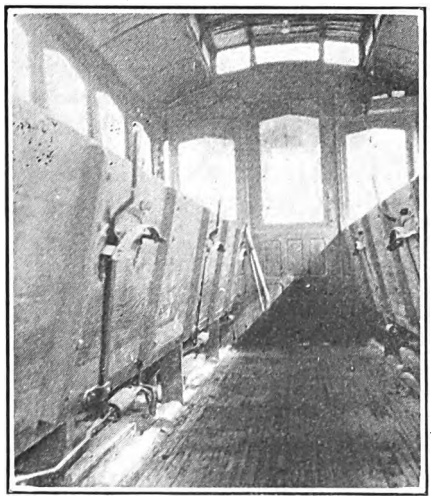
One end of the 6-in. x ¼-in. leather belt is wrapped around the pulley and the other end is connected to a ⅝-in. iron rod which is fastened to one end of a fulcrum casting about 6 ft. away. The fulcrum casting is connected to an adjustable hand rod which permits most any desired leverage with corresponding friction upon the pulley to be obtained. With this arrangement the load can be held or dropped as desired.

The speed of the motor is controlled by varying the resistance in the armature circuit. Direction of rotation is regulated by field reversing switches conveniently located. This hoist is doing most satisfactorily the work for which it was designed and its use has resulted in speeding up the lumber handling.

Systematic Oiling "Safetyfies"
Thus reduce your "S.O.S." cries.

Sand Car with Six Hopper Outlets

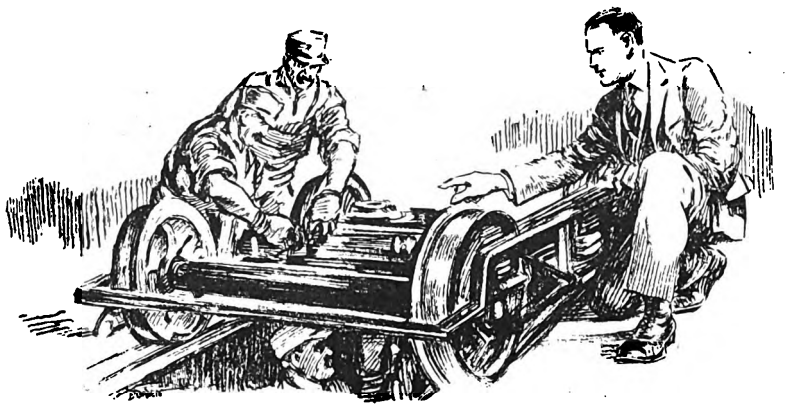
SIMPLIFICATION of rail sanding methods and continuity of sand flow have been considered of such great importance by the York Railways, York, Pa., that a special sanding equipment was designed and constructed. A single-truck passenger car, having served its usefulness, was stripped of all internal fittings. Two large sand bins were constructed along either side throughout the entire length. Each bin can accommodate 5 cu.yd. of sand when filled to capacity and is made of



Sand Bin and Hopper Operating Levers

Dick Prescott Inspects an Overhaul

and Sees a Wood Block



STEVE WHITE, carpenter shop foreman, was worried about the mutterings that he had heard among the men in the Consolidated Railway & Light Company's shop. He lost no time in voicing his uneasiness to Dick Prescott, young assistant superintendent, for whom he had developed a deep regard and friendship.

But Dick was not disposed to take the subject seriously. He felt that it was entirely natural for some of the men to question the wisdom of his appointment, after so brief an experience, and almost dismissed the subject from his mind on leaving the little carpenter shop office. Steve, however, continued to feel grave concern for his friend Dick.

Absorbed in the job of improving maintenance practice, Dick went on out to the overhaul shop, where one of the largest group of cars on the property was being put through as rapidly as the cars could be taken out of service. Several gangs of men were at work on this job and Dick stopped near one of the trucks to look over the work.

"How do you find them, Joe, in pretty bad shape?" queried Dick, addressing the workman in charge of the gang.

"You bet, bad," grunted Joe. "Big job to fix 'em."

"Guess you're right, Joe. They went too long without any real attention and now they're pretty well shot, eh?"

"Yeh," again grunted Joe in assent.

"How fast are you fellows going to get them through the shop?"

"Slow work," said Joe. "Too unhandy here to get much done. Have to fool around lot. Only two tracks here. Cars in way. Too much time jacking up and down. Lose lot's time. Cost lot's money."

"Yes," agreed Dick, "I can see that, all right. You have to get the cars on this track all up on horses to get the trucks out. Then the men on body work back there have to do a lot of climbing up and down to get in the cars. We need a car hoist or crane here pretty bad."

"Need it bad," repeated Joe.

Dick continued to watch Joe and his men as they proceeded systematically with their work of dismantling the truck. He noted that the gears were badly worn and that they showed evidence of lack of proper lubrication.

"Do you find many of the gears in bad shape like that?" he asked.

"Yeh, lot's of 'em. Gear cases all shot and some trucks no cases at all."

"That's a nice mess," said Dick. "What's the matter with them? Don't we have enough gear cases to go around?"

"Knock 'em all off," was Joe's comment. "Track on Main Street in hell of a shape. Paving all shot and busts gear cases every day."

"Well, that's going to be different soon, Joe. They're working on the Main Street track now and it will be in first-class shape in a few weeks. That means we've got to go after these trucks right now that we've got a chance to do so. Are there plenty of gear cases in stock?"

"Yep," replied Joe.

"All right. Make sure every truck is fully equipped when it leaves here, with plenty of grease on the gears. Then I'm going to get after the carhouses to make sure they keep them that way."

At this point one of the men unbolted the center bearing and removed it from the bolster.

"What do they have that wood block under the bearing for?" asked Dick, suddenly interested.

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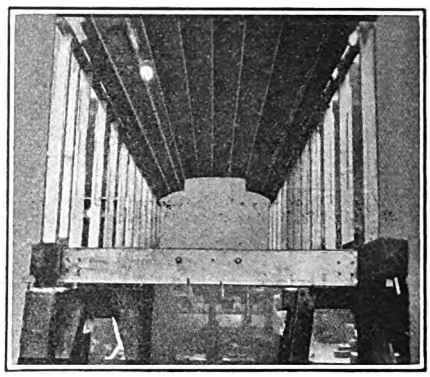
heavy yellow pine planking reinforced by substantial oak timbers.

Three Brill sand hoppers are a part of each bin, having exits in front of and between the wheels directly over each rail. Operation is by individual hand levers installed on the front of the bin and held in a latched position by a notched circle plate. This is mounted directly in front, thus permitting any desired degree of sand flow. The operating handle normally is held in the off position by a heavy coil spring attached to the lower extremity of the lever. This multiplicity of sanding outlets has eliminated the constant shoveling of sand into the hoppers, decreased the possibility of failure and has permitted the operator carefully to observe the results obtained by the sanding equipment.

You may forget your dignity, but don't lose your "bearings." Watch your babbitting.



Underframing of One-Man Cars Being Converted in Shop at Scranton

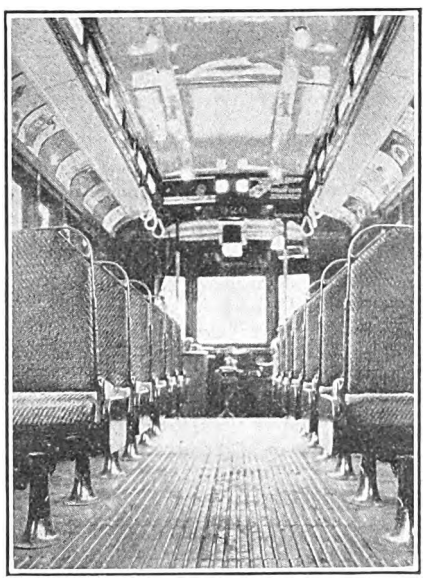
84½ Per Cent One-Man Operation Reached in Scranton

ONE hundred per cent one-man operation is the aim of the Scranton Railway, Scranton, Pa. When the ten two-man cars now being rebuilt in this company's shop are completed for one-man operation 84½ per cent one-man operation will have been attained. Two of these have been completed and the remaining eight are well under way. Such parts of the old body and equipment have been used as were found suitable for further service and which would conform to the design adopted.

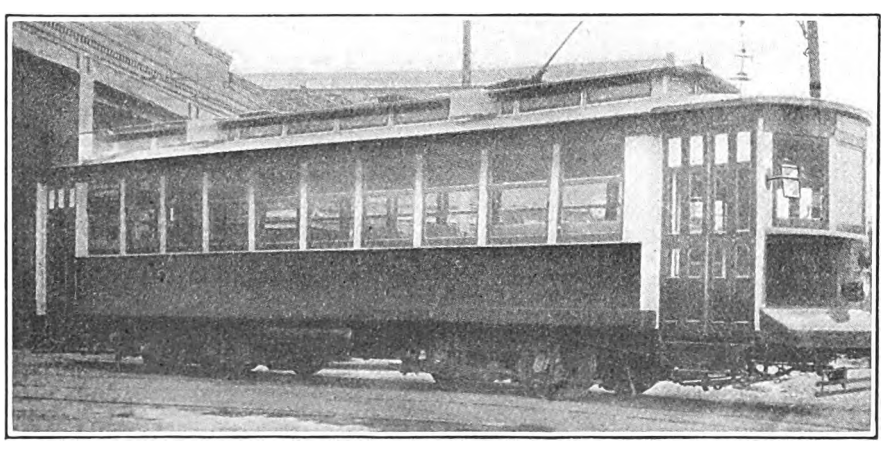
For economical reasons new framing was constructed with side and end sills of long-leaf yellow pine reinforced by well-seasoned oak cross framing. The sills employed are somewhat heavier than are ordinarily used on cars of this type and weight, being of 7⅞-in. x 9-in. and 5½-in. x 10-in. material respectively. Siding consists of ⅛-in. steel plates securely screwed to the posts. Rattan seats removed from the old cars were utilized. They consist of twelve cross and four longitudinal seats to provide for 45 passengers.

Old equipment of GE-80 motors with K-28 control and straight air brakes was completely overhauled and reinstalled. New safety devices of the National Pneumatic Company were adopted. An added safety feature is that of an adjustable observation mirror installed on the vestibule post which permits the motorman to obtain a clear view of the rear step of the car under all conditions.

The coloring of the outside of the car is orange with cream trimming and the inside is white veneer with cherry trimming. These color combinations give a very pleasing effect.



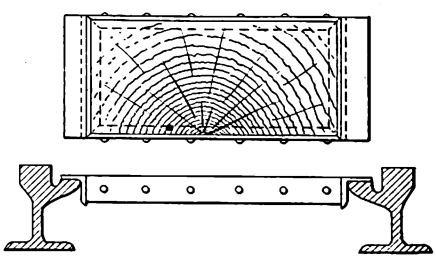
Interior View of One-Man Car Showing Motorman's Unobstructed View



Completed One-Man Car with Motorman's Observation Mirror

Carhouse Pit Planks Reduce Accidents

OPEN car pits or insecure pit planks are always a source of serious danger to the men working in and about a shop. This has been eliminated to a great extent in the shop of the Harrisburg Railways, Harrisburg, Pa., by the adoption of a rigid non-shifting pit plank, designed by the company.



Protected by a Frame of Angles the Pit Plank Fits Accurately Between Rails

This plank consists of a piece of 1-in. x 14-in. oak securely incased in a frame of 1-in. angles. Pieces of 1¼-in. angle are welded to the backs of the angles at the ends, with the top flush with the top surface of the plank. The over-all dimensions of the plank with its framing are just sufficient to permit it to drop between the rails without any lateral motion and the length over the supporting angles allows for wheel flange clearance. This plank affords a ready means for the men to pass across a pit. There is no necessity to raise it to permit of truck passage as is the case when planks are laid

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on top of the rail. Again, danger of breakage and slippage is minimized, as no lateral motion is possible and flange clearance is provided. Since these planks have been in service pit accidents have been reduced greatly.

Refuse Receptacle for Car Floor Sweepings

MAINTAINING a clean appearance of the shop floor of the Valley Railways, Lemoyne, Pa., is given constant attention by the organization. Suitable containers placed in convenient locations throughout the shop for the reception of refuse material, together with a receptacle to receive car floor sweepings, assist greatly in this.

Receptacle in Position to Receive Car Floor Sweepings

This receptacle is made of No. 16 gage galvanized iron having a base dimension of 8 in. x 15 in. and a sloping top. The maximum height is about 18 in. and the minimum such as to permit of sliding under the platform flooring, while the container rests on the car step. Suitable handles are provided for carrying.

Placing the receptacle on the car step for the reception of the floor sweepings not only eliminates double handling of the refuse but keeps it from being scattered over the shop floor, from where it would be tracked still further by the workmen.

The electric railway and your car journals
Both deserve careful thought as to their internals.

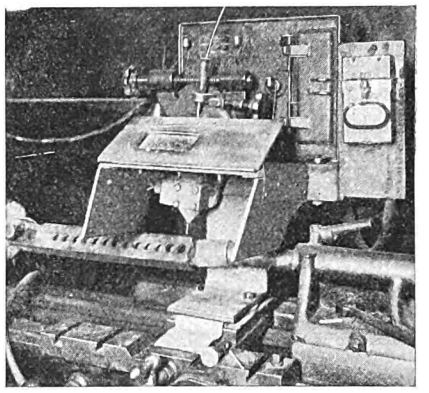
New Equipment Available

Automatic Welding Insures Better Workmanship

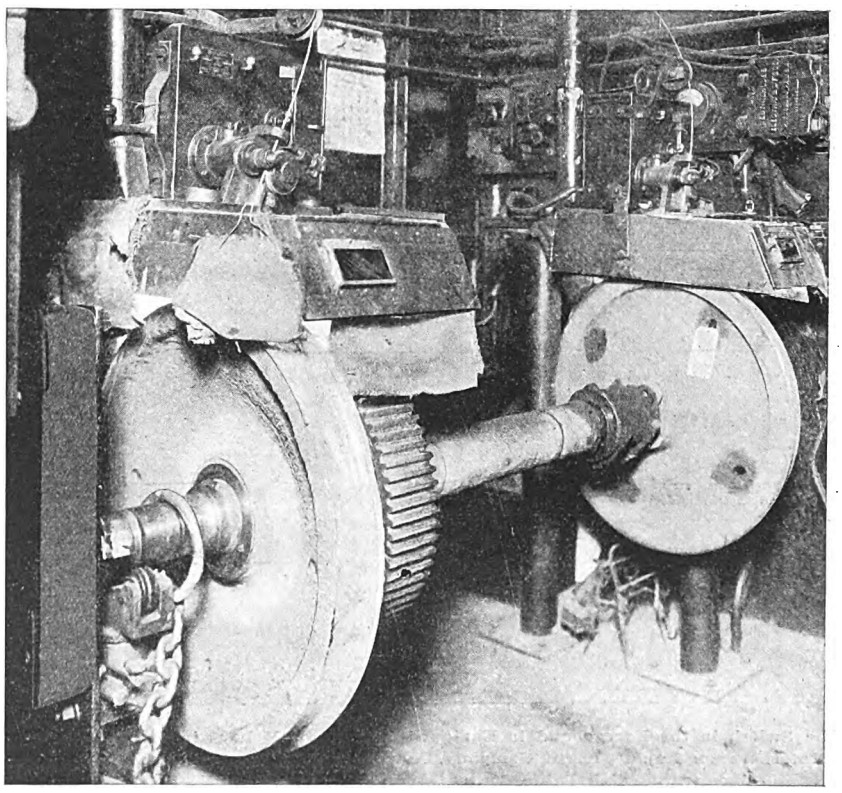
INCREASED use of automatic arc welding is being made in electric railway repair shops because the welds produced are reliable and the human element in welding is decreased. To meet the needs for an automatic welding machine, the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has brought out the Auto-Arc.

A large field of usefulness for the new automatic machine, it is stated, is for welding and building up of worn surfaces, such as those on brake equalizers, and other brake rigging parts. For this purpose the Auto-Arc is mounted on the carriage of a lathe so that it can be moved along the work either by hand or by the lead screw, with an adjustable driving speed. The brake equalizer or other part is placed on the lathe and the sides are held in position temporarily by a clamping device. The operator starts the machine, and with the work remaining stationary the welding is performed as the Auto-Arc moves along and deposits a seam of metal.

Another use for which the new welding machine is adapted is that of building up worn flanges of steel wheels used in city service. The worn wheel is placed in a device that consists of two stationary pedestals on which the car wheels are free to rotate. The wheels are driven by an attachment to the axle through a reduction gear, which in turn is driven by a small motor. The Auto-Arcs are mounted on a stationary pedestal and are free to swing as desired by the operator. As the wheels revolve



Equalizer Bar in Place on Lathe with Auto-Arc Ready to Start Welding Operation



Worn Car Wheels in Position for Welding Automatically

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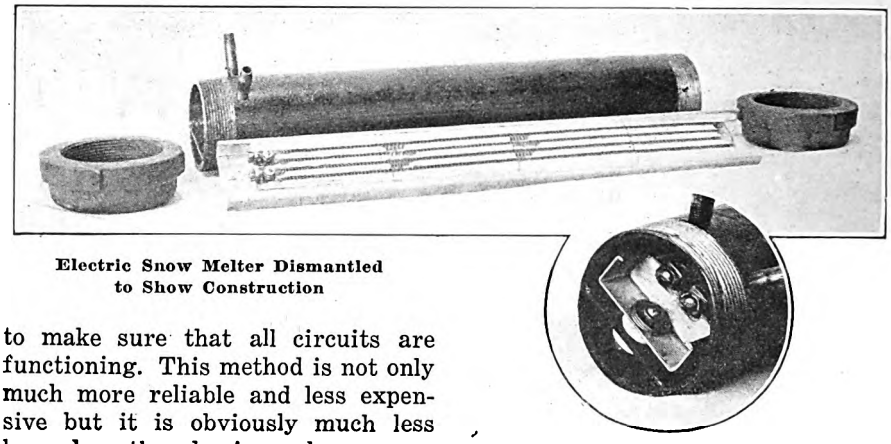
the Auto-Arcs deposit the metal at a peripheral speed of about 10 to 12 in. per minute. A set of car wheel flanges can thus be built up in approximately 2½ hours.

Electric Snow Melter for Track Switches

BY JOHN M. BOND
Transportation Division, Westinghouse Electric & Manufacturing Company, New York, N. Y.

KEEPING track switches open and operative during snowstorms can be accomplished best by keeping the points and mechanism above a freezing temperature. For this purpose the Westinghouse Electric & Manufacturing Company has brought out an electric snow melter. This was developed for and is now used extensively by the Interborough Rapid Transit Company, New York. The switches on the Interborough are of the automatic type, controlled from towers. During severe snowstorms they are liable to give trouble due to freezing or clogging with snow unless they are kept clear. The method used in the past was by shoveling and sweeping, but this requires a large force of men and equipment which must be held available for such emergencies during the winter months, and consequently is very costly and none too satisfactory.

The snow melters eliminate this manual work by giving off sufficient heat to melt the snow as soon as it reaches the ground and also to keep the switch movement from freezing. The number of men needed is reduced to a minimum of perhaps one or two, their only duty being to see that the current is properly turned on when the snowstorm begins and to inspect the switches occasionally to make sure that all circuits are functioning. This method is not only much more reliable and less expensive but it is obviously much less hazardous than having a large number of men shoveling and sweeping out switches during a blinding snowstorm within a foot or two of a live 600-volt contact rail.



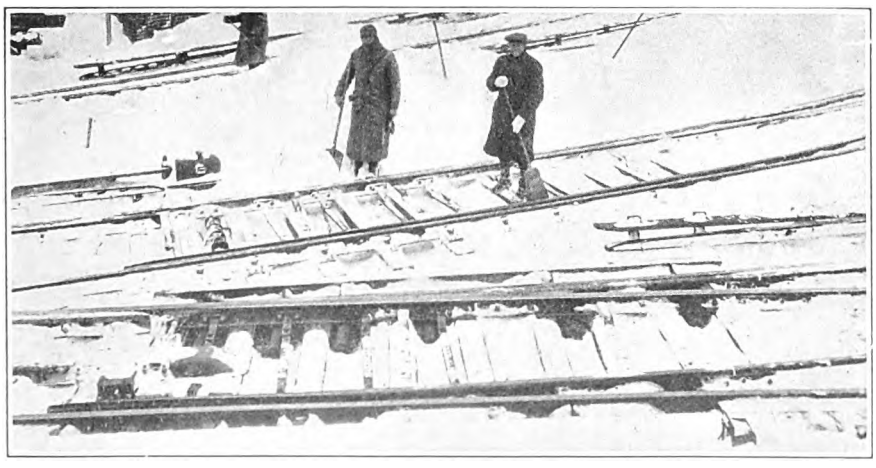
Electric Snow Melter Dismantled to Show Construction

The snow melters are designed to withstand extremely rough handling, such as being struck with picks and shovels. The heater element is made up of two coils, about ¼ in. in diameter, of nickel-chromium wire connected in parallel and supported in four grooved porcelain blocks which are held firmly in a sheet steel trough running lengthwise through a standard 3½-in. black steel pipe, 2 ft. long. The trough is sherardized to prevent rusting and is attached by insulated bolts to cross bars which are welded inside the pipe at each end.

Both terminals are at the same end of the pipe. Two standard pipe nipples located just above the terminals provide entrances for the connecting wires, which are sealed with tape and compound into the nipples, both outer and inner edges of which are beveled to prevent damage to the insulation of the wires. The ends of the pipe are equipped with standard light-weight pipe caps, red leaded to make the units watertight. By removing the end cap nearest the nipples the two terminals are exposed and are easily accessible for the purpose of connecting the units during installation. A steel terminal clip welded to the outside of the pipe provides a means for grounding the case of the unit.

The units supplied to the Interborough Rapid Transit Company were designed to operate twelve in series on a 650-volt, d.c. circuit, this being the number of units used at a switch. Connected in this manner each unit consumes 1,200 watts or a total of 14,400 watts per switch. Since the power used by the snow melters is proportional to the square of the applied voltage, the heat given off will, of course, vary accordingly. The current is taken from the contact rail through a fuse and a single-pole, single-throw knife switch directly to the units, each track switch equipment being supplied with its own knife switch and fuse so that it can be controlled independently of the others. Six units are placed under each switch point, the switches on this property being of the double blade type. In certain cases, however, depending on the curvature of the switch, the number of heaters used may vary from twelve to twenty. Also one heater is placed under the switch movement.

The heaters are laid horizontally on the roadbed between approximately alternate pairs of ties and parallel with them, beginning at a point just ahead of the switch blade and proceeding back toward the heel of the switch. All cases are grounded to a common wire. They are located not less than 1 to 2 in. below the bottom surface of the track as a precaution against interference with the automatic signal circuits if the casings of the units should come in contact with the rails.



The Switch in the Foreground Is Equipped with Snow Melters in 148th Street Yard of Interborough Rapid Transit Company, New York City, During Severere Snowstorm. The Rear Switch Being Swept Out by Workmen Has No Snow Melters

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Association News & Discussions

Snow Fighting in New England

Symposium Presented at Recent Meeting of the New England Street Railway Club Considers Methods of Keeping the Lines Open in Bad Weather so as to Increase Passenger Riding

DISCUSSION at the last meeting of the New England Street Railway Club, held in Boston on Dec. 2, was devoted largely to the subject of snow fighting. This was mentioned only briefly in last week's issue. In introducing the subject President F. D. Gordon emphasized the change in attitude of street railway men. Formerly they were satisfied to obtain sufficient revenue in the summer months to carry the road through the year. Nowadays, when rail transportation furnishes greater convenience than automobile transportation in the winter, January, February and March are the best revenue producers, and attention must be given to keeping the tracks open and the cars as nearly on schedule as possible. Four papers on this subject, by Messrs. Scott, Flanders, Bolt and Lockman, are abstracted elsewhere in this issue.

In the discussion Mr. Scott stated that crews make particular note of any excavations or unfinished street work prior to snow storms. Any obstructions that might interfere with the snow plows or wings are given particular attention. He also believes that an ordinance should be passed prohibiting automobile parking along the curb for 24 hours succeeding a snow storm. This would permit the city and company to clean up the streets quickly and would not only help the schedules but would help the public.

Both sweepers and plows are used by the Connecticut Company, according to Mr. Scott. Sweepers are not as satisfactory now as before the automobiles were on the streets. With the temperature low and starting with the beginning of a storm the sweepers will do good work. They are also used in the heat of the day after the snow is loosened up.

Low spots and grooved rails are salted, depending on storm conditions, while the track is salted right along. In a heavy storm with the temperature dropping the amount of salt used is greatest. The coarse grade of salt is used. Salt is distributed in 100-lb. bags in Providence and in 56-lb. bags in Connecticut. In 56-lb. bags it costs $15.71 a ton, in 100-lb. bags $13.80 a ton and in bulk some $5 or $6 a ton cheaper. The reason given for favoring the use of smaller bags than 200 lb. is the greater ease of handling.

In the absence of Mr. Flanders, his paper was read by H. J. Sullivan, superintendent of line and track Springfield Street Railway. Mr. Sullivan stated that better results are obtained in Springfield with sweepers than with plows. Rattan and steel mixed are used in the brooms. Canvas guards are used with the sweepers, to prevent breakage of windows or injury to pedestrians. Ice cutters with teeth are used to advantage. In Springfield the city assists with traction snow plows by pushing the snow directly over to the gutters, thus keeping the street clean. This year the city will have 38 trucks and seven tractors for the work. On some streets the city does all the cleaning while on others the railway handles it. The snow is dumped into the Connecticut River.

In Springfield several drivers of coal trucks have been arrested for stopping their vehicles on the car tracks and obstructing the street. When the snow loaders are started out they are accompanied by police officers, who move all automobiles out of the way so that the snow can be loaded.

On the Eastern Massachusetts Street Railway, according to Mr. Bolt, the single-truck snow plows are not a very important factor. During wet snow storms the service should alternate with a plow trip following two or three round trips of sweepers.

Buses that are equipped with scrapers can be operated in 3 to 4 in. of snow. After it gets deeper than that the scrapers are lifted and the roadway must be plowed with caterpillars or trucks.

The levelers of this company weigh about 1½ or 2 tons each, and are put on or taken off with the aid of crane cars. They are adjusted to the angle desired and then held in place by means of chains.

The Cumberland County Light & Power Company has also used levelers or wings on its plows. These are about 18 ft. long, according to G. C. Haggas, chief engineer. The use of the levelers has provided a place for automobiles away from the car track.

A rotary ice cutter developed by the Eastern Massachusetts several years ago was described by Mr. Glynn of that company. This machine cut so much ice that a platform was built out in front. After that an equipment was designed having a conveyor with 5-ft. blades. Not enough men could be put in the small space to shovel the snow off. Then a snow plow was designed built of steel and having solid steel blades raised or lowered by hydraulic jacks. A cross conveyor was put on. The plow was able to take off 1 in. of solid ice with a layer of 3½ ft. of snow for a distance of ½ mile in an hour and a half. The machine does not compress the snow, but lifts it.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Jan. 6-7—Midwest Electric Railway Association, midwinter meeting, Mayo Hotel, Tulsa, Okla.

Jan. 7—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

Jan. 10-14—American Road Builders' Association, convention and road show, Coliseum, Chicago, Ill.

Jan. 18-19—Kentucky Association of Public Utilities, annual convention, Brown Hotel, Louisville, Ky.

Jan. 19-20—Central Electric Traffic Association, Fort Wayne, Ind.

Jan. 21-22—Central Electric Railway Accountants' Association, Fort Wayne, Ind.

Jan. 25—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.

Jan. 26-28—Association of Equipment Men—Southern Properties—Memphis, Tenn.

Feb. 3-4—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.

Feb. 7-10—American Institute of Electrical Engineers, annual convention, Engineering Societies Building, New York City.

Feb. 10—Central Electric Railway Master Mechanics' Association, Toledo, Ohio.

Oct. 3-7, 1927—American Electric Railway Association, annual convention, Public Auditorium, Cleveland, Ohio.

Fighting Snow in Springfield and Worcester

BY H. M. FLANDERS
General Manager Springfield Street Railway, Springfield, Mass.

SPRINGFIELD and Worcester have street railway properties with similar physical characteristics. The total track mileage of the Springfield company is 203 and of the Worcester company 292. About half the mileage of each company is in center location in city streets, the other half being suburban lines, mostly of side location. Each company operates about 7,000,000 car-miles per year.

Snow-fighting organization and methods are practically identical on each property and are in charge of division superintendents. The transportation department is responsible for manning plows and sweepers, assigning

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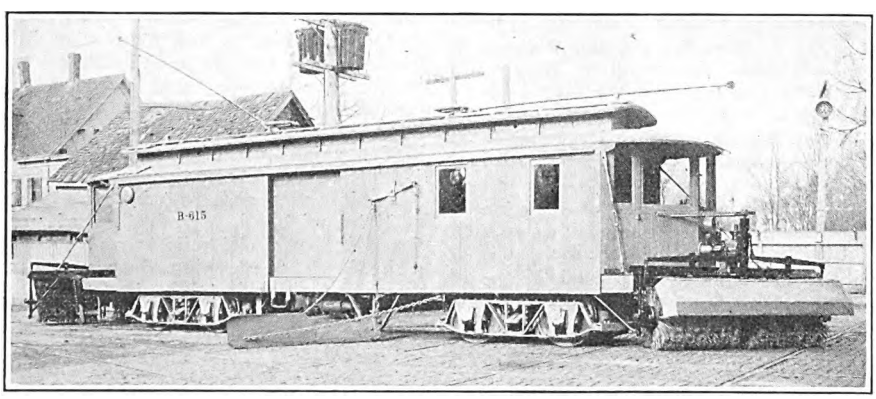
them to the lines and for keeping the lines open. The track department is responsible for the removal of all snow from streets where necessary and for keeping switches, yards, ditches and drains clear.

Each fall the division superintendents assign crews to certain lines. Each of the plows and sweepers sent out is manned by two or three uniform men, the third being a uniform man taken from the spare list.

The plows and sweepers so manned are sent out to the assigned lines as soon as the superintendents deem it to be necessary, a record being made on a sheet similar to a train dispatcher's sheet. Each crew has instructions to telephone the superintendent as often as practicable, posting him on conditions, and this information, with any special orders, is all recorded on the snow-dispatching sheet. All street inspectors report to the superintendent. Certain men are assigned to fixed strategic points, the remainder going to various points as required to act as the superintendent's representative on the job. The superintendent of tracks has authority to employ as many extra men and trucks as are necessary for his snow removal work.

As soon as the storm starts, the mechanical department assigns men to care for snow-fighting equipment. These men are on duty until the storm ends and attend to oiling, greasing and repairing as needed.

Springfield and Worcester each has one double truck rotary plow. These are rarely used; in fact, only in cases of extreme drifts. Springfield has four double-truck nose plows and five double-truck shear plows; Worcester ten double-truck nose plows and seven double-truck shear. Springfield also has nine single-truck shears and three single-truck nose plows, while Worcester has three single-truck shears and two single-truck nose plows. Except in light snows, the single-truck plows are practically worthless unless operated with a pusher.



Eastern Massachusetts Sweeper Equipped with Leveler

Springfield has two single-truck sweepers and nine double-truck sweepers. The former are used principally to keep our open air storage yard clear. Double-truck sweepers are used on the line. Worcester has thirteen double-truck sweepers. In both cities the double-truck sweepers are more efficient in practically any kind of a storm than are the double-truck plows. We have no figures of value as to comparative operating of maintenance cost of plows and sweepers. We believe that the sweepers can be operated and maintained at a much lower cost than the plows. Practically no cars in Springfield or Worcester are equipped with snow scrapers.

The only special equipment on either property consists of snow loaders and automotive trucks equipped with plows, each property having one Barber-Greene snow loader. The loaders are very efficient and economical and we have averaged in an eight-hour day a 5-ton truck loaded every three minutes. We have not used the trucks equipped with plows for plowing the tracks, but simply for throwing the ridges left by the plows and sweepers back into the gutters, where the snow can be handled by the snow loader.

We use salt in switches, and on practically all hills having grooved rail, catch basins and drains salting is begun as soon as the snow begins to fall.

The consumption of salt per mile of track per season for the last three winters was from 1,309 to 2,945 lb. per track-mile in Springfield and from 1,917 to 2,772 lb. per track-mile in Worcester.

Experience in Snow Fighting on the Eastern Massachusetts

BY W. C. BOLT
Superintendent Rolling Stock and Shops Eastern Massachusetts Street Railway
Chelsea, Mass.

EACH one of our thirteen division managers is fully responsible for transportation in his respective districts, including efficient and economical snow fighting. At the beginning of a storm, all sub-department heads are notified and requested to report immediately to the executive in charge, either the division manager or his division superintendent. It is our general plan to start fighting snow as soon as it is possible to man plow equipment. Delay in this respect has been found to be costly, and we very much prefer to operate our snow-fighting equipment early.

All paved track is covered first by sweepers. It is occasionally possible to cover all lines with sweepers and passenger car scrapers without using the heavier snow plows. Should the weather reports indicate a heavy snowfall, heavy plows are likewise placed in service without delay.

At the central headquarters, an accurate log is kept on which is recorded for each route the number of the plows, the time each plow started and the time it returned. It is generally planned to determine the exact location of every plow at least every 30 minutes. Plow crews have instructions to call headquarters by telephone if any unusual delay occurs. An automobile or taxicab is used in event a plow crew has not reported within a reasonable time.

After each storm, a report is prepared by each division manager, one copy of which is forwarded to the vice-president in charge of transportation, and one copy to the superintendent of rolling stock. This shows the hours and miles operated by each unit of snow-fighting equipment, the equipment failures, if any, the approximate inches of snowfall, the time storm began, the time storm ended, lines blocked and serious interferences with service, and an estimate of the total cost.

KINDS OF EQUIPMENT USED

We have a total of 88 double-track electric snow-fighting units to cover the 635 miles of paved and unpaved track, or an average of 7.2 track-miles per double-track unit. Electric snow sweepers have been found by us to be very efficient and particularly effective in snow storms with temperature under 29 or 30 deg. Sweepers are able to operate on paved track at relatively high speed, to clean thoroughly the street between tracks, and aid considerably in preventing the building up later of so-called "high centers." Sweepers, however, become less effective under heavy wet snow conditions, and it is then necessary to resort to plows. In unpaved track, of course, snow plows are very much more effective than sweepers.

The 23 passenger cars which have been equipped with Root scrapers have performed very satisfactorily. This type of unit replaces a regular passenger car, and at the same time clears the track zone of snow. It can cover more miles of track with one man than any other type of equipment, and is particularly effective in snowfall with temperature under 30. deg.

Our records do not give us information as to the relative cost of operating the several types of equipment. As between plows and sweepers, sweepers perhaps are slightly more expensive to maintain. However, we do not feel that this is an important item.

All of our snow-fighting units with the exception of Root scrapers, are equipped with levelers, and these are used to the maximum extent possible. In heavy, congested traffic, of course, the use of levelers would retard service. It is, however, important to level snow back from the rails as much as possible in order that automobile traffic will not find it necessary to use the tracks and

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thereby seriously delay passenger service.

Five of our heavy double-truck work cars have been equipped with steel levelers, 12 ft. long and 3 ft. wide. These equipments have been found most efficient for leveling purposes, and are used almost exclusively at night after each storm.

We also have an electric equipment known as the Sampson Axcess Ice Cutter, which has been effective under certain conditions, particularly where lines have been completely snowed-in. This unit carries a cutting blade, a rotating picker, a main conveyor and a cross conveyor.

Relative Advantages of Rail and Mobile Equipment

We have a rather large complement of equipment which is gasoline driven and not confined to rails, comprising: Seventeen Root scraper attachments for buses; fourteen Good Roads Machinery shear plow attachments for trucks; seven 5-ton Best caterpillar tractors for one-man operation equipped with Sargent steel-nose plows; one 7½-ton Walter tractor equipped with Good Roads Machinery shear plow and Walter center scraper. This equipment is intended primarily to care for the 116 miles of bus lines operated. The seven 5-ton caterpillar tractors have just been purchased, and it is our intention to use these tractors in conjunction with our electric snow-fighting equipment.

There is no question but what gasoline-driven equipment is of considerable advantage in temporarily taking care of a route which may be blocked by a stalled truck or otherwise. Traffic centers and street intersections can best be cleared of snow with gasoline-driven equipment.

Our average annual consumption of salt is approximately 475 tons, or three-quarters of a ton of salt per mile of track. Each plow is equipped with a number of barrels of mixed sand and salt. This mixture is used particularly on grades where iced condition of rail has made traction difficult. A mixture of sand and salt frequently seems to do better work in cutting ice than pure salt.

Cost of Fighting Snow

Our expenditure for fighting snow as recorded in Account No. 12, and expenditures for cost of maintaining snow fighting equipment, Accounts No. 32 and No. 33D, have averaged $198,499 per year for the last six years.

The total annual cost including fixed charges, based upon the average cost of the last six years, is $295,500, equivalent to the revenue from 4,220,000 passengers. Our average annual expenditures for fighting snow including fixed charges would pay 58 per cent of our common stock dividend. Again it would pay our entire annual dividends on the first preferred stock. Twenty-five per cent of our total bond interest could be taken care of if we were not confronted with snow-fighting expenditures. All of these figures refer to the cost of fighting snow with electric plows, and do not include any costs in connection with plowing snow on our bus routes.

Snow Removal in Hartford

By N. J. Scott
Manager Hartford Division the Connecticut Company

RAILWAY operators disagree as to the benefits of snow, and the only real answer to the question is our net revenue. We all agree that our gross is much greater in winter and at times of heavy snow, and if we can help one another to work out economical snow-fighting operation and removal costs it will be to our mutual advantage. The following is the procedure at Hartford, Conn., which has a population of 170,000 and a trading population of at least 250,000. The track mileage is 173.38.

When the storm begins a starter reports at the carhouse where snow-fighting equipment is housed and immediately thereafter crews report to him. Previously all snow-fighting equipment has been put in shape and loaded with salt. Each crew is given a route card and, barring sickness or some unavoidable occurrence, crews are assigned to the same routes and same equipment on each storm. The routes are so arranged as to get the most out of the equipment and the least possible time is lost in changing ends. This practice also improves passenger car schedules.

Starting with the storm again, two dispatchers divide up the lines by telephone circuits and control the movement of the snow-fighting equipment under the direction of the superintendent. Progress and difficulties are recorded at all times. Principals operating the equipment are well qualified for their work and keenly feel the responsibility of keeping their routes open. The crew starter provides reliefs and lunches for the crews as required. We have four double-truck sweepers and two single-truckers. These are used effectively on city routes with improved pavement in handling light snow and in cleaning up after plows. They are also useful in the work of the day following storms in cleaning tracks subjected to the vehicular traffic. Shear plows are used on city and on some suburban lines and are exceptionally good on double-truck operations. The A plows are used on single-track suburban lines, but the side shear plows seem to give better service. We move the snow with the wings and leveling boards as far from the rail as possible, where it is picked up by either truck or tractor and removed further from the rail or to the gutter side. This leaves a good traveled highway, which helps us in subsequent storms and maintenance of schedules, as all vehicular traffic is not forced to the car track.

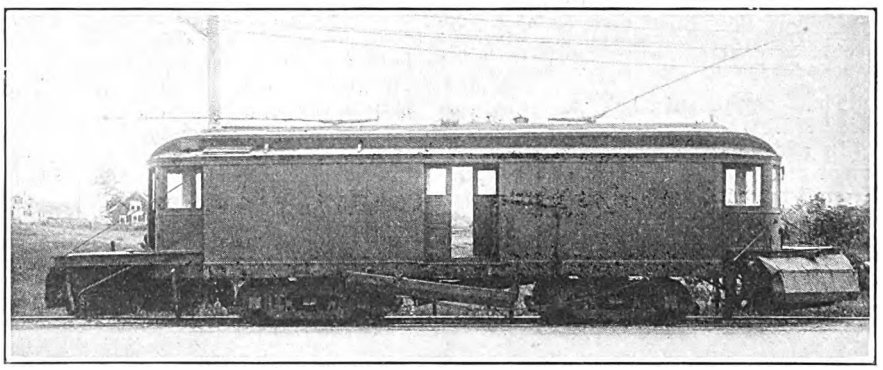
All cars are equipped with snow scrapers and are used to advantage not only at the time of storm but following the storms when vehicular traffic drags so much snow onto the rail and also in cases of slight drifting.

All of our snow-fighting equipment is confined to rails as we have not experimented with motorized snow-fighting equipment except on our own premises. There is no question but that equipment of this type would help in our general snow-fighting program, but we have kept away from it on account of additional burdens that might be placed on us by city, state and municipalities.

We have two cars in our track department which are rigged up to salt track; they also have route cards which cover our grooved type of rail, all switches and low rail in the city area. To my mind there is no question but what the proper application of salt is very essential, especially in heavy snow which is easily matted down by autos. After the salt is spread the snow loosens up and is easily removed by car scrapers or sweepers.

Each switch cleaner has a territory to cover and barrels of salt are placed at various locations on these routes. Each snow plow and sweeper also carries a supply of salt which is used in low spots and on lines not covered by regular salt car routes. The average consumption of salt per year per mile of track the past season, which was a fairly mild winter, was about 1 ton per mile of track.

We are called on to move snow in certain downtown city streets. During the past winter we cleaned 3 miles of streets at an approximate cost of $2,500 per mile, the loading being done by hand, using teams and trucks to cart the snow away. At night we sometimes use a motor flat and trailer. We are unable to dump snow into our sewer manholes in Hartford, but outlets in several bridges allow us to dump snow into the Par River in the downtown section and also in the Connecticut River, where we dump with a very



Former Eastern Massachusetts Express Car Equipped with Broom Sweeper

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short haul. In the case of snow trains as described above, the haul is considerably longer and at least 2 miles from the center of the city.

It is my belief that personal contact with the crews and a word of encouragement from time to time when the storm is raging are very helpful. We try to impress on them the responsibility of keeping their routes open.

Snow-Fighting Equipment and Methods

E. L. LOCKMAN
Assistant Engineer Surface Lines, Boston Elevated Railway

HANDLING of snow in a progressive community has undergone a considerable change from what it was some years ago when a certain amount of snow was left on the ground for the accommodation of vehicles on runners.

By law the Boston Elevated Railway is obligated to remove snow from the track area only. If snow is removed from the track area only vehicles will use the car tracks, thus delaying the car service. We find it is not only necessary to remove snow from the track area but also alongside the tracks to provide a roadway for other vehicles.

As time is the essence of snow removal, successful snow fighting calls for prompt, speedy action and special equipment is required.

In 1920 the company purchased its first piece of snow-fighting equipment other than car plows. This was a Champion snow plow. In 1922-23 we purchased our first snow loader. Two weeks after its receipt we purchased a second. We have added to this equipment from time to time. A list of the snow-fighting equipment owned by the company and operated by the maintenance department, exclusive of car plows, is as follows:

9 Barber-Greene snow loaders, 6 caterpillar tractors (5-ton) with steel plows, 3 Fordson tractors, 2 Walter truck snow fighters, 6 Differential cars equipped with snow plows, 3 rail cars equipped with side plows, 32 Champion snow plows for 5-ton trucks.

This equipment has a value of $112,888.

In addition the maintenance department operates 36 motor trucks varying from 7-ton of the Mack and White type to 1-ton Ford trucks. This equipment is used in regular service during all seasons of the year and is available for snow work when required.

CAR PLOWS

The company has a total of 162 single- and double-truck car plows are sixteen sweepers of both single- and double-truck type. The cost of maintaining the car plow equipment during 1925 was as follows: Car plows, $10,263.64; car sweepers, $2,763.49.

The cost of maintaining the Barber-Greene snow loaders, of which we had five in 1925, was $368.08.

From Feb. 5 to 24, inclusive in 1926 the following snow work was performed by the maintenance department equipment:

Cubic yards of snow removed		52,785
Truck loads		7,038
Number of trucks used		650
Average cubic yards per load		7.5
Average cost per cubic yard		$0.4688
Total cost		
Trucks	$18,822.48	
Operators	1,435.34	
Men with snow loaders and at dumps	4,490.44	
	$24,748.26	$24,748.26
No. of locations worked at		84

The average cost per cubic yard of snow includes hire of trucks and labor.

For effective snow fighting we find that a special organization is required both for the transportation department and maintenance department. Every man in the maintenance department, including the engineering force, clerks, etc., is assigned a place and used if the conditions require. The responsibility of handling snow is divided between the transportation and maintenance departments. The duties are responsibility of each department are well defined and understood.

The transportation department plows the car tracks and operates scrapers on the buses if necessary. The maintenance department operates all snow-fighting equipment exclusive of car plows and procures extra trucks from contractors for plowing bus routes, throwing back snow on car lines and for hauling snow; also extra trucks are provided and equipped for emergency and are stationed at several predetermined points on the system. These emergency trucks are equipped with blocks and falls, jacks and other tools for the purpose of removing stalled automobiles and other vehicles which break down on the car tracks. We found during the snow period of February, 1926, that this service was absolutely necessary in order that we might operate our car schedules.

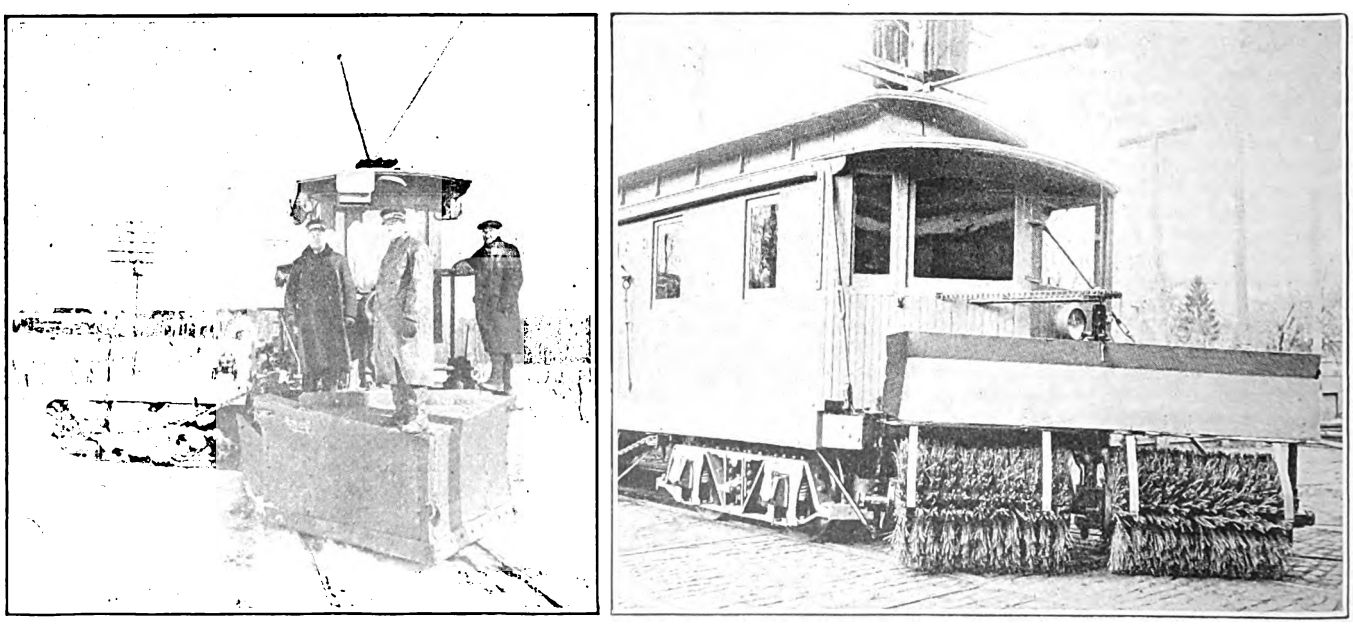
The maintenance department obtains permits for dumps for snow disposal. We have a total of about 60 sewer manhole locations for snow disposal and tidewater dumps located at various points in the system. We have a few land dumps, but land dumps are not desirable in connection with motor truck removal of snow.

To provide extra trucks necessary for snow fighting every fall we send out a questionnaire to local trucking concerns as to the number of trucks available and the price per hour, where located, etc., and during the season 1925-26 we had approximately 250 trucks on our list, available for snow work both for snow removal and for plowing.

During the past season we paid an average rate of $27 per day of nine hours for hauling snow and $36 per day of nine hours for plowing snow.

As before stated, we own 32 Champion snow plows for 5-ton trucks; 25 of these plows are used for hired trucks and seven for company trucks.

In addition to the car plow equipment we have found it desirable to equip certain service cars with side wings for throwing back the snow. We have three rail cars equipped with these



Eastern Massachusetts Equipment. At Left, Leveler with Nose Plow; at Right, Sweeper Rebuilt from Open Car

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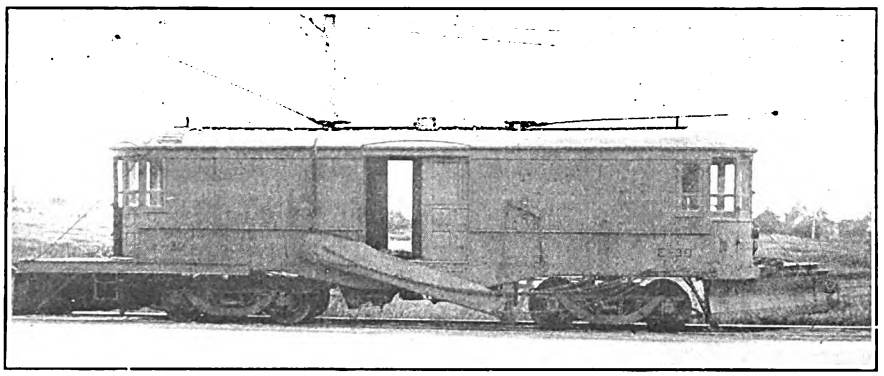
wings and six Differential steel cars equipped with front plows and we are now engaged in providing these steel cars with side wings similar to the side wings used with the rail cars.

During the heavy snow period of February the rail cars equipped with wings did wonderful work. No matter how deep the snow these cars had sufficient power to throw it back and provide a roadway of from 12 to 14 ft. wide alongside the car track for automobiles and other vehicles. Where streets were not of sufficient width to provide storage for this snow it was necessary to put out the snow loaders and remove it.

As to the relative advantages of equipment confined to rails and equipment not confined to rails, from our experience during the heavy storm of February, 1926, we found it would be necessary to have other apparatus than



Former Eastern Massachusetts Express Car Equipped with Shear Plow

plows and sweepers running on car wheels. When lines become tied up due to stalled cars or other vehicles breaking down on the track, so do plows and sweepers, at which time it is advisable to have on hand some other form of equipment that can go around the block and clear the line ahead for the stalled cars. For this work we believe the Walter snow fighter will be a very effective piece of apparatus.

The Walter snow fighter is in effect a six-cylinder, 80-hp., 7-ton truck of four-wheel drive, equipped with snow scraper blade and front patrol plow, and while it is purchased for use on bus lines it may be used on the system wherever its services are required.

The company also has on hand six 5-ton tractors equipped with steel plows. These tractors are the most powerful snow-fighting outfits we have and their only drawback is their slow motion, but for pushing back an accumulation of snow we believe they are unexcelled.

On tracks and special work we use an average of 2,000 tons of salt per year. As the miles of surface lines operated total 310,408, this is an average consumption of approximately 6.4 tons per mile.

The salt is purchased in bulk and is received in steam railroad box cars at our freight yard and from there distributed by service cars to several points on the system. When occasion requires it is distributed by special salt cars and motor trucks.

If the storm arrives late at night or in the early morning hours it gives us no particular concern. We have a free field for the operation of our snow equipment; but if the storm is of considerable proportion and arrives during the afternoon the situation is seriously complicated.

Before the storm arrives the supervisory forces of the transportation and maintenance departments report to their particular districts to which they are assigned. Station masters, with sufficient assistants, report for the purpose of assigning and detailing plow crews. The maintenance department assigns men to cover special work, passenger landings, rapid transit lines stations and rapid transit interlockings.

When the snow is from 1 in. to 2 in. deep car plows are sent out. If the storm increases in intensity the plow routes are shortened and additional equipment put on as needed.

Motor trucks, properly ballasted and with front plows, are sent out by the maintenance department as previously arranged to throw back snow from where it is deposited by the car plows and also to keep bus routes open. Other motor trucks equipped with jacks, blocks and falls, etc., and known as emergency trucks, are assigned to certain locations to assist the regular wrecking crew in removing broken down vehicles or vehicles that have become stalled on the car lines. Entrances to hospitals, public buildings, police stations, etc., are kept clear of snow.

About three hours after the storm is over, so abutters can clean their sidewalks the maintenance department sends out snow loaders to remove the snow from narrow streets and streets from which it has been agreed to remove one half the snow or from curb to curb. The amount of snow removed depends on the condition of the streets previous to the storm and the weather conditions following the storm.

During the night following the storm and as often as required service cars equipped with special side plows are sent out to throw back the snow toward the curbing. As before stated, this equipment has been found to be very efficient as it provides a roadway of from 12 ft. to 14 ft. in width from the car rail toward the curbs, and in this way we entice the automobile traffic to keep off the car tracks.

After every storm the snow equipment, of whatever type, is returned to its own station for inspection and repairs, if repairs are necessary, and there it is put in readiness for the next storm.

American Association News

Rolling Stock

REPORTS of chairmen of special committees in the rolling stock division outlining the work to be undertaken during the coming year occupied a two-day session of the standing committee on rolling stock held at association headquarters, New York, Dec. 13 and 14, 1926. Those present at the meeting were A. T. Clark, chairman; W. S. Adams, V. W. Berry, W. C. Bolt, W. W. Brown, R. S. Bull, R. W. Cost, F. J. Foote, M. R. Hanna, J. M. Hipple, E. A. Hutchins, J. S. McWhirter, T. H. Nicholl, Hugh Savage, R. B. Smyth, C. W. Squier and W. G. Stuck.

In a review of Manual sections special attention will be devoted to revising that for couplers and the location of end connections on interurban cars. Specifications for gears and pinions will be revised by special committee No. 10 on gearing. It was decided to recommend to the executive committee of the Engineering Association that special committees be formed to take up revision of standard journal boxes and the establishing of additional limits-of-wear standards.

The committee that is studying motor coach design and maintenance methods will go over the specifications proposed by the Society of Automotive Engineers through its motor coach division for the New Jersey Board of Public Utility Commissioners, and it will also review the inspection schedules as published in the 1926 equipment committee's report.

In order to arouse interest in the subject of appearance, comfort and convenience of cars, a study of which is being made by special committee No. 3, a special campaign will be instituted. This will consist of a number of articles by men who are accomplishing particular improvements in the appearance, comfort or convenience of rolling stock on their properties, these articles to be published in ELECTRIC RAILWAY JOURNAL. Others will also be requested to submit letters for publication discussing the subject and outlining what they consider essential.

The study of car lighting being made by special committee No. 4 will include recommendations for the lighting of typical surface cars. Additional lighting tests will be conducted in order to secure data and a report on the number and sizes of lamps now available will be made, together with a list showing the demand for the various types in electric railway car service.

Discussion of results being obtained from roller bearings in European countries brought out that increased interest is being manifested and that the study being made by special committee No. 5 should prove valuable.

Committees which are studying side wear of brushes in ventilated motors, noise reduction in car operation and current collecting devices outlined the work which will be undertaken.

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Professor Seligman Addresses Tax Committee

REGULAR and advisory members of the American Association taxation committee were addressed at a luncheon meeting held in the Engineers Club, New York, on Nov. 10, on the subject of the gross-net tax by Prof. E. R. A. Seligman of Columbia University, nationally known economist. Professor Seligman cited experience with this general form of taxation where it has been applied, and recommended it as a means of securing more equitable distribution of the tax load on business.

In discussing the taxation of utilities, and particularly the electric railways, he decried the unfairness of the burden now carried. He pointed out, however, that this was in large part attributable to unwise effort in the past to avoid a fair share of the tax burden. He held that no business could afford to dodge its fair share of taxes, but agreed that utilities are justified in striving to equalize their taxes with those carried by other forms of business.

During a morning session at association headquarters, and following Professor Seligman's talk, the committee discussed the advisability of undertaking a program to stimulate industry-wide advocacy of the gross-net system of taxation for electric railways. It was the purpose of the committee first to determine the sentiment of its own members regarding the principles of gross-net taxation and after that to undertake a study of the practical problems of its application.

There was some difference of opinion as to the advisability of an indorsement of the principle advanced or of advocacy by electric railways of any particular system of taxation. Such an indorsement was finally passed, however, with a number of members not voting. A sub-committee was appointed to make a further study of the gross-net method and to prepare a report on the subject for submission to the committee, and if approved to the executive committee.

Those present included the following; regular members, Chairman A. T. Davison, general counsel Third Avenue Railway, New York City; H. Allen, comptroller Chicago Surface Lines; Robert M. Feustel, president Indiana Service Corporation, Fort Wayne; H. L. Geisse, general manager Wisconsin Valley Electric Company, Wausan; W. A. Jackson, vice-president the Milwaukee Electric Railway & Light Company, L. R. Nash, operating vice-president Stone & Webster, Boston; C. L. S. Tingley, American Electric Power Company, Philadelphia; and W. J. Wright, assistant general counsel Public Service Corporation of New Jersey, representing Senator E. W. Wakelee. Advisory members at the meeting were W. J. Flickinger, Connecticut; A. W. Brady, Indiana; J. L. Swope representing C. D. Emmons, Baltimore; E. M. Walker, Schenectady; H. B. Cobban, Oklahoma; E. B. Griffiths representing A. W. Robinson; E. J. Dickson, Rhode Island; T. J. Moore, Virginia; Managing Director L. S. Storrs, J. W. Welsh, executive secretary, and Leslie Vickers, economist of the association staff.

Parking No Aid to Merchants*

By F. C. Fox
Assistant to President A. I. Namm Company, Brooklyn, N. Y.

THE merchant today is seriously interested in the transportation problems. First, I think, I ought to indict the merchant as being guilty of producing a great part of the present traffic congestion. The downtown shopping district has become an institution. A number of large department stores have been established in one section. We spend millions of dollars annually to bring people to that section from all the outlying districts. We have created this vast movement and, having built up this tremendous congestion, now we are crying for help.

It is not quite right to say that the merchant is selfish and wants his customers to park around the store and in the streets adjoining the store, because he doesn't. We made a check recently to ascertain what benefit we received from the automobiles parked around our place of business. We front on Fulton Street, which, of course, is a two-track street. The rear is on Livingston Street which is likewise a two-track street. We found in the check-up that 75 per cent of our customers came to the district via subway or elevated, 24 per cent arrived by surface cars and 1 per cent presumably walked or came by automobile.

There were 118 automobiles parked from 9 o'clock in the morning until 5 o'clock in the afternoon on Livingston and Hoyt Streets and Elm Place. From those 118 cars 80 customers came into the store, and just think what those 80 customers did to traffic on Livingston Street. They practically eliminated all of the road area except that section of it on which the surface cars were operating, so that these 118 automobiles impeded thousands of people.

We do not desire that condition and we are going to do our part to eliminate it. Congestion that we have helped to create is now undoubtedly seriously interfering with our business. It has become such a serious problem that when the Department of Commerce recently sent out a questionnaire to practically every merchant in so-called downtown shopping districts, these merchants agreed that this congestion is interfering with traffic so seriously that unless something is done the downtown shopping district will soon be a thing of the past.

We are not selfish; we believe in living and letting live, but we are alarmed to see the number of neighborhood stores springing up. A few years ago the grocers, the butchers, and the like, were practically the only neighborhood stores. Now, because of traffic difficulty, we find all sorts of shops, specialty shops, springing up in almost every residential neighborhood in the city. We are perfectly willing to let them have business, but we don't want them to take our business away from us, because in the creation of this business we have made a huge investment in real estate and in building up good will. Decentralization would mean that the money we have spent for the good will and invested in our plant would be seriously jeopardized.

One of our neighbors tried the private parking proposition. A garage was hired and had two uniformed men to take the customers' automobiles from the store to the garage and bring them back again without any charge for the service or for the parking. But such is the selfishness of human nature, that the customers, realizing it would take a few minutes to get the automobiles, that they would be a little inconvenienced by this arrangement, refused to permit it, and the store finally gave it up in despair. Thus the much-heralded means of preventing parking around department stores by providing garage space, I am afraid, is doomed to failure. People simply will not do it.

At the present time there seems to be an insidious sort of propaganda, and I don't know where it comes from, that the street car is the source of all traffic evils, and the remedy proposed is the bus. I may not know much about it, but I think the remedy is a little worse than the evil. As has been said, the street cars stop on every corner, but I suppose the bus will have to stop somewhere too. The street car with its definite lane of travel carries about three times as many passengers as the bus, and it certainly is not causing the congestion that the bus is causing.

Buses are good things, but not good enough to supplant the surface cars. They are good things as auxiliaries to surface cars, but they should be in the hands of organizations skilled in transit. We have had some experience along that line. Once we tried to give some of our delivery to an unskilled organization. The result was chaos and we had to turn it all back to our own organization trained in that business. They soon straightened it out.

I don't believe that putting buses on the streets, particularly on the main thoroughfares, is going to help us very much. It certainly isn't going to help the Police Department very much in controlling traffic, nor the public very much, unless the buses are in the right hands.

I believe if all those interested in the traffic congestion problem will get together with the powers that be, the city fathers and so on, and work out a solution of this problem, they will find a way out. I hope so from a selfish point of view, because if they do not, eventually there is going to be decentralization of the mercantile business. It will have to branch out like the banks, establishing branches in every section of the city. That will not benefit the public, because it will increase the cost of merchandise, and the public is going to pay. From the point of view of a centralized merchant I feel that this traffic problem is so important that all the merchants are right in bending their best efforts and giving all the assistance possible to those interested in improving traffic conditions.

*Abstract of a paper presented at a meeting of the Metropolitan Section A.E.R.A., New York, N. Y., Dec. 3.

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The News of the Industry

Merger of East Bay Transit Facilities

Key System Transit Company and Southern Pacific Likely to Merge Lines in Interest of Economy and Efficiency

Important changes in East Bay electric railway and ferry service are forecast by the announcement that the Southern Pacific and the Key System Transit Company, Oakland, Cal., are about to merge all or part of their lines in the interest of economy and efficiency.

Close on the heels of this revelation comes the statement that the Western Pacific is negotiating for the purchase of the Sacramento Short Line and that the stockholders of the latter road are about to vote on this question.

Students of railroad affairs see in these announcements a new development in the contest waged for some time between the Southern Pacific and the Hill interests. The latter are seeking a "place in the sun"; in other words, a new Pacific Coast terminal.

An ideal terminal exists in the East Bay, where the Key mole is located, just a little way up the bay from the Southern Pacific mole. The Hill interests are known to have "flirted" with the Key officials over its prospective purchase. But the Key officials have been wary. Their ferry and electric train service are the best paying portions of their holdings.

To complicate the situation, the Key lines have an agreement with the Short Line by which the latter is permitted to run its trains through the streets of the East Bay and to the mole. If the Western Pacific, through its adjunct, the Sacramento Northern, an electric road, should acquire the Short Line, it would also purchase the right to use the Key mole.

The Western Pacific has a terminal in Oakland, but it seeks a shorter route to the north than it now has. Its auxiliary, the Sacramento Northern, runs between Chico and Sacramento. In the event of the purchase being approved by the stockholders of the Short Line, it is said that the Hill lines, the Northern Pacific and the Great Northern, through their subsidiary, the Oregon Trunk Line, would build a link from Klamath Falls in Oregon to Chico and then run trains over the Short Line tracks to the Key mole.

Officials of all the roads concerned have admitted that the negotiations are in progress and that there is "something doing." Walter Arnstein, president of the Short Line, stated that the stockholders of his road will shortly vote on the matter of the purchase and C. M. Levey, president of the Western Pacific, also admitted that the deal is under way.

Key officials are equally frank, but declare that at the present time plans are tentative. C. O. G. Miller for the Key System Transit Company asserted that surveys are in progress by engineers of the Southern Pacific to determine how some of the duplicate service of the two ferries and electric lines can be eliminated in the interest of efficiency and economy.

Regardless of what plan or plans are finally adopted, it is likely that the ferry schedules of the two lines will be alternated and that commutation books will be made interchangable. This is a plan that has long been considered and one that will meet with popular favor.

Under another plan considered Key System trains will practically cease to run to Berkeley and East Oakland, those two sections being given over to Southern Pacific service almost exclusively. In turn, it has been suggested that the Southern Pacific abandon its Central Oakland service in favor of the Key.

Mr. Miller also admitted that still another plan being considered is one that calls for a merger of the Key and Southern Pacific electric lines and ferries through the formation of a holding company, each line to keep its own operating head. Under such an arrangement, it is pointed out, great economies could be effected and a reduction in rates would probably follow.

It is expected that Paul Shoup, executive vice-president of the Southern Pacific, will have final say as to which of five plans is to be chosen. He has been in the East for some time.

Key officials declare that the recent raise in railway fares from 6 to 7 cents, which was expected to bring more revenue, has failed of its purpose and that no financial relief has been afforded.

Chicago Coach Hearings Start Dec. 21

Motor Interests That Would Supplant Street Cars Want Adequate Return —Say They Cannot Be Silenced by Arrogance—Backed by Big Bankers, Including Seligman and Guaranty Trust—One Side Says It Can't Be Done, Other Says it Can

JOHN A. RITCHIE, president of the Chicago Motor Coach Company, was the chief witness at the public hearing called on Dec. 10 by the committee on local transportation of the Chicago City Council to consider the proposal of his company, submitted to the Mayor and the Council on Dec. 8. This proposal, it will be recalled, contemplates that the motor coach company shall be permitted to take over the functions of the Chicago Surface Lines in supplying comprehensive city-wide transportation in Chicago after the expiration of the railway company's franchise next February.

The discussion on Dec. 10 was preliminary and really constituted the first of a series of hearings on the matter to begin Tuesday, Dec. 21. In this series of hearings it is expected that such points as cost of operation, compensation to the city, capital investment, flexiblity of operation, relative speed, capacity of vehicles, existing litigation, economic use of street space, paving, etc., will be taken up.

Adequate Return Wanted

At the preliminary hearing Mr. Ritchie outlined in general the company's plans. He said that as to the whole contract "the city can write its own ticket, so long as we are enabled to earn an adequate return." Little more than the barest essentials of the plan were touched upon, however, and no definite action or results can be expected until after the investigating committee has delved into the matter thoroughly.

Mr. Ritchie's appearance before the committee drew a vast throng of city officials, Surface Lines executives and representatives of the trainmen's union. By way of preface Mr. Ritchie declared that his company's long experience and financial responsibility qualifies it to undertake this great enterprise. Among the bankers who have approved the plan and stand ready to finance it, he mentioned the Foreman Trust & Savings Bank, Chicago, and the Guaranty Trust Company and J. & W. Seligman Company, New York. The discussion at this meeting followed along much the same lines drawn in the letter originally addressed to the committee, but Mr. Ritchie was kept busy answering the questions and criticisms of the none too credulous Aldermen. He seemed undisturbed by the many queries and objections thrown at him by the Aldermen. At the close of the hearing, he conceded that if provision was made for a reasonable return on the investment, the city could write any kind of a franchise and "we will meet your terms."

Mr. Richardson Answers Mr. Ritchie

Some of Mr. Ritchie's arguments in his original proposal were answered by Guy A. Richardson, vice-president of

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the Chicago Surface Lines. He was quoted as follows in the Chicago *Tribune:*

The bus lines so far this year have fallen off 4 per cent in passengers, while the street cars have made an increase of more than 4 per cent. When the novelty wears off the public comes back to the street car the old trustworthy transit, rain or shine sleet or ice, hot or cold.

If buses are to give city-wide service certain things would have to be cared for first. Let me enumerate some of them: greater frequency of buses at ends of lines service at all hours of the day, a greatly increased ratio of rush service to non-rush reasonable head room, pneumatic tires, air brakes for safety, working conditions and wages, heating and ventilating, taxes and street charges for paving. Even the change to pneumatic tires, which would cost 1½ cents a bus-mile, would wipe out the present profit from operation.

If these factors were cared for, as they are by the street car lines, the fare by buses would be closer to 15 cents than 10 cents.

Mr. Richardson discussed the buses in London, which were used as an argument in the proposal of the Motor Coach Company. He is quoted:

Conditions in London and Chicago are not comparable. In London the tramway is the workman's vehicle. He gets a special rate at rush hours. So the buses do not start operating until 8 a.m. and they cut off service, except on main thoroughfares about 8 p.m.

The buses carry the great bulk of the London traffic. But the average ride in London is less than 1 mile, as compared with 4½ miles for the Chicago street cars. They keep hopping on and off in London.

If London buses carried their passengers as far as do the Chicago Surface Lines, London would require three times as many buses as now. London's volume of traffic is on a different basis than there.

They have few private automobiles; traffic is mostly taxis, buses, and commercial vehicles. Tramways are excluded from the old city of London, which is about 12 square miles. The buildings are low, no skyscrapers, the people are more widely distributed, many of them walk to work, they are not centralized as here in the downtown district. Yet last year the London transportation committee curtailed the number of buses on account of the great congestion. So much for London.

Mr. Richardson discussed the Fifth Avenue buses of New York:

The Fifth Avenue Coach Company operates on the finest sightseeing street in the world, yet after 30 years and more as a company it has been able to justify using only about 300 buses in the largest city in the country.

The present speed of buses on Fifth Avenue is less than 4 m.p.h. all afternoon, and between 5:15 and 6:15 p.m., between 32d and 52d Streets it is only 2⅔ m.p.h., or less than a walking gait.

This is not transportation and should be forced off the street to let other fast vehicles have a place. Five subway trains per hour would handle more people than do the Fifth Avenue buses, and at 25 m.p.h. instead of 2⅔. Fancy taking 22 minutes regularly to travel a mile!

The bus company claims it could do the work of Chicago's 3,539 street cars with 4,685 buses. It would be impossible—the load is too high. It would take at least 6,500 buses at a minimum to serve Chicago if paving, street clearances, and so on were arranged so that they could operate.

The price bid by Yellow Coach for such a type bus for Detroit this year was $12,125 without tires. So 6,500 buses at $12,500 with tires would cost $81,000,000. This would represent the investment in buses alone.

The present investment of the Chicago Motor Coach Company, in land, buildings, shops, garages, coaches and equipment necessary for present operation is about $6,900,000. Coaches alone make up about $3,700,000, or about 53 per cent of total necessary investment. The figures are from records on file with the Commerce Commission.

If this ratio holds good, and it should, the total investment needed for a system of 6,500 buses would be about $150,000,000. If there are only 4,700 buses, the total would be at least $110,000,000.

The bus proposal, interpreted by some to mean the wiping out of the entire capital investment of the Chicago Surface Lines without return to the investors, has brought some rather severe criticism. The *Journal of Commerce* said editorially.

The street car lines which Mr. Hertz proposes to supplant are now giving Chicago the best surface transportation of any large city in the world. Of course there is overcrowding and there is straphanging, and some of the motormen and conductors are surly fellows. This, that and the other complaint is true. But the Chicago street car lines are not here being compared with limousines or parlor cars; they are being compared with street car lines in other large cities. And the Chicago street car service is better than that in any other large city.

An enormous number of people are carried at peak hours in the early morning and the late afternoon, and there has to be straphanging just as there has to be a busy signal on the telephone wires at peak hours. The street car public would lose much of its discontent if it could be frequently transported to other large cities in order to experience the service there at the rush hours.

That it would be possible to junk the great surface transportation plant and perform as good a service by buses, does not seem reasonable to the observer.

And yet if it be assumed that all that Mr. Hertz says is true, still there is a moral objection to the junking of the street car lines. There is a plea in equity for the people who have lent many millions of property to give Chicago the best street car system, and whose investment would be destroyed if street cars were abandoned.

Twenty years ago the street car franchises were given. It was then agreed that at the expiration of the franchises on Feb. 1, 1927, the city should have the right to buy the lines at a contract price. Fifty-five per cent of the net receipts was set aside for a traction fund, which would constitute a large part of the price the city would pay for the property.

The obligation now rests upon the city either to buy the property as agreed twenty years ago, or else to permit a continuation of service. Any other course would be an injustice to the investors who twenty years ago, and by means of purchase of bonds since then, have supplied capital which now should either be returned to them by means of city purchase of the lines, or which should be permitted to continue earning returns.

It is unlikely, however, that the moral obligation will be much considered by the City Council. It is one of the axioms of popular philosophy that an investor in a public utility is always a villain, and that every dollar that can be squeezed from him is a dollar laid upon the altar of righteousness. Therefore moral objections to the junking of the street car lines will not count. But practical objections count immensely. Aldermen will be wary about creating a situation in which people who want to go to their work cannot find a way to get there.

MR. RITCHIE ANSWERS MR. RICHARDSON

Officers of the motor coach company were quick to reply to these criticisms. Mr. Ritchie did so in a statement made public on Dec. 13. Another communication was dated Dec. 12. In addition still another statement was made in which some of the reasons were advanced why a city-wide motor coach system "could meet the existing requirements of surface transportation in Chicago better and more quickly than any other form of local service," but in the interest of brevity and avoidance of technicality, other important features were merely mentioned, leaving more detailed consideration to this further letter and "to conferences with your body."

In his statement of Dec. 12 Mr. Ritchie served notice "that we cannot be silenced by arrogance, glittering generalities, and misstatement any more than the people who are suffering because of lack of proper transportation can be silenced by such. The time has passed when deception can triumph." He felt a questioning attitude to be natural, proper and reasonable, but his response to those who said that "it can't be done," namely, furnish a city-wide system to carry all of the passengers now being carried by the street cars, was: "We can do it."

These various communications in behalf of the bus company run to the extent of 24 closely typewritten pages. It is impossible to do more than indicate the scope and the tenor of these statements. Mr. Ritchie replied to several of Mr. Richardson's criticisms and then said that "there would seem to be no reason to analyze in detail the other statements made in the article referred to (the *Tribune* article). It is evident that Mr. Richardson was incorrectly reported or spoke without authoritative data, giving general impressions rather than readily ascertainable facts." At another point Mr. Ritchie said that "whatever opposition modern motor coach service meets is of the kind that was met by the printing press, weaving machinery, great beef-packing plants, elevated railroads, etc., and which always arises to oppose a better way of doing old jobs. Old established interests suffered, but society as a whole is entitled to the fruits of civilized progress."

The general communication, to which reference has been made, says:

A city-wide motor coach system such as we proposed in our letter could, better than any other type of street surface transportation, be co-ordinated with rapid transit lines in Chicago easily, quickly, and without impairment of capital, or the necessity of any large new investment. This can not be said of any other existing type of surface transportation.

The first official confirmation of the plan, to supplant local street car service by putting 4,200 additional buses on the streets of the city was evoked on Dec. 7, when John Hertz, chairman of the motor coach company, held a conference with Mayor William E. Dever for the purpose of obtaining a hearing before the local transportation committee. Representing that such a plan is not only possible but commercially feasible, a letter signed by Mr. Ritchie, president of the company, and seeking to "work out with the committee a complete plan of motor coach transportation for Chicago, which in our judgment, will result immediately in great public advantage," was accordingly laid before the local transportation committee the following day.

The letter of President Ritchie to William E. Dever, Mayor, and the City Council follows:

By reference to the volume published by Al. F. Gorman, city clerk, in November, 1924, entitled "Sundry Proposals and Plans for the Development of Local Transportation Facilities in the City of Chicago," it will be found that on Sept. 24, 1924, we called attention to the fact that the Chicago Motor Coach Company could serve the city of Chicago and its people with greatly improved transportation facilities.

Since that time we have given further study to the subject and are now in a position to work out with you a complete plan of motor coach transportation, which, in our judgment, will result immediately in great public advantage.

Notwithstanding the case now pending in the Supreme Court of Illinois between the city and our company, involving certain legal questions, and having in mind the importance to the city of Chicago of an early settlement of its surface transportation problem, and agreement can be entered into between us which will bring about a prompt solution of the problem. This agreement would be binding on the city and our company, no matter which side is successful in the pending litigation.

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Brooklyn City Employees Receive Safety Bonus

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Left to Right, N. R. Nay, James Prundy, William Preisendorfer, Borough President James J. Byrne, Everett Merrill, Michael Ford and John Walker

Approximately 86.4 per cent of the 2,172 motormen, conductors and safety car operators in the employ of the Brooklyn City Railroad participated in safety bonuses distributed on Dec. 15. This was in accordance with the new plan inaugurated by the company on Aug. 1 of the current year, under the terms of which platform employees receive $5 for each 30 days of work completed without a chargeable accident.

Distribution of the bonuses was made at each of the carhouses with appropriate ceremonies, at which C. E. Morgan, vice-president and general manager of the company, and Borough President James J. Byrne of Brooklyn presided.

Failure to report any accident in which the company's cars may be involved is cause for loss of the bonus by the men responsible. In determining chargeable accidents under the terms of the bonus plan, responsibility on the part of the crew is determined by the management after investigation.

Since the plan has been in operation for a period of only four months during the current year, the maximum bonus which could be earned by any employee was $20. During a full year the maximum amount which can be earned is $60. Nineteen of the 1,876 men participating this year received the maximum amount. Of the remainder, 747 men received awards for three 30-day periods, 727 for two periods and 383 for one.

Summarizing the results accomplished, Vice-President Morgan states that accidents of all types were decreased 35 per cent in the month of October from the total of the corresponding month in 1925 and that this rate of decrease is being maintained from month to month.

We propose giving Chicago a complete installation of modern double-deck motor coaches, serving not only the people now served by the Surface Lines, but extending the installation to localities at present without any service.

The motor coaches to be furnished would be of the most recent design, with the upper decks fully inclosed, so that the full seating capacity would be available at all times of the year under any weather conditions.

We propose to furnish a sufficient number of motor coaches so that during rush hours there would be available 290,000 seats as compared to 156,000 seats now provided by the Surface Lines.

In rush hours, because of increased schedules, approximately eight motor coach passengers out of every ten would have seats, compared with present conditions on street cars where approximately four passengers out of every ten have seats.

During non-rush hours, based on the same schedules as present street car operation, our service would furnish 40 per cent more seats than are now provided by the street car system.

Express or "limited stop" motor coach lines would be installed, furnishing quasi rapid transit service, thus saving large numbers of passengers an appreciable amount of time. This type of service is needed, yet it cannot be rendered by any street transportation agency operating on rails.

By reason of long experience and financial responsibility, we feel qualified to undertake this work, and, therefore, ask that full consideration be given this communication.

The modern large capacity motor coach is a more efficient carrier than the street car, due to the marked improvement in construction in recent years. There has been little progress in recent years in street railway systems; the mileage has failed to keep pace with transportation needs, and the present tendency is to avoid adding new mileage. The motor coach, on the other hand, is expanding and interesting the best engineering, economic and financial thought of the country.

The art of motor coach design and construction has developed to the point where mass transportation can be adequately handled by the motor coach. The motor coach has already demonstrated in actual service in London its ability to handle large masses of people, notwithstanding that the type of motor coach used is less in carrying capacity than the type we propose to use.

In London, in 1925, an average number of 5,500 motor coaches, with an average seating capacity of 47 persons, carried 1,671,000,000 passengers, or more than were carried by any other facility in that city; more than were carried by all street car and motor coach systems in Chicago; more than were carried by the entire Interborough Rapid Transit Company's system of subways and elevated railroads in New York City; and nearly twice as many as were carried by all of the steam railroads of the United States together, as reported by the Interstate Commerce Commission. This is mass transportation!

For the proposed city-wide operation in Chicago, the fully-inclosed, double-deck coach will seat 62 passengers and will be designed to accommodate comfortably a small number of standing passengers on the lower deck. The question of increasing the carrying capacity of the motor coach for the accommodation of a reasonable number of standees is a simple engineering matter.

In Chicago the street cars have an average seating capacity of 44, and, in rush hours, carry more standing that seated passengers.

The Surface Lines in Chicago could not carry passengers at present cost except for the large standing loads.

On the proposed system, 134,000 more seats would be provided than are now available on the Surface Lines, with only a small standing load.

In the proposed motor coach system, approximately 80 per cent of the investment would go to provide motor coaches and 20 per cent for garages, repair shops and working capital; while on the Surface Lines only 21 per cent of the investment is in street cars and approximately 79 per cent in other items, only a small part of which is for car barns and shops, the major portion being for track construction, overhead electric system, power plant equipment and other items not needed for motor coach operation.

The total capital investment for the proposed city-wide motor coach operation in Chicago would be less than one-half of the present value of the Chicago Surface Lines as reported by the Board of Supervising Engineers.

The length of the average ride per passenger on the Surface Lines in Chicago is about 4 miles. On the present motor coach system, operating largely on the boulevards, the average ride per passenger is about 6 miles.

The larger volume of business, the flow of traffic to and from the large number of business and industrial centers throughout the city, the large amount of two-way riding, the shorter average ride, together with other factors, all incidental to a city-wide operation, account materially for the difference in the present motor coach and street car fares.

Considering the lower investment and other elements as now existing making up the cost of carrying a passenger, with the advantages incident to a city-wide operation, the cost of carrying a passenger on the proposed city-wide motor coach installation would, under reasonable terms, be approximately the same as that on the Surface Lines.

The cost of street car operation per mile operated is 34.03 cents, and the cost of motor coach operation under our proposed plan would be 34.92 cents.

The trend of public thought in Chicago is toward co-ordination of all local transportation systems. There is also a public demand for additional rapid transit in order that a larger number of our people may enjoy its benefits. The proposed motor coach system lends itself to a co-ordination with rapid transit more readily than any other form of surface transportation.

We favor early co-ordination with rapid transit and stand ready at all times to co-operate to obtain it.

The flexibility in operation of the motor coach makes it possible to rearrange routes in such a way as to bring the people in contact with rapid transit without the delay and expense incident to reconstruction of surface lines.

Such readjustment by the motor coach can be made without impairment of, or increase in, invested capital, which cannot be said of any other transportation agency.

There are many factors which make motor coach transportation desirable in Chicago, touched upon generally in this letter, and which will be further elaborated in detail in personal conference with your transportation committee.

Less street congestion—the total street area covered by 3,539 street cars in operation is 1,443,912 sq.ft. and the total street area covered by 4,685 motor coaches in operation (the number proposed under our plan) would be 1,124,400 sq.ft., a saving in street area of 319,512 sq.ft., or 22 per cent.

No street car tracks, with the accompanying tearing up and laying down.

No trolley poles or overhead wires.

Motor coach service reflects the modern tendency for quality in matters of business and recreation. It provides safe, smooth, comfortable and healthful transportation.

The motor coach is readily adaptable, without material initial expense, to any development of Chicago's comprehensive plan of civic improvement.

No long construction period required. We estimate that a substantially complete service could be ready in six months.

We can install a complete system on the basis of a twenty-year term.

It is the most comfortable city transportation offered the public.

Faster movement through congested traffic.

The breaking down of a motor coach does not delay other motor coaches.

Wire and power house troubles are absent.

Disabled vehicles and other obstacles can be readily passed.

Deviation may be made from regular routes in case of fire, accident, parades, etc.

Fewer accidents, since coaches stop near the curb. The curbs stops make for greater safety, particularly in the transportation of children to and from schools and elsewhere.

Quieter operation.

Advantages to the city's popularity in showing visitors the city under the best transportation conditions.

Whenever it appears to the Illinois Commerce Commission—which, under existing law, has jurisdiction of our service—that

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the public will be best served by the carrying out of our plan, we believe that its members will aid in such development and consummation.

The subject of fares, transfers, period of contract, capital investment, extension of routes, the right of the city to acquire, compensation to the city for the use of streets, and many other factors necessary to consider, are matters which have received our thought and attention. We are desirous of conferring with you to work out a plan which will meet with public favor.

Transit Survey in San Francisco

The city supervisors of San Francisco have adopted a motion appointing a joint committee of finance and public utilities committee "to survey and study problems of transportation in this city and county, with particular consideration of early expiration of important street railway franchises, and report recommendations for acquisition of all privately owned street railway lines in operation here and efficient consolidation of such lines with the Municipal Railway." The resolution relates to the important Market Street Railway franchises which the city claims expire in two years and the company in four. The joint committee is empowered to appoint a citizens' advisory committee.

Seattle in Crisis

Taxpayers Who Maintain Interest in Municipal Railway See Affairs of Road Hopelessly Involved—Mayor Favors Refinancing and Would Buy More Cars

UPON request of S. B. Asia and the "fourteen taxpayers" who have maintained a lively interest in the affairs of the municipal railway at Seattle, Wash., City Comptroller H. W. Carroll has furnished data which Mr. Asia says show the lines to "have reached a crisis financially." Although $4,236,500 has been paid on the bonded debt, accrued depreciation is estimated to total $4,794,688. Mr. Asia also points out that the railway's financial dilemma is further aggravated by the fact that it went on a warrant basis on Dec. 10 to pile up funds to meet approximately $1,150,000 in bond principal and interest due on March 1.

Mr. Asia further points out that the railway must reimburse the Puget Sound Power & Light Company to the extent of $600,000 for taxes paid on railway property for the year 1919 and interest, together with court costs. He states this liability will increase the deficit from $769,427, the amount now recorded, to more than $1,300,000.

As for the accrued depreciation amounting to $4,794,688, for which no sinking fund provision has been made, this is declared to mean that when the useful life of the plant is ended there will be no funds to replace it, because the laws of this state prohibit the issuance of bonds for replacement purposes. Mr. Asia said:

> I maintain that it is the height of folly to assume that the railway is making good when the facts are that there is a large deficit, or excess in liabilities over assets in the railway fund, and that this deficit is increasing daily. While bond installments are being paid, working capital on hand is diminishing each year as the deficit grows, and no funds are being laid aside for replacement of plant.

MR. ASIA'S SEATTLE SUMMARY

Date	Deficit	Surplus
April 1, 1919 (5c. fare)..	$70,453.82	
April 1 to Dec. 31, inc., 1919 (5c. fare).....	507,425.92	
Year 1920 (5c. and 6½c. fares).....	1,236,283.60	
Year 1921 (6½c. and 8½c. fares).....		$226,588.29
Year 1912 (8½c. fare)...		710,083.95
Year 1923 (5c. and 8½c. fares).....	107,868.14	
Year 1924 (8½c. fare)...		369,430.78
Year 1925 (8½c. fare....		25,746.01
Year 1926, first nine months (8½c. fare)...	179,244.67	
	$2,101,276.15	$1,331,849.03
Net deficit September 30, 1926.....		769,427.12
	$2,101,276.15	$2,101,276.15

On the other hand, Finance Chairman E. L. Blaine of the City Council, pointed out that on Dec. 31, 1920, the city railway fund had a deficit of $2,100,537 brought over from Division A and growing out of the first 21 months of operation on an inadequate fare. Five years later, on Dec. 31, 1925, this deficit had been reduced to $590,182, a total reduction of $1,510,354, he states.

On Dec. 31, 1920, bonds to the amount of $17,315,000 were outstanding. Five years later this had been reduced to $14,299,500, a net reduction of $2,915,500, despite the issuance of additional securities between these dates, Mr. Blaine claims. The actual payment on bonded indebtedness during this period was $4,846,191.

In addition to the above decrease of $1,510,354 in the deficit, according to Mr. Blaine, and the net reduction of $2,915,500 in the capital investment, the system paid $5,606,000 in interest, making a total payment of $10,031,854 over and above all operating, maintenance and other overhead expenses. He said:

> I submit that this is a pretty good showing for a business that is approaching bankruptcy. All this has been accomplished in spite of persistent attempts to discredit the system on the part of those agencies in the city which should be interested in building up rather than tearing down the industries of the city and whose very existence is dependent upon adequate transportation being furnished our citizens.

Just prior to the announcement by the Clearing House of Seattle that it would refuse to cash railway warrants, Mayor Bertha K. Landes issued a statement on the railway situation in which she made the following three recommendations:

1. The railway system should be refinanced.
2. Economies in operation should be adopted.
3. Revenues should be increased by improving service, principally by the purchase of 80 new street cars.

The Mayor added that she wished to confer with the chairmen of the finance and the utilities committees of the Council on refinancing of the lines. The Mayor was quoted as follows:

> Increasing revenues are a very necessary factor in solving the problem of even reasonable financial stability for the system. The only way to increase revenues is by speeding service and creating more express routes for the outlying districts.
>
> The way to do that is by buying the 80 new street cars. I feel like urging you to consummate this deal quickly if our interests can be quickly taken care of, bearing in mind that the proposed cars are a vital part of the new program for successful operation of the railway.

On Dec. 10 the city of Seattle cashed the payroll warrants of more than 2,000 railway employees. Two days before the payrolls were due the Clearing House had refused to cash the municipal railway warrants. Finally, Mayor Bertha K. Landes and members of the City Council arranged for a loan of the necessary funds from the city light department. It was found that the city light department has on hand about $1,200,000 in cash, and the water department fully half as much representing proceeds of bonds sold for construction work. By borrowing from the fund, it was pointed out, the railway is helped and the light department will profit, for the railway warrants bear 6 per cent interest. Before this plan was made public, the Mayor received an offer from Rhodes' department store to cash the $130,000 of railway warrants.

In a belated effort to meet the emergency, members of the City Council advanced two proposed plans for refinancing the railway. Of the two refinancing plans favored, one is to induce the Stone & Webster interests, from whom the railway was taken over, to grant an extension of time on the railway purchase bonds; the other is to issue long-term refunding bonds sufficient to pay off the present bonds. At the present time the city pays $833,000, annually on the principal. This sum with interest brings the payment to approximately $1,500,000. If the bondholders are willing to grant an extension of time, to permit a payment of not more than $500,000 annually, E. L. Blaine, chairman of the City Council finance committee, states the line could be made to pay.

If the refunding plan is attempted, the city must first go to the Legislature for authority to float such an issue. The city owes approximately $10,835,000 on the $15,000,000 purchase. It would be necessary, therefore, to issue $10,835,000 in refunding bonds to pay off the present outstanding bonds. The refunding bonds, so Mr. Blaine pointed out, would be on a 50-year basis.

LEGISLATIVE AUTHORITY NECESSARY

In the meantime the Council expects to adopt suggestions of D. W. Henderson, superintendent of the railway, that will further reduce operating expenses. The changes affect nearly every car line in the city and will result in an estimated annual saving of $300,000 in operating costs. The plan contemplates speeding up of service by rerouting lines through the downtown district to reduce congestion. The basic idea is to make street car riding more attractive by more frequent service, chiefly through the operation of loop cars during the early morning and late afternoon rush periods. Except in one or two minor instances, no curtailment of service is proposed. Unlike the plan proposed by Clark R. Jackson, superintendent of the public utilities department, Mr. Henderson's program does not call for looping back of all North End and Capitol Hill car lines at Pike Street. Mr. Henderson estimates that the saving in operating costs due to rerouting will be $156,364 a year, without any reduction in regular service.

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Increased Rates in Petersburg Sought—Buses to Operate

The Virginia Electric & Power Company recently filed a petition with the State Corporation Commission for a general increase in transportation rates in the city of Petersburg, Va. The case has been set for a hearing on Dec. 21. It is stated in the petition that the company is planning to start the operation of buses in Petersburg on Jan. 1, 1927, in connection with its railway system. The company asks that the following fares become effective on that date over its railway and bus system in the Petersburg division: Cash fare, 7 cents; tokens, four for 25 cents; school tickets, 3½ cents. There will be no charge for transfers. Rates in force at present are: Cash fare, 6 cents; tokens, five for 25 cents, and school tickets, 2½ cents.

The company further declares that it plans to operate buses under an ordinance passed by the Petersburg City Council on Nov. 16 containing regulations for bus operation in that city. It also plans to replace railless cars on Sycamore Street with buses.

More Pay for Employees, Says Paper

The San Francisco *Chronicle* of recent date stated that the finance committee of the Board of Supervisors paved the way for an increase of 40 cents a day for clerks, car repairers, trackmen and janitors employed by the San Francisco Municipal Railways, San Francisco, Cal. This was accomplished by transferring $50,000 from the 1926-1927 budget to reimburse the city lines for funds borrowed to aid in constructing the Twin Peaks and Stockton Street tunnels. Chairman McSheehy pointed out that all of the $50,000 would not be used in meeting the proposed pay increases, but would guarantee the road against a deficit. Wages now received by the employees are as follows: Clerks, $185 a month; trackmen, $5.40 a day; car repairers, $6.40, and janitors, $145 a month. Several hundred will be affected by this change.

No Accident Bonus Plan Announced in New Jersey

As an additional incentive to careful driving on the part of car and bus operators, the Public Service Railway and the Public Service Transportation Company, Newark, N. J., on Dec. 3 put into effect a "No Accident Bonus Plan."

Under the plan $1 will be credited to each operator for every week of the fiscal year in which his accident record is "clear"; that is, in which no accidents are charged against him. The first bonus will be paid him in a lump sum on or about Dec. 15, 1927, and each year thereafter, so that it will provide a welcome Christmas fund. If the operator's record is clear for the entire fiscal year he will receive $60 instead of the $52, to which he would be entitled under the letter of the offer.

A continuing record for each reporting operator will be kept in every carhouse and garage from which cars and buses are operated. Especially constructed blackboards will be used for this purpose. They will carry the name of every operator reporting at that particular carhouse or garage. For every week of the current month in which he has had no accident a white star will be placed opposite the operator's name and a red dot, red to indicate danger, for every week in which one or more accidents are charged against him. A cumulative record of white stars, red dots and bonus earned will also be kept for every man.

In addition, at the expiration of the year, the name of every operator who has gone through the twelve months with no accidents will be permanently painted on the board, the list constituting the house or garage honor roll.

"L" Rent Put at $900,000

The proceedings before the Pennsylvania Public Service Commission on Dec. 10 on the matter of an "L" rental were adjourned by Commissioner Benn. Counsel for the Philadelphia Rapid Transit Company and protesting parties were instructed to file briefs and prepare to argue the case not later than February, 1927.

The outstanding testimony of the hearing was that of ex-Service Commissioner Scattergood, who stated that the Philadelphia Rapid Transit Company could operate the city-built Frankford elevated line at a substantial profit and still pay the city a flat rental of $900,000 a year during the 30-year term of the proposed lease. He based his analysis of the earning capacity of the Frankford road upon figures submitted by the company. He said that proper consideration of the increased earnings through short-haul traffic on surface lines in the northeast section, due to the elevated operation, would establish the city's line as a consistently profitable utility.

Coleman J. Joyce, chief of the Rapid Transit Company counsel, objected to Mr. Scattergood's testifying as an expert, but was overruled by Mr. Benn, who said that the witness was as fully conversant with utility matters as any man on the bench. At the conclusion of the hearing, the commission instructed W. K. Myers, president of the railway, to forward his estimates of the rentals due the city each year in the proposed lease. That exhibit, which the Philadelphia Rapid Transit Company officials declared would differ materially from the figures submitted by City Comptroller Hadley, will be open to rebuttal by the protesting parties.

Pittsburgh Trainmen Receive Increase of 1½ Cents an Hour

At its regular meeting on Dec. 7, the Pittsburgh Traction Conference Board approved the item in the Pittsburgh Railways budget for 1927 which included the increase of 1½ cents an hour in the rate of pay of trainmen, effective Jan. 1, 1927. The contract with the men does not expire until May 1, 1928. As was stated in the ELECTRIC RAILWAY JOURNAL of Dec. 11, page 1062, the increase is considered economically sound because of the many economies the men have instituted or helped to put into effect.

New Rates in Knoxville

The Tennessee Public Utilities Commission has approved a new schedule of rates on the lines of the Knoxville Power & Light Company, Knoxville, Tenn., effective Jan. 1. It provides for selling six tokens for 30 cents, a weekly pass good for any number of rides for $1.25 or 10 cents a ride for all who do not have tokens or passes.

Another Move in Jacksonville Franchise Issue

A tentative franchise for the Jacksonville Traction Company, Jacksonville, Fla., is to be prepared and submitted to the laws and rules committee of the City Council and the citizens' committee, from which a new bill of privilege is expected to be procured. This decision was made at a joint meeting of the two committees held in the City Hall on Nov. 30. A series of meetings is to be held, in which J. P. Ingle, manager of the company, will participate. It was his belief that the franchise, after it is prepared, should be submitted to the voters to decide. He announced that the company plans to spend $750,000 on extensions and improvements to the service if a proper franchise is granted by the city.

Radial Agreement Submitted

The draft agreement between Toronto and the Ontario Hydro Commission for the transfer to the former of the Hydro radials was submitted to the board of control by the City Solicitor on Dec. 1. Objection was taken by the board to one clause providing that any property of the Toronto & York Radial Railway, which is not being transferred by the agreement, be still in the name of the Toronto & York Radial Railway. The city will deliver to the commission such conveyances, transfers and bills of sale as may be necessary to vest in the commission all property not being transferred by the agreement and which shall then be in the name of the Toronto & York Radial Railway.

It was suggested that the foregoing clause be taken up with the commission to have the agreement before the City Council with the agreement transferring the property to the Toronto Transportation Commission.

The agreement states the original purchase price and the amount spent in rehabilitation of $2,375,000 and $1,200,000, respectively, but leaves blank the further amounts to be paid by the city. The commission will secure cancellation of the $1,200,000 bonds issued by that body, the city taking over the liability and leaving, finally, only $2,375,000 bonds for the purchase, issued by the commission for the redemption of which the city will be responsible. The commission will hold the city's bonds to this latter amount as security for payment. The commission will continue to supply power at rates charged to similar enterprises with an indemnification of the city against loss. A complete transfer is provided for and a single arbitrator will adjudicate on any disputes arising in the future.

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Philadelphia Rapid Transit Within Its Rights

Much has been said in the newspapers of Philadelphia in the last ten days about the inadequacy of the service furnished by the Philadelphia Rapid Transit Company on its surface lines. One of the charges is that a deliberate effort is being made to promote the use of the more costly cabs at the expense of the trolley service. In consequence the *Ledger* has reminded its readers:

> In all consideration and discussion of transit service at this time of peak loads, due allowance must be made for the difficulties the company encounters during bad weather. It is admittedly hard to maintain schedules when ice and snow block the tracks.
>
> It must also be remembered that the traction company is within its rights in urging the use of its cabs. It is not within its rights if it is promoting the use of its taxicabs by curtailing car service at the expense of the regular car riders.
>
> The P. R. T. protests that this charge is both unfair and unfounded. Nevertheless, thousands of Philadelphians have the impression that it is true. It has been made for weeks by city and suburban car users. It should be the first business of the P. R. T. to eradicate that impression.

Traffic Jams May Require Rerouting

Rerouting cars of the Birmingham Electric Company as a means of eliminating congestion in the down-town district may become necessary in Birmingham, Ala., according to Ross W. Harris, traffic expert in charge of Birmingham's traffic survey. As a result of the recent rapid growth of the city the down-town streets are very badly congested. Mr. Harris will require a number of months in completing his survey and will then offer a solution.

Modified Franchise Recommended in Kansas City

The special franchise committee of the City Council of Kansas City, Mo., at a meeting held on Dec. 11, recommended a modified franchise, providing an income of $2,000,000, based on 8 per cent earnings on a valuation of $25,000,000. The modified franchise recommendation will be submitted to the Council immediately, although action probably will not be taken before Dec. 20. William G. Woolfolk, president of the new company, agreed in principle with the report, and representatives of the railway will act with the committee when a committee is chosen later to work on the actual draft of the franchise document.

The recommended franchise, which is for 30 years, provides that when the earnings of the company exceed 8 per cent, reductions are to be made in the ticket fare at the rate of ½ cent for each $100,000 gain in the net annual income. The fare at present is fifteen tickets for $1. An expenditure program of $6,600,000 is required, half in rehabilitation and half in new improvements and extension. An 8 per cent return will be allowed on the money spent for improvements.

It is recommended that the street railways in both Kansas Cities shall be operated as one system, including uniform and universal fares and transfers. The city will have two members on the company's board of directors instead of five, one of whom will be the city railway commissioner, who will have the power to determine what part of the expenditure shall be classified as repairs and what as improvements.

It has been pointed out by lawyers in Kansas City, Mo., that the proposed franchise is really not binding but is a "gentlemen's agreement," the Missouri Public Service Commission having the final control.

News Notes

Answers Filed in Fare Action.—Counsel representing the cities of Niagara Falls and North Tonawanda and the village of LaSalle has answered the equity action brought in the United States District Court at Buffalo by the International Railway, Buffalo, N. Y., seeking to restrain the municipalities through which it operates local and interurban lines from interfering with the collection of a proposed new tariff of higher fares. The action also names the New York Public Service Commission as one of the co-defendants. The three municipalities which have replied to the equity action deny the present rates are confiscatory. They also say the federal courts have no jurisdiction and that the fare question rests with the Public Service Commission.

Hears Fare Petitions.—Commissioner Van Voorhis of the Public Service Commission conducted a hearing on Dec. 15 on the petitions of the Black River Traction Company and its subsidiary, the Watertown Transportation Company for permission to increase fares in Watertown and to discontinue the sale of round-trip tickets between Watertown and Glen Park for 15 cents. Evidence was presented showing a loss of $12,996 in the operation of the traction company in 1925 and a profit of but $588 in bus operation and that about the same result was expected in 1926. The city of Watertown waived the fare restriction of the franchises granted these companies and on March 21, 1921, permitted a 7-cent fare. On March 15, 1926, application was made for an increase to 10 cents or seven tickets for 50 cents, which was granted Oct. 18, 1926, subject to the approval of the commission. There was no opposition to these petitions.

Campaign Urges Patrons to Buy Tickets.—The Georgia Railway & Power Company, Atlanta, Ga., is making a drive to induce patrons to buy tickets by the week. Through different advertising mediums it urges the purchase of a "dollar's worth" of convenience. Patrons are urged to hand the conductor a dollar bill and get fifteen car tickets in exchange, or, better still, to buy a week's supply from the street conductor or at any of Jacob's stores before boarding the car. In other advertising matter the company says: "Buy your week's supply of tickets and forget about fares for the rest of the week. It's budgeting street car expenses just like you budget the rest of the items in your daily life." It is hoped that this campaign on the "dollar's worth" tickets will result in material increases in sales.

Would End Skip-Stop System.—An effort is being made to have the City Council of Baltimore, Md., take part in a campaign being waged by some organizations and individuals to end the skip-stop system that has been placed in operation during the morning and evening rush hours by the United Railways & Electric Company. One of the members of the Council has introduced a resolution which requests the Maryland Public Service Commission to order the railway to discontinue this plan of operation. The resolution makes the claim that the skip-stop is "a great inconvenience to the general public and has done little to speed up traffic."

Wage Agreement Effected. — The Montreal & Southern Counties Railway, Montreal, Que., has concluded an agreement with its trainmen for three years, effective as from Sept. 1. Trainmen in passenger, baggage, express and work car service will receive 45 cents an hour for the first year; 49 cents for the second year; 50 cents for the third year and 52 cents for the fourth year. Conductors and motormen in freight and snow plow service will receive 50 cents for the first year; 52 cents for the second year; 54 cents for the third year and 55 cents for the fourth year. The rates were recommended in the majority report of the board of conciliation and investigation appointed to consider the dispute between the management and employees.

Elimination of "Death Crossing" Expected.—The elimination of "Death Crossing" on the Illinois Traction System west of Edwardsville, Ill., where eleven persons have lost their lives during the past four years, was brought a step nearer when a jury in the Madison County Court fixed an award of $1,500 as the amount to be paid the Tetherington estate for land needed by the Illinois Division of Highways to construct the southern approach to a viaduct to eliminate the grade crossing.

Higher Fares Increase Receipts.—Cash fares received on the Municipal Railways of St. Petersburg, Fla., on the first day of operation under the 7-cent rate showed an increase of approximately $240 over those on the last day of the 5-cent limit. No definite comparisons could be made, it was stated, until the 12,000 tokens sold at the old rate and now being used by patrons were returned. The total receipts of the municipal railways on the first day of the month, when the 7-cent fare went into effect were $1,070 in cash fares; $67 in token sales; $118 in school children's tickets and $175 in cash fares on the buses, in addition to transportation of 65 passengers on tokens and 204 school children.

Greetings and Party in New Brighton.—The Beaver Valley Traction Company is giving its Sixteenth Annual Christmas Party on Tuesday, Dec. 21, at Junction Park, New Brighton, Pa. On a Yuletide greeting card, the invitation is forwarded for a good time to be had from 7:30 to 1. A Christmas party in New Brighton is part of the tradition of the company.

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Recent Bus Developments

Fare Readjustment Sought

New Jersey Company $1,600,000 Behind on Operation of Bus Subsidiary —Seeks Traffic Changes

Readjustment of fare zone limits on ten bus lines, five in Newark, calling for an additional fare where a city line is crossed, and a fare zone change on the Bloomfield trolley line are provided in a schedule filed on Dec. 15 by the Public Service Railway and Public Service Transportation Company, Newark, N. J., with the Board of Public Utility Commissioners to become effective on Jan. 1.

PRESIDENT MCCARTER STATES THE CASE

The petition is signed for both companies by Thomas N. McCarter, president. It declares that "the problem to be decided by the board representing the public and the companies is whether fares should be immediately increased sufficiently to make these properties self-supporting, or whether other measures should and will be undertaken either to make a fare increase unnecessary or to lessen the amount of any necessary increase in fare."

The readjustment of zones, with the attendant increase in fares to a considerable number of riders, is only one of several measures suggested by the companies for eliminating the financial troubles connected with the operation of the transportation system in the various sections of the State. These included a further and more completely co-ordinated service; relieving the company of paving obligations; relief from charges for snow removal, street sprinkling and oiling; better regulation of traffic; institution of a better type of bus service; a reduction of taxes.

Five of the lines are in Newark and five outside the city. On the Newark routes a 5-cent fare has been charged, regardless of the fact that the end of the line was beyond the city limits. Under the proposed rate a 5-cent fare would be collected from passengers riding to the city limits and an additional 5-cent fare from all those riding beyond. Other lines affected similarly are those between Elizabeth and Roselle and between Paterson and Hawthorne. On lines between North Newark and Passaic and between Elizabeth and Kenilworth the fare for through passengers would be increased from 10 to 15 cents.

RAILWAY TAX COLLECTOR FOR PUBLIC

A statement made by the companies says in part:

In New Jersey the railways are practically tax collectors for the public, the riders on the car paying the taxes. These companies pay a franchise tax of 5 per cent of their gross receipts. In addition, they pay local taxes on real estate and personal property, the railway paying a gross receipts tax at the average state rate in lieu of its tax on personal property. These, of course, are in addition to federal taxes. Such high taxes are not assessed against any business in the country other than utility companies. These two companies are paying taxes amounting to approximately $2,740,000 a year.

All passes and reduced rate tickets of every kind and description should be abolished. If the rates charged permitted the companies to earn the full cost of service, passes and reduced rate tickets might be favored on the ground of public policy. But while these companies are attempting to maintain the 5-cent fare, which experience has shown to be too low a fare to provide the full cost of the service, losses should not be increased by carrying a certain class of passengers at a still lower rate of fare or for nothing.

All the above measures are in the public interest but cannot be made effective without the assistance and co-operation of the public authorities. They must be effective before the public can obtain the benefit of a completely co-ordinated and unified system of local transportation. Their adoption furnishes the only hope of supplying the public proper and adequate service at the lowest rates of fare consistent with such service.

When the railway instituted the 5-cent fare experiment at the request of the board, the company had filed a 10-cent rate. A higher fare than at present obtains is justified by experience, not only here but generally throughout the United States. The fare on buses in New York City and Philadelphia is 10 cents. The railway fare in most other places throughout the country is higher than that charged by this company, the average throughout the country being 7.7 cents. In New York City where the fare is 5 cents, a substantial part of the cost of operation is provided through general taxation.

Attention is then called to the fact that since the inauguration of the 5-cent fare the railway has failed to pay operating expenses and fixed charges with no return upon the money invested in the railway company by Public Service Corporation of New Jersey, and that Public Service Transportation Company has failed to earn operating expenses and fixed charges during this same period by more than $1.600,000. "Neither the board nor the public can expect this state of affairs to continue," declares the petition.

Ordinance Would Protect Louisville Railway

A direct result of the announcement on Dec. 6 of the plans of the Peoples Transit Company to establish a bus line on Broadway, Louisville, Ky., in competition with the Louisville Railway has been the introduction of a regulatory ordinance before the City Council. This measure would bar buses and jitneys from streets containing car lines, or streets paralleling car lines for a distance of three blocks to each side, thus giving the traction company protection along its own line and closing adjoining property served by the line. The proposed new ordinance would also place restrictions on bus companies, regarding the amount of insurance, bond or similar protection that would have to be given the public, as protection against personal injury and property damage.

No action is expected on the ordinance until the latter part of the month. In the meantime it is understood that the new bus company is getting ready to start service directly. The new line is to use Mack buses, at least on its first unit installations.

Twin City Operation Explained

President Lowry Tells the Story of Co-ordinated Service Before Local Real Estate Board

Street cars will never be superseded by bus lines, says Horace Lowry, president of the Twin City Rapid Transit Company. He was speaking before the Minneapolis Real Estate Board, Minneapolis, Minn., on Dec. 9 in the first official review of the operation of railway and bus lines by the Minneapolis Street Raliway and the Twin City Motor Bus Company. This last-mentioned company, an auxiliary, has two crosstown bus lines connecting intersecting trolley lines on Lowry Avenue and 38th Street and a gas-electric bus line supplementing trolley service on Nicollet and Hennepin Avenues.

Mr. Lowry said that the present rate of railway fares in the city yields just about the 7½ per cent return authorized by the Minnesota Railroad and Warehouse Commission. These rates of fare, 8 cents cash and six tokens for 40 cents, amount to an increase of 13 per cent over the old rate, which was 6 cents flat. On the other hand, passenger traffic has decreased 8 per cent, but fewer automobiles are entering the heart of the city than a year ago.

The bus lines have been operating only a few weeks. The gas-electric line does not compete with the railway. It is showing a profit at a 10-cent fare. Receipts of the crosstown bus lines, run at the same fare as the trolleys with transfers, are not yet up to operation cost. The gas-electric line, without transfers, is taking in about 38 cents a bus-mile on an operating cost of about 25 cents. The crosstown lines are operating at about the same cost, the Lowry Avenue line returning 13.1 cents a bus-mile and the 38th Street line 20 cents.

In Minneapolis the street cars bulk about 18 per cent of the vehicular traffic but carry 76 per cent of the travelers.

In prospect for 1927 is a line across the new Ford bridge connecting the two cities over the Mississippi River and two car lines now reaching to the bridge in either city. Eventually there will be another crosstown line on 42nd Street, the farthest south now being Lake Street.

Proposed bus service for what is known as the Bryn Mawr line extension into a part of the city now being developed seems remote as the park board desires to collect a fee for the use of the parkways to compensate for the additional burden on the roadways from operation of buses. Mr. Lowry said this had been found impractical by the state commission as it would permit any town to levy taxes on buses passing through and would upset the entire state rate structure in the present system of state licensing of buses

Bus Lines Authorized.—The Public Service Commission granted a certificate on Dec. 14 for the operation of bus lines in the city of Rochester and the town of Gates, Monroe County, to the Rochester Railways Co-ordinated Bus Lines, Inc.

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Another Bus Proposal for Buffalo

Ernest M. Howe of Detroit, whose 5-cent bus plan in Buffalo collapsed last spring, has outlined to Mayor Frank X. Schwab a proposal for the operation of a fleet of 25 buses in Buffalo over three lines at an 8-cent fare. In his statement giving publicity to the new Howe bus proposal, Mayor Frank X. Schwab of Buffalo said that the American Car & Foundry Company had notified him that it would finance the new bus lines in Buffalo for Howe and his associates, who will operate under the name of the Buffalo Bus Corporation.

Sufficient capital to start the operation of 25 buses on three lines in Buffalo has been secured and Mr. Howe and his associates have indicated their willingness to post a bond of $25,000 to insure the city that they will carry out every detail of the new plan to operate buses in competition with the local lines of the International Bus Corporation, a subsidiary of the International Railway, both of which are under Mitten Management of Philadelphia.

Application will be made to the City Council by Mr. Howe and his associates for a franchise on the three proposed lines and then the application will be taken before the Public Service Commission for the necessary approval. One of the largest makers of buses, it was stated by Mayor Schwab, will lend its financial support to the Howe plan and will appear before the state utilities board in support of the 8-cent bus lines. The International Bus Corporation charges a 10-cent fare on its three local lines in Buffalo.

Bus Plans for Suburban New York Maturing

The County Transportation Company, Inc., Port Chester, N. Y., petitioned the Public Service Commission on Dec. 10 for a certificate for the operation of bus lines in the village of Port Chester and the town of Rye, Westchester County. The routes indicated are from Liberty Square to North Main Street, Putnam Avenue, North Regent Street, Irving Avenue, Breckenridge Avenue, Fairview Avenue, Monroe Place and Westchester Avenue, returning to Liberty Square and also from Liberty Square to Westchester Avenue, South Regent Street, Boston Post Road and South Main Street to Liberty Square.

Negotiations have been under way for some time between the trustees of the village of Port Chester and the railroad as to the operation of railway and bus lines and public hearings were held on Nov. 1, 9 and 15. As a result the board of trustees adopted a resolution on Nov. 15 consenting to the abandonment of railway lines and the substitution of buses therefore. The resolution provides in addition for an annual payment to the village of 3 per cent of the gross receipts of the entire routes, that operations will begin within 60 days after a certificate has been granted; that present equipment is to be removed from the streets; that the fares will never exceed 10 cents with transfer privileges, and that the franchise will be for ten years from the date of certificate issued by the Public Service Commission.

The County Transportation Company, Inc., also filed a petition with the commission for authority to issue 250 shares of its capital stock of the aggregate par value of $25,000 and petition was also made by the New York & Stamford Railway for authority to purchase the Transportation Company stock and to pledge it as collateral security. Hearings will be held on the three petitions.

Transfers with Railway Suggested in St. Louis

The People's Motorbus Company of St. Louis, Mo., through its attorney, Robert Burkham, on Dec. 2, offered to work out with the United Railways a plan for interchange of transfers from the Kingshighway route of the bus company to and from the various street car lines connecting with it. The offer was made at a meeting of the rapid transit committee of the Board of Aldermen. It meets a suggestion contained in the Rapid Transit Survey recently made public by E. R. Kinsey, president of the Board of Public Service, and C. E. Smith, consulting engineer for St. Louis. Mr. Smith, who favors co-ordination of bus and street car service, declared the suggestion if adopted would be "one of the most important events in the transportation history of St. Louis."

Col. Albert T. Perkins, general manager of the United Railways, has declined to comment on the suggestion until he has had an opportunity to study it. The United Railways is in receivership and under the rules of the federal court, which has jurisdiction, the receiver is not permitted to accept less than the regular fare fixed by the Missouri Public Service Commission. The present car fare is 7 cents, while the bus company charges 10 cents. Under a split fare plan the bus company would have to accept 3 cents as its share of co-ordinated service unless the federal court should approve some other division.

East St. Louis Railway Buys Business—Ends Dispute

Sale of three of the four buses operated by the Herzog Motor Transport Corporation of Edwardsville, Ill., to the East St. Louis & Suburban Railway, East St. Louis, has been announced. Until recently the Herzog line operated the buses between Edwardsville and Glen Carbon, but was enjoined by the Circuit Court from further operations on complaint of the railway. The bus company had failed to obtain a certificate of convenience and necessity from the Illinois Commerce Commission, although the bus line was several years old. The sale of the buses is believed to have ended the dispute. The railway proposes to operate a bus line between the two towns, while F. W. Herzog, president of the motor corporation, will charter his single remaining bus to special parties, without a fixed schedule. He does not need a state certificate to use a bus in that manner.

Another Promise on New York Bus Matter

Mayor Walker of New York said on Dec. 13 at a meeting of the Board of Estimate that he expected the board to agree on the award of bus franchises, 116 applications for which are pending, not later than Jan. 15. The Mayor explained afterward that he had meant that the board by that time would agree not only on a policy as to whether bus operation should be borough-wide or city-wide, but also on the applicant or applicants to whom the franchises would be awarded.

According to one commentator the Mayor's announcement was interpreted at City Hall as indicating that there had been at least a tentative agreement between the Mayor, who has favored city-wide operation, and Comptroller Berry and most of the borough presidents, who are believed to have favored making separate awards for each borough.

Express Service Between Oakland and Berkeley

Express railway service between Oakland and Berkeley via Telegraph Avenue, supplemented by the operation of buses, which will make all stops, was set by the Key System Transit Company for Jan. 3 following receipt of word that its fleet of fourteen new buses would be ready for operation at that time. The new service will reduce by 25 per cent the present running time between Fourteenth Street, Oakland, and University Avenue, Berkeley.

The fare will be 7 cents while universal transfers will be issued to all crosstown lines, and from the buses to the street cars and from street cars to buses. A person can board a bus at any corner and transfer to the through street car line or any crosstown line, or can board a through car and transfer to the bus if he wants to alight at any street between the station stops of the through street cars. Buses will not operate on Sunday, and on that day the present street car service will be maintained.

New Coach Service Begun in Atlanta

Atlanta's ten new single-deck coaches were placed in operation on Dec. 1 on the Morningside and Virginia-Highland lines. They are equipped with every modern safety device and appliance to improve riding comfort. These include four-wheel hydraulic brakes, 7½-in. balloon tires, deep, leather-upholstered seats, ample ventilation facilities, tested heating systems and adequate lighting arrangements. Like the double-deck coaches placed in service last year, the new coaches are painted in a flamingo red and cream color scheme. Entrance and exit are by the front door, which is operated mechanically by the coach driver. The single-deck coaches do not replace the double-deckers, as the larger coaches will continue in service during the rush hours, but simply are providing a supplementary service which already is proving very valuable to patrons of both lines.

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Financial and Corporate

New Financing for Brooklyn City Approved

The stockholders of the Brooklyn City Railroad, Brooklyn, N. Y., approved on Dec. 7 a plan to create a new general and refunding mortgage of unlimited amount and the issuance of $2,500,000 of the bonds at the present time. As first drawn the plan contemplated the use of stock purchase warrant in connection with the bonds, but the bonds will be sold without the stock purchase warrant. Under the terms of the resolution adopted up to $18,000,000 of bonds may be issued for general and refunding purposes on the present properties. Any further issue of bonds, however, must be secured by new properties.

Directors are empowered to issue bonds from time to time without the stockholders' consent and to give stock purchase warrants or make future bond issues convertible into stock. No action was taken on the plan to increase the capital stock. This remains at $16,000,000. Funds received from the sale of the present issue of $2,500,000 will be used, it is said, for the purchase of cars, the redemption of car trust certificates and other corporate purposes.

New Firm to Deal in Utility Securities

Stone & Webster, Inc., and Blodget & Company announce the formation of a new company under the name of Stone & Webster and Blodget, Inc. The corporation is a combination of the securities department of Stone & Webster, Inc., and the old investment house of Blodget & Company. The engineering and construction, management and investigating departments of Stone & Webster, Inc., are not included and will not be affected by the combination.

Bayard F. Pope, now a partner of Blodget & Company, will be president of the new corporation. Other officers and the directors will be drawn from both the participating companies, all the present partners of Blodget & Company being officers of Stone & Webster and Blodget, Inc.

Public utilities and others whose securities will be handled by Stone & Webster and Blodget, Inc., will have the advantage of a wider market through the combination than either of the companies could offer separately. Its facilities will be available not only for originating issues to be sold by the new house exclusively, but also to public utilities and other corporations in the sale of whose securities Stone & Webster and Blodget, Inc., will participate with other houses.

While the new corporation will be operated in an entirely independent capacity, it will have at its elbow the comprehensive engineering and construction and analysis service of Stone & Webster, Inc.

The officers of Stone & Webster and Blodget, Inc., in addition to Bayard F. Pope, president, will be: C. E. Ober, H. R. Hayes and R. H. Carleton, senior vice-president; T. T. Whitney, Jr., P. L. Warren, J. D. Thomas, R. H. van Deusen, A. C. Dunmore, J. E. Baker and A. B. Griffin, vice-presidents; F. T. Pratt, secretary, and Howard F. Neill, treasurer.

The new company will begin operation on Jan. 1, 1927, at 120 Broadway, New York.

New Chicago "L" Issue Approved

Stockholders of the Chicago Rapid Transit Company, the elevated lines, on Dec. 9 approved an increase in the authorized prior preferred stock of the company from $5,000,000 to $10,000,000. The new issue of stock has been approved by the Illinois Commerce Commission. It is the intention of the directors to issue only $1,500,000 at this time, to be sold through the Utility Securities Company. The new stock will pay a return of 7.2 per cent or 60 cents a share a month, instead of the 65 cents a month a share being paid on the present outstanding prior preferred, sold several years ago to employees and the public. In a notice sent with the latest dividend check to its passenger and employee partners the management said:

> The lower rate of return of the new stock emphasizes the value of the present outstanding stock as an investment. The present stockholders should hold on to their holdings, because they will find it difficult to get an investment as reliable which pays as high a rate of return. The new rate of 7.2 per cent is a good return on a stock that is as safe as the prior preferred of the Rapid Transit Company. Shareholders who desire to increase their holding may make application now for the new stock to the Utility Securities Company.

The proceeds of the new issue of stock are to be used to meet capital expenditures for improvements and extensions to permit of the company doing a larger business. The money derived from the last stock sale was used for the purchase of new cars, for platform extensions and other capital expenditures which greatly enhanced the value of the properties.

$4,656,000 Boston Elevated Issues Authorized

The Department of Public Utilities of Massachusetts has approved issuance by the Boston Elevated Railway two issues of bonds. The first totals $2,700,000 to be put out on Feb. 1, 1927, at not more than 5 per cent or not longer than twenty years to refund West End Street Railway bonds maturing on that date. The second totals $1,956,000 for the same period and with the same interest rate to be put out May 1, 1927, to retire the same amount of West End Street Railway bonds maturing then. The indentures by which these two issues will be secured will carry the provision for calling the bonds at 101 after the expiration of two years from the date on which they are drawn.

Another Hearing on Albany Fares

In figures submitted by the United Traction Company, Albany, N. Y., at the Nov. 30 hearing before the Public Service Commission on the petition of the company for a 10-cent fare it was brought out that the company had a net operating income of $261,955 on its entire system for the nine months of 1926. Operating losses of $21,552 in Troy and $2,173 in Rensselaer were claimed by the company. General Manager Murphy said that the net operating revenue of $222,496 shown in the comparative figures for Albany was virtually eliminated when fixed charges were deducted.

An adjournment was taken until Dec. 15 to enable the commission and city authorities to go over the data. John E. MacLean, general counsel of the company, said he would submit figures on behalf of the Capitol District Transportation Corporation separately, although the problems of the bus and trolley lines were much the same. The Capitol District Transportation Corporation, the bus operating subsidiary, has a similar petition pending.

Immense Refunding Issue by Indiana Company

Retirement of seventeen issues of securities, varying in amount from $11,000 to $1,834,300, by the Interstate Public Service Company, Indianapolis, Ind., will be effected through an issue of $10,000,000 of first mortgage and refunding 5 per cent bonds which the company has sold to a banking syndicate. Nine of the issues which are being retired carry a 5 per cent interest coupon, one 5½ per cent, five 6 per cent, one 6½ per cent and one 7½ per cent.

In addition to providing for the retirement of these bonds, proceeds of the new issue will be used for additions and extensions to the property of the corporation, which is controlled by the Middle West Utilities Company.

Balance in Detroit Increases

For the year ended Nov. 30, 1926, the City of Detroit, Department of Street Railways reported railway operating revenue of $22,788,523 against $22,246,735 for a similar period of the year previous. The coach operating revenue was $2,023,802 and $702,596 for this year and last year respectively. The total revenue from all sources was $25,075,554 against $23,132,562 for the year ended Nov. 30, 1925. Total operating expenses were $19,142,015 against $17,060,802. In these two figures are included coach operating expenses of $1,959,592 and $673,299 for the years ended Nov. 30, 1926, and Nov. 30, 1925. Net revenue was $5,933,539 against $6,071,670 in November, 1925. The net income was $3,243,243 for this year compared with $3,440,529 for a year ago. The balance for the period was $638,063 against $562,741 for a similar period last year. Railway passengers carried in 1926 totaled 489,726,807 and 477,412,178 in 1925. The total number of passengers carried on the coaches was 25,804,419 this year against 9,435,872 for the year ended Nov. 30, 1925.

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Receivers Named for Chicago Railways

Friendly Action Brought to Preserve Integrity of Company and Avoid Chaos and Confusion—Statement by Directors—Other Recent Moves Reviewed

THE Chicago Railways, the so-called west and north side surface lines, were placed in receivership on Dec. 15 by Federal Judge John H. Wilkerson. The petition for this action came from the Westinghouse Electric & Manufacturing Company, which represented that it had demanded $67,075 in payment for electrical equipment for a substation and that payment had been refused. It asserted also that the funded debt of the company, totaling $103,228,265, will fall due when the company's franchise expires on Feb. 1, 1927, and that this obligation cannot be met. To conserve the interests of every one it was urged that the company and all its assets and earning power be put into judicial custody. The Chicago Railways, operating in coordination with the Chicago City Railway, constitutes the Chicago Surface Lines.

The company through its lawyers admitted all the allegations and Judge Wilkerson appointed these three receivers: John J. Mitchell of the Illinois Trust Company, Frederick H. Rawson of the Union Trust Company and Henry A. Blair, president of the company.

The court authorized the lines placed under its protection to continue unified operation with the "city" system. This means the same service as at present with transfers and the same fares. For several years Chicago's Surface Lines have been charging a 7-cent fare. On the elevated lines the fare is 10 cents.

Protection of Law Needed

In explaining the reasons for the receivership the directors of the Chicago Railways pointed out that the only way in which the company can provide for the obligations which will become due on Feb. 1 is the continued operation of the system and that the only way this can be assured is by placing the company's property under judicial protection.

No arrangement with the city for continuance of service after the expiration of the franchises could be carried out, it is declared, if the holders of overdue bonds should bring suits, obtain judgments and issue executions against the property.

"Seeing no way," the statement of the board of directors says, "by which to avoid the chaos and confusion which would result in local transportation if the properties were not in judicial custody when the many millions of indebtedness evidenced by bonds falls due on Feb. 1—in other words, believing a receivership to be inevitable in order to give authoritative assurance that efficient street car service can be provided—the directors authorized and directed counsel for the company to join in the application that the court take the properties into judicial custody to the end that the system may be kept intact and thus able to provide service to the car riders without interruption."

John J. Mitchell of the Illinois Merchants' Trust Company, speaking for the receivers, said:

"In accepting appointment as one of the receivers it is with the hope that the receivers may be able to render a public service by bringing about between now and Feb. 1 concurrence among all interests in all street railway properties in some plan or arrangement which the city authorities might approve whereby for some reasonable period following Feb. 1, 1927, and without prejudice to any right of the city or to any interests in any of the properties, there may be continued the unified operation of all the surface lines with like effect as regards service to the public as though all such lines were owned and operated by one company.

"With the present unified service assured until Feb. 1 the immediate task of the receivers will be to work out if possible some plan, arrangement or understanding for the continuance after Feb. 1 of unified operation of the separate street railway properties in such a way that the city authorities may assent thereto without in any way prejudicing any of the rights of the city during the interval until a permanent solution of the traction problem is reached."

City Council Authorizes Six-Month Franchise Extension

An hour after the receivers had been appointed the City Council voted to authorize its local transportation committee to negotiate a six-month extension of the franchises of the railways. So many questions of a legal character were asked by the Aldermen that Mayor Dever said:

> This is a critical situation. I have practiced law long enough to know that this is the time to ask the corporation counsel to think—not to talk. I hope you will not ask questions involving complicated legal questions, but rather confine your questions to those which are essential for you to get information upon which to cast your votes.

Aldermanic questions indicated that the Councilmen desire the law department to ask the federal court to compel the receivers to continue to pay 55 per cent of the railway's net receipts to the city, pave its right-of-way as the franchise stipulates, clean the streets and perform other obligations which it assumed in accepting the franchise.

Later in the week the Mayor charged that the receivership was part of a plot to defeat Chicago's administration plan to unify local transportation facilities and give the citizens a fair traction deal. He made this statement at a meeting of the Conference on Home Rule for Public Utilities called by the Illinois municipalities.

While the Mayor was speaking Leonard A. Busby, president of the Chicago City Railway, in a letter to Alderman McDonough, chairman of the committee on local transportation, announced that his company would accept a six months extension of the present traction ordinance, which expires on Feb. 1, 1927.

Corporation Counsel Busch promised the Council sub-committee on traction that on Monday or Tuesday he would file an intervening petition in the federal court to assure full protection of the city's rights in the receivership under the 1907 traction franchise ordinances.

A very brief recapitulation of some of the salient points in the local traction situation follows:

1. Franchises of companies whose properties are operated by the Chicago Surface Lines, largest street railway system in the world, expire on Feb. 1. These companies are earning a good margin of profit, but one of them has already gone into the hands of receivers.

2. Bankers interested in Surface Lines' securities have formed protective committees for practically all classes of security holders, and seem disposed to await events on and after Feb. 1 before taking further action.

3. F. J. Lisman, New York, has submitted a plan for refinancing of the Surface Lines' properties which has met with the opposition of the protective committees.

4. Chicago Motor Coach Company has offered to replace street cars with buses, which raises the question of what will be done in that event with the present properties and their security holders.

5. The City Council has made several attempts to deal with the problem, which thus far have come to nothing, apparently because of the gap between ideas as to what is financially and what is politically advisable. A proposal that expiring franchises be extended six months is still under consideration.

6. The State Legislature does not meet in time to deal adequately with its part of the problem. Chicago will probably present little opposition to a bill permitting the granting of terminable franchises to the railways, but will undoubtedly object to state control thereof, especially in matters of service.

7. Chicago has at present an uncoordinated local transportation system composed of surface lines, elevated railroad and buses. Co-ordination of these facilities, with the possible construction of a loop subway, would greatly aid the development of the city and its metropolitan district.

Praise from a Financial Authority

THE bankers who have been identified with the Chicago Surface Lines for twenty years have formulated no plan for reorganization. With the earning power of the properties great as it is there should then be no difficulty in arriving at a sound financial plan. The Chicago Surface Lines are almost unique among street railways in the steady growth of their earnings. They carry annually about 850,000,000 passengers. The increase in passengers carried and in gross revenues this year is running better than 4 per cent above 1925.

Physically the property is exceptionally fine, it gives good service and has a substantial degree of public good will. The companies have been successful in obtaining reasonably remunerative fares from the courts, the value of their properties has been established beyond possibility of question. Even the city's appraisers have found actual value in excess of the "purchase price" established by the present ordinance. During the present régime millions of dollars have been collected in depreciation funds to meet heavy renewals that may be necessary some years hence.—*Barrons.*

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Merger Talk Again in Washington

The Public Utilities Commission of the District of Columbia has adopted the bill designed to induce the Washington Railway & Electric Company and the Capitol Traction Company to merge voluntarily. Enactment of the measure will be sought at the coming session of Congress.

Stripped of its verbiage, the measure contains three rewards for the companies if they consolidate and a heavy penalty in the form of a 50 per cent increase in the gross revenue tax if they fail to do so by July 1, 1928. The rewards are a guaranty against unlimited bus competition, repeal of the crossing policeman tax and repeal of the bridge repair tax.

Members of the committee explained that the bill is very similar to the joint proposals of the railways submitted several days ago, except that the objectionable service-at-cost plan, based on an agreed valuation, is removed. The commission bill also ignored the request of the companies that they be relieved from any obligation to pay the cost incident to the laying of new pavements for the permanent improvement of streets or highways utilized by them.

The commission decided to transmit the outline of the merger plan submitted by the railways to Congress, together with its merger bill, so that it may have independent consideration.

Acquisition of the Washington Rapid Transit Company by the North American Company was a violation of the public utilities act, William McK. Clayton, special legal adviser to the Public Utilities Commission, held in an opinion submitted to the commission. Mr. Clayton held that no other utility in the District and under the control of the commission offended the act of Congress by acquiring and holding the stocks and bonds of another public utility corporation without first securing the consent and validation of either Congress or the commission to such purchase and holding. Mr. Clayton warned the commission that should a merger of the street railway companies fail to be consummated "a very grave question" might arise as to the legality of the holdings of the North American Company in the Washington Railway & Electric Company and the Capital Traction Company.

The purchase of the Washington Rapid Transit by the North American Company, Mr. Clayton said, "seems to be the first instance" in the commission's fourteen years of control "where a public utility submitting to its jurisdiction desiring to buy or sell the stock or bonds of another public utility did not first apply for the consent of the commission to such purchase or sale."

Abandonments in Oswego Sought

Five petitions were filed with the Public Service Commission on Dec. 9 by the Empire State Railroad Corporation asking for approval of the abandonment of certain railway lines in the city of Oswego, N. Y. The petition states the directors of the railroad adopted a resolution on Oct. 26 in favor of the abandonment of the railway on five different lines and that this resolution was adopted in a stockholders' meeting on Dec. 3. The petition further stated that the receipts from the electric lines on these routes did not meet operating expenses. This loss in conjunction with losses upon other routes in the city of Oswego was so great as to impair the solvency of the petitioner and threatened to destroy its ability to furnish railroad service of any kind over any of its lines. The commission will hold a public hearing on the application.

Long Receivership to Be Lifted

Property of Second Avenue Railroad, New York, to Be Sold Jan. 13—Reorganization Terms Reviewed

A plan to bring the Second Avenue Railroad, New York, out of receivership was made public on Dec. 15 by the committee representing holders of the road's receivers' certificates. It is proposed to buy the road at auction on Jan. 13 and then to form two corporations to control severally the real estate and railway properties of the company.

The proposed real estate corporation would have a bonded indebtedness not to exceed $750,000 secured by a first mortgage on the carhouse property and a capital issue of 31,400 shares of no-par stock. This lien would be placed on the land and improvements only to the extent necessary to meet cash requirements in the event that such funds were not provided by the consolidated mortgage bondholders. The stock would be exchanged for receivers' certificates in the ratio of ten shares for each $1,000 certificate.

The proceeds of the first mortgage loan, if placed on the property, would be used to the extent necessary to purchase an amount of the proposed railway corporation's first lien 6 per cent thirty-year bonds to provide cash for the latter corporation's operation. If the committee was able to bid in the road at a price within the amount of the certificates found to have been expended in preserving and operating the road, the amount of the first mortgage loan would be confined to cash requirements. The statement says:

> The committee has been conferring with representatives of the consolidated mortgage bondholders on sundry proposals looking to the providing by them of the "cash requirements" in exchange for an interest in the railway corporation. This would save the carhouse property for the certificate holders free from lien. The principal obstacle has been the difficulty of arranging a contract to obtain power for operation. There is still a possibility that the consolidated mortgage bondholders will provide said "cash requirements."

The proposed railway corporation would acquire the property, rights, interests and franchises, exclusive of real estate. It would have a bonded indebtedness not to exceed $750,000 of first lien 6 per cent 30-year bonds, and a capitalization of 31,400 shares of no-par stock. This stock would be exchanged ten for one for certificates in the event that cash requirements were met by a mortgage on the real estate. However, if they are met by bondholders, this stock would be divided between bondholders and certificate holders in amounts to be determined by the committee.

The Second Avenue Railroad operates 26 miles of conduit railway in the Borough of Manhattan. The road has been in the hands of receivers since 1908. This is one of the longest receiverships on record.

Helena Properties Sold

Properties of the Helena Railway, Light & Power Company, Helena, Mont., were sold on Dec. 1 for $584,500, under foreclosure proceedings, to the bondholders' committee, represented by C. M. Clay of the law firm of Simpson, Thayer & Bartlett of New York.

The plan proposed for the reorganization contemplates the segregation of the railway properties from the light properties. Two separate companies will be formed, one to take over the railway and the other to take over all of the activities of the company other than those performed by the railway. Holders of certificates of deposit under the agreement dated July 30, 1925, who assent to the plan will receive for each $1,000 bond $600 in 6 per cent bonds of the electric company and $400 in cash, together with an amount of cash equivalent to interest at the rate of 5 per cent per annum upon 60 per cent of the principal amount of the old bonds from Sept. 1, 1925, to the date from which the new bonds bear interest and upon 40 per cent of the principal amount of the old bonds from Sept. 1, 1925, to the date to be selected by the committee for the distribution of the new bonds and cash to the holders of the certificates of deposit.

The electric company is to make an issue of 25-year 6 per cent bonds to be issued under and be secured by a mortgage constituting a first lien upon all physical assets and franchises of the electric company then owned and thereafter acquired and also upon the stock of the railway. The initial issue of bonds is to be $750,000.

Another Step in Disposition of Rockford Properties

Charles J. Horn, Milwaukee, Wis., bought the physical properties of the Rockford, Beloit & Janesville Electric Railway, Rockford, Ill., at a foreclosure sale on Dec. 9 in that city for $52,000. Mr. Horn was the only bidder. He bid in the property according to an arrangement under which it is expected T. M. Ellis, Jr., Beloit, will become the owner of the line within 60 days. The present sale relates particularly to the Rockford, Beloit & Janesville Electric Railway, formerly included as a part of the Rockford & Interurban Railway system.

Napa Valley Road Reported Sold

Rumor persists of the sale of the San Francisco, Napa & Calistoga Railway (electric) to the Western Pacific Company. The rumor has been strengthened by the reported sale of the Sacramento Short Line to the Western Pacific. It is generally known that the Napa Valley road has recently defaulted in interest payments on its

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bonds. Control of the road is held by James Irvine, Seattle. Its tracks connect Vallejo with Calistoga, and it reaches San Francisco through a traffic agreement with the Monticello Steamship Company.

New York City Companies Would Consolidate

A joint petition of the Eighth Avenue Railroad and Ninth Avenue Railroad, New York, has been presented to the Transit Commission praying that the commission authorize the petitioners to merge and consolidate the capital stock, franchises and property of each petitioner pursuant to a joint agreement duly entered into by them, so as to form one corporation under the name of "Eighth & Ninth Avenues Railway."

States Condition of Former Railway Property.—The Denver & South Platte Railway, which until last May operated tramcars between Littleton and Englewood, Col., recently advised that all physical property had been removed from the right-of-way and sold in accordance with authorization from the Public Utilities Commission.

Worcester, Too, Accepts New Haven Control.—The committee on streets of Worcester, Mass., formally accepted the ruling of the 1926 Legislature that the New York, New Haven & Hartford Railroad be permitted to resume control of the Worcester Consolidated Street Railway. The matter was taken up to answer a petition of the New Haven road to the City Council that it be allowed to take over and control the holdings in accordance with the wishes of the city. The City Council and Mayor O'Hara favor the arrangement.

Opportunity Given to Buy Shares.—An opportunity is afforded the patrons and employees of the Winnipeg Electric Company, Winnipeg, Canada, to become partners of and share in the earnings of the railway. The company is offering 2,500 shares of its 7 per cent cumulative preference stock. The shares are offered to company employees at par, $100 per share, and may be bought for cash or on partial payments of $10 cash and $10 per month per share. In order to give a large number of customers and employees the opportunity to participate, the company is limiting the number of shares to any one person to 50. The sale will close on Dec. 23.

Approval Sought for Intercompany Financing.—The San Francisco-Sacramento Railroad, Oakland, Cal., has applied to the Railroad Commission for authority to execute a mortgage in favor of the Sacramento Northern Railway in the sum of $98,430. This will be payable in one year from date, with interest at 6 per cent, covering money borrowed from the mortgagee.

O. H. Wathen a Louisville Director.—O. H. Wathen has been elected a director of the Louisville Railway, Louisville, Ky. Mr. Wathen will replace W. S. Campbell, chief engineer and general manager of the Kentucky & Indiana Terminal Railroad, who resigned.

Personal Items

C. W. Wilson Research Manager

Pittsburgh Railways Designates Official to Head Important Activities —Many Years Experience

Clyde W. Wilson has been appointed by the Pittsburgh Railways, Pittsburgh, Pa., to the position of manager of the research department—a department which has been lately created for the purpose of rendering a service to the operating officials in the way of instruction concerning production and sales of railway transportation in other cities as well as complete and up-to-date information about all branches of the properties of the Pittsburgh Railways.

At the time of the reorganization of the company at Pittsburgh, Mr. Wilson was made assistant to the general manager and served in this capacity and as assistant to the vice-president until his appointment to head of the research department.

C. W. Wilson

The choice of Mr. Wilson for this position is particularly fortunate, his wealth of knowledge gained through years of experience both in electric railway and railroad transportation having fitted him thoroughly for this work.

The activities of his department range from investigations which may be so important as to indicate broad changes in policy or method to minute analyses of local operating cost. Information is secured by means of visits by the research manager and research engineer to other properties, through contact with associations, from trade journals, by maintaining a newspaper clipping service, from other companies direct, and from any other sources available.

Mr. Wilson was born near Covington, Ky., and was educated in the public schools and at Kentucky State College at Lexington. From 1902 until 1906 he worked for the Erie Railroad, the Cincinnati, Hamilton & Dayton, now part of the B. & O., and Chicago, Cincinnati & Louisville Railroad, now part of the Chesapeake & Ohio Railroad.

In 1906 he became associated with the Cincinnati Traction Company and served in various positions of the operating department until 1920, when he was asked to come to Pittsburgh to help Thomas Fitzgerald, at that time a consulting electric railway engineer and now vice-president of the company, in the work preliminary to the reorganization of the Pittsburgh Railways.

Changes in Personnel at Ludington

The Michigan United Light & Power Company, Grand Rapids, Mich., announces changes in personnel made since the recent formation of the Pitkin power group in Michigan. Under the new plan W. A. Wadsworth, manager of the southern territory since last March, has been made vice-president and general manager to direct the Michigan properties of the concern. His headquarters will be temporarily in Ludington, Mich., that he may supervise the management of the Ludington district.

Management of the Michigan Public Service Company at Sheboygan will be in charge of F. A. Swanson, Ludington, who will be succeeded as local superintendent by F. B. Swanson at Hart. C. L. Mosher will be plant engineer and load dispatcher for the state. He formerly was with the Consumers Power company at Jackson. C. G. Pitkin has been promoted from the Hart office to Ludington. Work in connection with the accounting and the construction activities of the company will be consoliated.

B. F. Pope Heads New Investment Firm

Bayard F. Pope has been elected president of Stone & Webster and Blodget, Inc., which will succeed on Jan. 1 to the securities department of Stone & Webster, Inc., and the investment house of Blodget & Company, as noted elsewhere in this issue. Mr. Pope has risen steadily in the investment banking field. After he was graduated from Harvard in 1908, he joined the Chicago banking house of Mason, Lewis & Company. This corporation was dissolved in 1910 and Mr. Pope joined Blodget & Company, by which he was charged with the responsibility of developing the New York office. Shortly after this country's entry into the war he enlisted for work in the publicity department of the Liberty Loan Committee, where, under Gov. Benjamin Strong, he did remarkable work as vice-director of publicity in charge of advertising, his department laying out the entire plan for liberty loan work throughout the country. He was made a partner in Blodget & Company in 1919. In addition to being president of the new company, Mr.

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Pope is also a director in a number of other corporations, including Engineers Public Service Company, General Public Service Corporation, Virginia Electric & Power Company and New England Power Association.

Illinois Power & Light Purchasing Department Changes

Changes have been announced in the organization of the purchasing department of the Illinois Power & Light Corporation, Chicago, Ill.

Frank H. Hughes is appointed supervisor of purchases with headquarters at Chicago.

H. J. Vance is appointed purchasing agent for the Illinois properties of Illinois Power & Light Corporation, acting in that capacity both for the various Illinois divisions and for the Illinois Traction System. Mr. Vance also will have direct charge of the Decatur storehouse, and his offices will be located at Decatur.

J. A. Jefferis is appointed fuel purchasing agent with headquarters at St. Louis, having responsibility for the purchase of coal and other fuels for all the various state groups of the company.

G. M. Eaton with Molybdenum Corporation

G. M. Eaton, chief mechanical engineer of the Westinghouse Electric & Manufacturing Company, has identified himself in a sales engineering capacity with the Molybdenum Corporation of America.

With Westinghouse he soon associated himself prominently with railroad electrification problems and his success in that field is attested by his prominence in work associated with the mechanical features of electric locomotives for the Pennsylvania, the New York, New Haven & Hartford, the Norfolk & Western and the Chicago, Milwaukee & St. Paul Railroads.

In 1910 Mr. Eaton was appointed division engineer of the railway department, where the scope of his activities was widened. In 1919 he was made chief mechanical engineer of the Westinghouse company. Many inventions are accredited to him. They include developments in the field of complete locomotive design, motor mounting, motor details and overhead line construction. He will continue a curtailed association with the Westinghouse company in the capacity of consultant on mechanical engineering problems.

Changes in Kewanee

In line with the new plans for supplying current to the Kewanee Public Service Company, Kewanee, Ill., a change will be effected in the personnel. Jean DeCamp, superintendent of the railway system for the last two years, and Max Bertch, master mechanic, will leave soon for Texarkana, Tex., where they will join the Southwestern Gas & Electric Company, occupying positions there similar to the ones they held in Kewanee. E. T. Crocker, Quincy, has been transferred to have charge of the railway at Kewanee.

A. T. Spencer at Montreal

Former Toronto Official Becomes General Superintendent of Construction and Maintenance of Quebec Property

A. T. Spencer has joined the staff of the Montreal Tramways, Montreal, Que., with the title of general superintendent of construction and maintenance. Since May, 1924, he has been assistant to the general manager of the Toronto Transportation Commission, Toronto, Ont., operating the municipal electric railway there. Before that he was engineer of way of the Toronto Commission. As assistant general manager at Toronto he continued to supervise the operation of the way department.

HELPED TO REHABILITATE TORONTO PROPERTY

Mr. Spencer was appointed to the important position of engineer of way of Toronto Transportation Commission in May, 1921, in anticipation of the extensive rehabilitation program which began when the commission took over the local lines the following September. This work might have been accomplished in a leisurely manner, but the idea of leisure in rehabilitating the property of the Toronto Railway did not enter into the thought of the Transportation Commission, appointed by the city to take over and operate the Toronto Railway and consolidate it with the lines then owned by the city. The city had suffered too long from bad tracks and poor cars and been inconvenienced in too many other ways to be at all tolerant of any program which countenanced dallying with the work in hand.

A. T. Spencer

200 MILES OF TRACK REBUILT

As explained in the ELECTRIC RAILWAY JOURNAL for May 10, 1924, in the personal about Mr. Spencer at the time he was made assistant to the general manager at Toronto, quantity production methods were worked out for the reconstruction of nearly 200 miles of track, and the matter was handled so well under his direction and supervision that all of the work was done during two seasons. In order to carry out this work successfully in the very short space of time in which Mr. Spencer accomplished it, he had to resort to many novel methods and to exercise a great deal of ingenuity.

Mr. Spencer brought to the work which he did at Toronto a fund of information gained while serving with other railways and while engaged in other similar lines of work. For a few months prior to his appointment under the Toronto Transportation Commission in May, 1921, he acted as assistant engineer in the railway department of the Hydro-Electric Power Commission of Ontario. Before that he had been connected with the Montreal Tramways, first as assistant engineer in charge of maintenance of way and later as chief engineer of this department. Previous to that he was employed by the Canadian Pacific Railway on grade revision in New Brunswick, Quebec and Ontario. In 1907 he was appointed assistant engineer of the Montreal Park & Island Electric Railway, and it was from this company that he went to the Montreal Tramways.

Mr. Spencer entered upon his engineering career in 1901 with the Dominion Coal Company and the Sydney & Louisberg Railway. He was born in Nova Scotia and there received his general and technical education. In all the work that he has done Mr. Spencer has shown a remarkable capacity for carrying out the job efficiently.

ACTIVE IN ASSOCIATION WORK

He is a member of the standing committee on way and structures of the American Electric Railway Engineering Association and is chairman of the special committee of that association appointed to study the use of alloy steels, other than manganese, in special trackwork. He is an associate member of the Engineering Institute of Canada, a member of the Association of Professional Engineers of Quebec, a member of the Association of Professional Engineers of Ontario and a member of the American Society of Municipal Improvements.

A. P. Way, formerly assistant electrical engineer of the American Electric Power Company, successor to the American Railways, Philadelphia, is now assistant engineer in the electrical division of the Department of City Transit at Philadelphia. He was connected with the Wilmington & Philadelphia Traction Company, a subsidiary of the American Electric Power Company, immediately before taking his present position.

Roy L. Zinstine has been appointed supervisor of safety and first aid of the electrical department of the Pennsylvania-Ohio Electric Company, Youngstown, Ohio. This is a newly created position. In 1921 Mr. Zinstine went to the Pennsylvania-Ohio system as a truck driver in Youngstown. He was one of the 26 employees who elected to take the Red Cross first aid training in the institute organized by Dr. Redden.

R. G. Soper has been elected treasurer of the Southwestern Public Service Association, Dallas, Tex. For many years Mr. Soper was active in the manufactured and later the natural gas industry. He was also secretary of the Dallas Gas Company.

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W. G. Holmes has been appointed industrial agent for the Interstate Public Service Company, Indianapolis, Ind. Mr. Holmes was connected with the Indianapolis Chamber of Commerce at the time of his appointment. He is a graduate of Colgate University, where he specialized in mathematics, engineering and economics and where he served as assistant instructor in engineering two years prior to his graduation. From September, 1925, to March, 1926, he was with the Bureau of Business Research at Indiana University. As industrial agent of the Interstate he succeeds the late Anderson G. Moore.

R. M. Vaughan, who has been in charge of valuation work in the engineering department of the California Railroad Commission for a number of years, has resigned to engage in private practice.

B. M. Lathrop recently retired as general superintendent of the Colorado Springs & Interurban Railway, Colorado Springs, Col. He had been associated with the company for the past 25 years.

A. E. Haak has succeeded B. M. Lathrop as general superintendent of the Colorado Springs & Interurban Railway, Colorado Springs, Col. For some time he has been purchasing agent of this company. He will continue in that capacity.

J. J. Flynn has been appointed general storekeeper for the Chicago Rapid Transit Company, Chicago, Ill., succeeding R. R. House, who was recently promoted to general superintendent of stores for the four electrically operated railroads under the management of the Insull interests. Mr. Flynn has been an employee of the Chicago Rapid Transit Company for fourteen years.

Francis J. Gannon has resigned as assistant treasurer of the Northern Texas Traction Company, Fort Worth, Tex., to take over the duties of assistant treasurer and secretary of Davis Islands, Inc., a development at Tampa, Fla., under Stone & Webster management. He had been assistant treasurer of the Northern Texas Traction for the past ten years. More recently he had also been handling the advertising for the company. A. A. Chamberlain has succeeded Mr. Gannon as assistant treasurer.

Dr. W. B. Coffey, chief surgeon of the Market Street Railway, San Francisco, Cal., for almost 25 years, resigned as head of the medical department to become chief surgeon and general manager of the Southern Pacific Hospital System.

Charles H. McEachron has recently been appointed superintendent of the Tacoma Municipal Belt Line, Tacoma, Wash. He succeeds in this capacity A. Gunderson. Reconditioning of the rolling stock of the belt line will be undertaken at once by the newly appointed superintendent, it was stated by Mayor M. G. Tennent. The appointment is temporary, it is said. Mr. McEachron has been foreman of the machine shop of the Tennent Steel Casting Company, of which Mayor Tennent is the head, for the last three years.

James Dalrymple Retires

Glasgow Manager with World-Wide Reputation Will Relinquish Post After 46 Years of Service

James Dalrymple, general manager Glasgow Corporation Tramways, Glasgow, Scotland, recently intimated to the tramway committee of the corporation that he is prepared to retire from his position. The information was conveyed to the committee in the course of a discussion on a proposal that a considerable number of tramway employees who were dismissed by the manager because of their action during the general strike in May last should be reinstated. This proposal had come before the committee on previous occasions, and Mr. Dalrymple was firm in his attitude that as regards the particular men he would not take them back. In this he was supported by the majority of the committee and the Council. Despite this indorsement of him, Mr. Dalrymple decided that, taking all the circumstances into consideration, it would be inexpedient for him to carry on. He therefore intimated that he now proposed to exercise, as he was entitled to do under the corporation's scheme of superannuation, the option he had of retiring. He added that he wished to be relieved of his duties Dec. 31.

In all this politics has played its part. At a recent municipal election the socialist party gained a number of seats, and though the socialists are still in a minority, their number is now nearly as great as that of the moderate party. It is said that some of the latter were absent from the meeting of the committee on Nov. 18 so that the socialists had a small majority and carried their motion for reinstatement. Meanwhile Mr. Dalrymple had sent in his notice of willingness to retire. A small committee was appointed to consider the terms on which the resignation would be accepted.

Mr. Dalrymple has been in the service of Glasgow Corporation for 46 years. He was originally in the accounting department. When the tramways were municipalized in 1894 he became tramway accountant, and in 1902 he was appointed deputy general manager. Some two years later when the late John Young, then general manager, resigned in order to take a similar position with the Metropolitan District Railway, London, Mr. Dalrymple was appointed general manager. That post he has held since with conspicuous ability and success, both as regards the operating and financial sides of the undertaking. Under him the Glasgow Tramway has not only maintained its position as one of the successful undertakings of its kind in Great Britain, but has enhanced its position.

Mr. Dalrymple has visited the United States from time to time to study traffic conditions. On one memorable occasion when he was called in to advise, he strongly opposed the municipalization of railways in Chicago. By means of personal inspection he has also mastered street transport conditions on the Continent of Europe. Two years ago he went on invitation to Bombay, India, to advise as to the tramway development in the city. During the war he raised a battalion from among the Glasgow tramway employees in one day, and others followed. For these and other services during the war he received the C.B.E. decoration.

It was through Mr. Dalrymple's successful efforts during the general strike in May last to maintain tramway service in Glasgow by the engagement of volunteers that he incurred the enmity of socialists in the Town Council. The hostility thus aroused against him has been intensified by his subsequent refusal to reinstate certain strikers. It appears that he was willing to consider applications from some of them in the event that vacancies arose but he would not agree to reinstatement of the men en masse at present.

P. E. Dufour has been appointed valuation engineer of the California Railroad Commission, effective Jan. 1, 1927, to succeed R. M. Vaughan, who recently resigned from the service of the commission. Mr. Dufour has been with the transportation division of the commission's engineering department since March, 1921, at which time he was employed to make an extensive check of the federal valuation of the steam railroads in California. He has handled the valuation work on several of the large investigations made by the commission. Previous to his employment by the state Mr. Dufour was associated for six years with the bureau of valuation of the Interstate Commerce Commission. In addition to this work he has had considerable railroad experience, having been employed a number of years with the Southern Pacific Company, six years of which time he was assistant engineer in charge of railroad construction in California and Oregon. He was graduated in 1904 from the Van der Naillon School of Engineering.

B. P. Shearon has been elected secretary of the Northern Indiana Public Service Company, Hammond, Ind. He succeeds W. D. Boone, who has resigned because of illness. Mr. Shearon has been connected with the company for nineteen years. He formerly was comptroller of the company and for the last two years has been assistant secretary and assistant treasurer.

Obituary

Joseph Alvin Reckard, for 26 years cashier of the Los Angeles Railway, Los Angeles, Cal., died recently. Mr. Reckard was 66 years old. Prior to his going to the Los Angeles Railway in 1900 he was agent for the Toledo, Peoria & Western Railway at Fairbury, Ill.

Frederick G. Orcutt, assistant paymaster of the Connecticut Company at Hartford, Conn., died on Dec. 2 at his home in that city. Before going to the Connecticut Company he had been employed in similar capacities by the Boston & Maine and the New York, New Haven & Hartford Railroads. Mr. Orcutt was born in 1862.

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Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Big Car and Bus Purchase Program at Atlanta

Ten new single-deck coaches have been placed in service by the Georgia Railway & Power Company, Atlanta, Ga. Purchase of the new coaches raises still higher the record of new transportation equipment purchased during the year, a mark which already had eclipsed any previous year in Atlanta's history. In addition to the ten coaches, the company has purchased and placed in service during 1926 60 new street cars for city lines and ten new de luxe interurbans for the Atlanta Northern and Stone Mountain lines.

Westinghouse Gets Big Order in Brazil

Award of a contract from the Paulista Railway in Brazil for the extension of that road from Rio Clare to San Carlos, a distance of 42 miles, has been made to the Westinghouse Electric International Company. This contract includes complete transmission line equipment, catenary contact system, together with necessary substation equipment and locomotives. The locomotives to be furnished will be duplicates of several built by the Westinghouse company and shipped to Paulista a few months ago. They represent the fourth order for that company to be placed with the Westinghouse company. The contract price for this present order is in the neighborhood of $1,500,000, it is reported.

M. J. A. Bertin Heads Galena Signal Oil

M. J. A. Bertin, who for several years has been in charge of the European business of the Galena Signal Oil Company, has been elected president and a director, succeeding L. J. Drake, who resigned to become president of the Union Tank Car Company.

Twin Cities Improvements Intimated

Improvements for 1927 to be made by the St. Paul City Railway, St. Paul, Minn., will cost about $350,000, with no definite outline yet made. A proposed new interurban line connecting the Franklin Avenue line in Minneapolis with the Rondo-Maria line would cost the St. Paul company $1,500,000, according to T. Julian McGill, vice-president of the Twin City Rapid Transit Company, and would require a larger fare. Otherwise construction of the line would not be possible for some years.

In Minneapolis the requests for railway extensions and improvements would, if carried out, cost the Minneapolis property $600,000 more than the fund available. In 1926 the outlay was $650,000, but for 1927 it will be less than this sum.

Oil-Electric Locomotive in Lumber Service

A new use for oil-electric locomotives has been found with the placing of a 100-ton unit of this type in service at Westwood, Cal., hauling logs from the woods to the mill of the Red River Lumber Company. The locomotive was built jointly by the American Locomotive Company, Ingersoll-Rand Company and the General Electric Company, and is similar in its general characteristics to other oil-electric units of the same tonnage which have been built for use by various railroads in the past years. The unit, which is operated by the Red River Lumber Company, is kept in daily operation over a 20-mile section of track.

Cold Facts at Disposal of Manufacturers

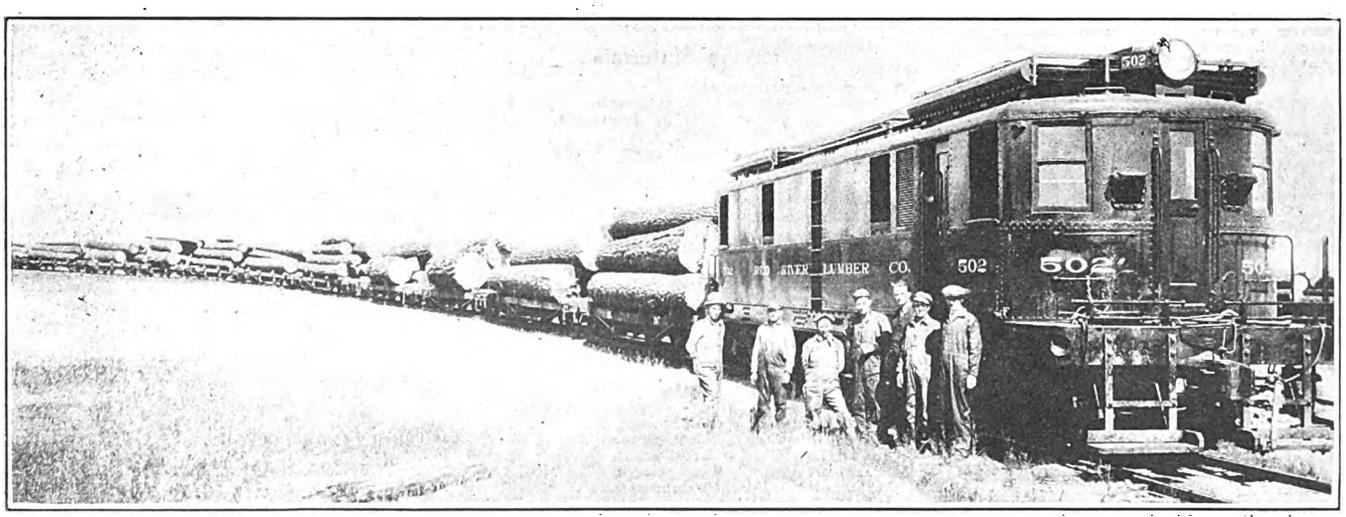
Discussion of Results Obtained with New Equipment Given by Charles Gordon at Cleveland Convention Ready in Booklet Form

Early in the week of the American Electric Railway Association convention in Cleveland last October a group of important electric railway manufacturers and their representatives gathered together at the invitation of James H. McGraw, president of the McGraw-Hill Publishing Company, Inc., to discuss various conditions affecting the purchase of new equipment in the industry. At this meeting Charles Gordon, editor of ELECTRIC RAILWAY JOURNAL, analyzed carefully the results which are actually being obtained by various properties which have shown a willingness to modernize their rolling stock. The questions of whether it costs less to buy new cars than to maintain old ones and whether the industry is actually paying for new equipment and then not getting it were answered in no uncertain terms.

So many requests were received by the JOURNAL for copies of Mr. Gordon's remarks that it was decided to publish them in booklet form for general distribution. Copies are being sent to manufacturers throughout the industry and an adequate supply of additional copies has been prepared for distribution to those who may request them. The booklet is illustrated with a number of charts which graphically portray the anomalous condition which is in existence at the present time and the common sense answer to the whole puzzling situation. It is hoped that this compilation of specific facts will prove of material assistance in the campaign to infuse new blood into the veins of the industry through the guise of modern rolling stock.

New Testing Laboratory for Delta-Star Electric

The Delta-Star Electric Company, manufacturer of unit type high-tension equipment, has constructed a new large testing laboratory in its plant at Chicago, Ill., for the use of its designing



Type of Load Hauled by This Oil-Electric Locomotive

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engineers. The company feels that this will afford the means of securing the data necessary so that the equipment offered for sale will meet the severe conditions imposed by modern interconnection of the transmission system.

Included in the equipment of the laboratory are transformers, each of 250 kva. capacity and weighing approximately 18 tons each. They have primaries of 2,000 volts, secondaries of 250,000 volts and are arranged for the cascade or chain connection.

Excitation and control of the transformers is secured by a synchronous motor-generator set, the 2,000-volt winding of the first transformer being connected directly to the alternator. With three transformers in series there are 750,000 volts between the high-tension terminal of the third transformer and ground.

Another Instance of Manufacturer Co-operation

In mailing its recent dividend checks to stockholders, the Westinghouse Electric & Manufacturing Company expressed the hope that they would endeavor to ascertain the facts regarding local electric railway service and lend a helping hand toward establishing a favorable attitude of mind toward the electric railway. It said that this would result not only in better service for the people, and aid the prosperity of the stockholder's neighborhood, but would also benefit him as a part of the great Westinghouse organization.

The company said that the electric railway system of any city is a true mirror of the progressiveness of that community, for upon these transportation facilities, as a keystone, depend social and industrial progress. It then set forth these facts:

Since the establishment, 40 years ago, of the first transportation systems operated by electricity, this industry has made steady and healthy progress until today it represents an investment of $6,000,000,000 with securities held by 1,300,000 people; operates 105,000 cars and 50,000 miles of track; and carries more than 16,000,000,000 passengers annually.

Your company has been privileged to be identified with this basic public utility for the past 40 years and is in a particularly favorable position to appreciate the full value of its service and the importance of public understanding and co-operation.

For the past decade your company has endeavored to tell the public the facts and thereby to secure a better public understanding of the economic service rendered by the electric railways. This has been accomplished by a consistent program of co-operative advertising in the leading national popular media such as *Forbes*, the *Literary Digest*, *Scientific American*, *Collier's*, the *Nation's Business* and *Saturday Evening Post*, and in many financial papers.

In Special Publication 1751, "Electric Railways—The Keystone of Progress," are reproduced some of the most important of these advertisements. The 24 illustrated represent a combined circulation of 26,324,000, or in reality that number of individual messages delivered in behalf of the electric railway industry.

Large Equipment Order Placed by Long Island

Electrical equipment valued at approximately $700,000 is to be added by the Long Island Railroad. This expenditure will be made on equipment for 60 motor and 30 trail cars. The order calls for a duplicate of equipment previously purchased from Westinghouse by the railroad. Delivery is to be made in the spring to meet the requirements of heavy traffic. When the added cars go into operation the Long Island Railroad will have in service approximately 700 Westinghouse equipped motor cars.

Rolling Stock

Chicago, Aurora & Elgin Railroad, Aurora, Ill., is reported to be inquiring for fifteen additional interurban cars at the present time.

Utah Light & Traction Company, Salt Lake City, Utah, has purchased two 230-in. wheelbase Mack bus chassis, on which will be mounted Duralyte street car type bodies. The buses will be put in trolley feeder service between Bountiful and Centersville, an 8-mile route at a 20-cent fare. The schedule calls for eighteen trips daily.

Chicago, South Shore & South Bend Railroad, Michigan City, Ind., is making inquiries for ten motor cars and ten trailers.

Brooklyn City Railroad, Brooklyn, N. Y., expects to issue specifications about Feb. 1, 1927, for from 175 to 190 new cars. Since this matter was referred to originally in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 20, page 952, it has been decided that the new rolling stock will be similar to the cars now on the property, known as type 8,000. After these cars are delivered and older cars have been retired the company will have no cars in operation built earlier than 1920.

New Advertising Literature

General Electric Company, Schenectady, N. Y., has issued a leaflet describing its new automatic welding head which provides automatic electrode feeding of the magnetic clutch type. The welding head and control are available either separately or as a part of a complete automatic welding equipment.

Ohmer Fare Register Company, Dayton, Ohio, describes its Odometer in a publication issued recently. This device is intended for application to electric and steam railway cars, trucks, buses and Drivurself cars. The company says that the Ohmer Odometer for railway service accumulates total mileage whether the car is going forward or backward. It requires no attention after once applied, and continuous, accurate and uninterrupted mileage reading are assured. When applied to railway service there is no change in the head or principles of its operation.

Pennsylvania Railroad, Philadelphia, Pa., has placed orders for 60 all-steel electric cars for suburban service in the Philadelphia district. The orders were distributed as follows: Standard Steel Car Company, 30; Pressed Steel Car Company, fifteen, and American Car & Foundry Company, fifteen. Electrical equipments for these units were ordered some time ago, as reported in the issue of the JOURNAL for Nov. 13, page 912. The cars will be placed in service early in 1928 upon completion of electrification between Philadelphia and Wilmington, Del., and Philadelphia and West Chester, Pa.

ELECTRIC RAILWAY MATERIAL PRICES—DEC. 14, 1926

Metals—New York

Copper, electrolytic, cents per lb.	13.375
Lead, cents per lb.	7.887
Nickel, cents per lb.	35.00
Zinc, cents per lb.	7.41
Tin, Straits, cents per lb.	68.625
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	63.00
General service	32.50

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$9.00
Somerset mine run, Boston	3.25
Pittsburgh mine run, Pittsburgh	2.75
Franklin, Ill., screenings, Chicago	1.875
Central, Ill., screenings, Chicago	1.725
Kansas screenings, Kansas City	2.35

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.35
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.20
Steel bars, cents per lb.	2.00
Ties, white oak, Chicago, 6 in.x8 in.x8 ft.	$1.45

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (24 gage), cents per lb.	3.00
Sheet iron, galvanized (24 gage), cents per lb.	3.85
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	2.50

Waste—New York

Waste, wool, cents per lb.	12-18
Waste, cotton (100 lb. bale), cents per lb.:	
White	13-17.50
Colored	10-14

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	11.40
White lead in oil (100 lb. keg), cents per lb.	14.00
Turpentine (bbl. lots), per gal.	$0.91
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	5.25-5.50

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire, cents per lb.	15.75
Rubber-covered wire, No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, cents per lb.	17.50

Paving Materials

Paving stone, granite, 5 in. New York—Grade 1, per thousand	$142.40
Wood block paving 3½, 16 lb. treatment, N. Y., per sq.yd.	$2.70
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3x8½x4 N.Y., per 1,000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	1.94
Cement, Chicago consumers' net prices, without bags	2.10
Gravel, ¾-in., cu.yd., f.o.b. N. Y.	1.75
Sand, cu.yd., f.o.b. N. Y.	1.00

Old Metals—New York and Chicago

Heavy copper, cents per lb.	10.85
Light copper, cents per lb.	9.25
Heavy brass, cents per lb.	6.50
Zinc, old scrap, cents per lb.	4.25
Lead, cents per lb. (heavy)	5.75
Steel car axles, Chicago, net ton	$17.25
Cast iron car wheels, Chicago, gross ton	14.75
Rails (short), Chicago, gross ton	16.50
Rails, (relaying), Chicago, gross ton	28.50
Machine turnings, Chicago, gross ton	6.75

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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68 New York, Saturday, December 25, 1926 *Number* 26

Another Shift in the New York Commissions

CHANGES in the public service commission law of New York enacted by the last Legislature will go into effect on Jan. 1. They are part of the so-called reform and economy program of Governor Smith. Among other things a new public service department is created to be headed by the chairman of the present Public Service Commission. This body will take over the Public Service Commission, which has jurisdiction elsewhere than in New York City, and the Transit Commission, which is local to the greater city. That is only part of the story. Under the provisions of the state department law, passed by the 1926 Legislature, the Governor will have control over sixteen out of the eighteen groups of governmental machinery with czar-like power of appointment and removal.

The changes about to be put into effect are just another instance of the tinkering in recent years with the administration of the public service law. For some time after the passage of the original legislation back in 1907, under Governor Hughes, there was no tendency on the part of legislators to toy with the law. Since then, however, there has been hardly a legislative session at which some changes have not been advocated. This is cited as a fact, not as a justification or a condemnation.

The excuse for the present consolidation of activities of the regulatory commissions is that they are both quasi-judicial bodies doing the same kind of work. At the time of the approval of this latest change, considerable doubt was expressed as to the advisability of the move Next in importance, perhaps, to the consolidation is the restoration to the Governor of the right of removal of commissioners on charges. The original law, enacted under Governor Hughes, provided this feature. Under the administration of Governor Miller, the law was amended so that a member of the commission could be removed only on a two-thirds vote of the Legislature.

During the 1926 session of the New York Legislature nothing more was attempted than to arrange the structural framework necessary to group the activities of the more than 150 departments and bureaus of the state into eighteen departments. Since the adjournment of the Legislature, however, a reorganization commission has been at work preparing amendments to the law to make the transfers of legal authority such as are necessary to insure the functioning of various activities of government. Already Governor Smith is suggesting still further modification of the public service commission law, as referred to elsewhere in this issue. Legislation to this end will undoubtedly be introduced early in the coming session. Still further changes would appear to be necessary to the public service commission law and the state department law defining the general structure of the new department of public service. As indicated before, the practicability of the present arrangement has been seriously questioned. That is a point which can be settled only by the actual results recorded under the new arrangement.

Retail Merchants Have a Direct Interest in Transportation

THE record of the attitude taken by retail merchants on the transportation question is not a particularly enviable one. It has been narrow rather than broad, nearsighted and expedient rather than constructive. Although transportation is primarily a community problem, the merchants' attitude has consistently worked against sound progress.

Opposition of retail merchants was largely responsible for the abandonment of skip-stop operation in many cities despite the obvious advantages which this plan offered in expediting the movement of people between their homes and central business districts. The merchants were more interested in forcing every car to stop at their particular corner than in expediting the movement of the entire mass of riders.

Much the same attitude has been taken on the parking question. Each merchant in the congested business districts would be perfectly content to advocate parking restrictions, provided that these did not apply in front of his own establishment. When a rerouting plan is proposed to reduce congestion through the elimination of overlapping or interference between various car routes, downtown merchants are usually in favor of the plan provided the routing is laid out so that every car in the city passes their front door. Even the construction of by-pass highways to route through automobile traffic around business district congestion is frequently opposed by downtown merchants on the ground that prospective customers will be deflected from their establishments.

Business growth in the central areas of American cities lags far behind the rapid increase in outlying community centers. This condition is unquestionably attributable to the attitude of central district merchants. Unless they awaken to the situation this trend will ultimately destroy the value of a central location. People will not and should not tolerate existing conditions. The growth of outlying business centers offers a solution—and spells the ruin of downtown merchants and property owners.

The action of Chicago merchants in advocating the development of transit facilities in the central district at their own expense is particularly significant. In most cities opportunities exist for improving surface travel facilities so as to avoid a large part of the heavy cost of rapid transit construction. Establishment of express streets, skip-stops and the elimination of park-

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ing would bring immediate improvement at negligible expense.

Merchants who are beginning to understand the relation between their own welfare and that of their community are taking a more constructive view of current local transportation problems.

It is high time that other merchants awakened to the situation. They are definitely faced with the reluctance of shoppers to submit to the inconvenience and danger of the intolerable congestion which exists in most central business districts. The day has passed when downtown merchants can afford to consider only their own business to the exclusion of the community's convenience and welfare.

Foremen's Conferences Help to Improve the Shop Service

AT A MEETING of the New York Railroad Club on Oct. 15, helpful information was given on methods being followed by a number of the steam railroads in and about New York to better the working conditions of shop and other equipment employees. Thus this meeting assists, at least in part, to answer the question raised last week, i.e., how to recruit the right kind of men in the equipment department, how to keep them there in a contented state of mind, and how to train them for more responsible, and consequently more lucrative, positions in the future. All of these answers are based on the establishment of educational courses for both foremen and those in less responsible positions in railway mechanical departments.

Some of the steam roads have developed the apprentice system extensively and these courses appeal with especial force to the average railway apprentice because they mean he will have special instruction fitted to his needs, whether he has had merely a high school education or is a college graduate. The large number of young men annually enrolled in correspondence schools shows the desire that most of them have, especially when their opportunities for school attendance have been limited, to supplement their education, usually along the lines of the industry in which they are engaged at work. Railway educational courses allow them to do this while receiving pay and working in surroundings conducive to study, i.e., in association with other minds keen on acquiring the same knowledge, under personal instruction, and with large "laboratory" facilities.

The foremen's training courses, described in the New York Railroad Club papers, are of a different nature, but their popularity has been such that their number among large railroad and industrial corporations has increased very rapidly during the last few years. The purpose of such conferences is partly to broaden the background of foremen by exchanges of experience among themselves, partly to bring to their attention desirable methods applicable to their work which have been developed elsewhere, perhaps outside of the industry, and partly to allow them to pursue studies along collateral lines, such as legal, financial and accounting matters related particularly to their industry.

Testimony of the popularity of both the apprentice courses and foremen's conferences among the railroads entering New York was given in much detail in the series of papers before the New York Railroad Club, already mentioned. In this case, age seems to have made no difference. Thus, one group of foremen's conferences was mentioned in which the work scheduled was to have finished in April, but the class was so enthusiastic that the meetings were carried on until the latter part of June, when the summer weather made further continuation impracticable, yet three or four men in the class were upward of 70 years of age, and at least seven were over 60.

Possibilities for Foremen Conferences on Electric Railways

IN PERHAPS no industry are the reasons for both apprentice schools and foremen conferences so outstanding as in the electric railway industry. In manufacturing, mechanical methods necessarily have to be more or less standardized according to the article being produced. But a railway shop is devoted primarily to repairs. In other words it is designed not to turn out one finished article only, but to undertake a thousand pieces of work, each differing from the other in considerable detail, because of the nature of the repair and the type of equipment repaired.

In a sense also an electric railway company is better able to carry on such a series of conferences than a steam railroad because its shops usually are in one city so that all of the foremen can easily be gathered together for conferences and discussions. Nevertheless, as shown by the report of the committee on education at the Cleveland convention, not very much is being done along these lines by electric railway companies. A conspicuous exception is the notable work being done on the Boston Elevated Railway, under the direction of Prof. H. H. Norris, whose illuminating representations of foremen's conferences, given at the Cleveland convention as well as previously at Indianapolis and Boston, have done much to awaken interest in this subject on the part of the industry at large.

Some electric railway companies may be deterred from engaging in foremen's conferences because they consider that they are not large enough, having perhaps only three or four foremen. In this case, the wisest plan is undoubtedly to join with some industry in the town in which they are situated. It will be found that many of the problems of the railway and industrial foremen are alike. This applies very largely, of course, to labor matters and to accounting, and probably to some extent to mechanical processes, such as the use of tools, methods of electric welding, etc.

If the testimony given by other industries as to the benefits derived from courses of this kind is true, and there is no reason to doubt it, a long step forward can be taken in the improvement of equipment methods.

Milwaukee's Open House Week a Remarkable Expression of Public Service

SELDOM has the family spirit of a utility been more strongly developed than in Milwaukee. This spirit permeates beyond the officials of the company, beyond even the employees, and out into the community the company serves. The recent "at home" the company held was equally a success among employees, stockholders and the consuming public. On stockholders' day,

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out of 16,000 tickets requested, almost 12,000 were used. These owners of the property were glad of the opportunity to see the different units that earned the dividends on their invested savings. Many of the men and women, old in years, marveled at the wonders they saw. Many expressed themselves as well pleased at the splendid exhibits, and several comments were made, such as "I guess my money is safe here and I have some more next time some stock is offered."

It is difficult to estimate the value of such an affair. Even the company officials hesitated to hazard a guess. It is not measurable on any known basis, but certainly the company that has gained from its customers the kindly feeling of pride exhibited has an asset of great grip, the crisp greenback.

Not alone is this an asset to the company. It is likewise a means of instilling that pride of good service in officers and employees alike that should be an inspiration toward still greater efforts. There should be in every one's life something more than merely making a living—that much is only instinctive. Public service through any of our utilities offers that other element of value to employees of such companies, and the promotion of the service spirit by such public exhibits as Milwaukee's "Open House" week would be of value if it did nothing more than this.

Whose Stocking Is Filled— The Policeman's or the Conductor's?

A CONDUCTOR is only a conductor, but a policeman swings a big stick. Hence the abrupt and often distinctly rude manner adopted toward railway employees by the general public—hence also the honeyed demeanor and almost sycophantic regard frequently expressed by rich and poor alike for the minions of the law. It is not the car operator whose feet are submerged in piles of big and little gifts at Christmas time. He is fortunate to receive a scant "Merry Christmas" from his impatient passengers. It is the hand that writes the traffic "ticket" which receives the warm caress, the crisp greenback.

Yet the policeman is no whit above the average railway employee in his social stratum. A conductor or a motorman occupies a position of responsibility and trust fully as great as the guardian of the city's peace. It is true that there is nothing about him to inspire fear—which, after all, probably motivates the average man in his attempt to cultivate the members of the "Force"—fear, and a desire to obtain special privilege.

But the platform man has certain perquisites which are denied even to the members of the constabulary. He comes daily into close personal contact with his patrons—he is vouchsafed countless opportunities to render little acts of thoughtfulness to those whom he serves—in short, he may, if he wishes, become even more a living, breathing personality in the eyes of the car riders than the blue-coated man of the street intersection. If he is but a numbered automaton with a gruff attitude and a strident voice, he can blame only himself.

Several companies have adopted the scheme of providing their platform men with name badges. Where this has been done, it is worthy of note that patrons have soon fallen into the habit of addressing the railway representatives by name. From the standpoint of the operators and conductors, it would be well if a similar procedure could be adopted for the patrons.

An individual's personality is practically the only thing which cannot be taken from him—it is his to do with as he will. The policeman has behind him the majesty of the law. The conductor has the greater majesty of his own individuality and, in an ever-increasing number of cases, the knowledge that his company stands ready to reward him with greater responsibility as he distinguishes himself in the outpost line of company representatives.

Modern Industry Recognizes Its Responsibilities

CONVINCING evidence is furnished on all sides of the growing appreciation of its responsibilities by modern industry. It is a theme that is constantly recurring as a topic of discussion where business men assemble. Here and there the scoffer may appear, but he is crushed by the weight of the record of accomplishments. In this work of trying to humanize industry, few companies have done more than has the General Electric Company, and few men who have discussed the matter have reduced the subject as a science to simpler terms than did Gerard Swope, president of the General Electric Company, in an address made recently at the annual dinner of the Associated Business Papers. He said modern business was responsible to society in this order: the public, the employee, the shareholder and the industry itself. His conception of industry was that it is not primarily for profit, but for service.

Mr. Swope was very outspoken. He did not seek to make a virtue out of the work of his own company. He said that we know of no better system today than the capitalistic system for rewarding individual effort or corporate effort. In this he is right. The iniquities of the large corporation are as nothing compared with the iniquities of the small proprietor, where the latter still persists in modern society. If industry wants the workers to give to their work the best that is in them, it should remove fear for the future, as the element that has in the past disturbed the worker most. Mr. Swope's plan of approach to the removal of these fears contemplates full recognition by industry of its responsibility to insure employees, see that they are properly housed, urge the value of thrift upon them and deal more forcefully with the problem of unemployment. This is, of course, merely the outline. It certainly is the duty of industry fully to assume these obligations. Mr. Swope made that plain.

So far as the public utilities are concerned, they have long since been in the vanguard of the movement. Instance upon instance could be cited of companies in which each of these things has been carried to a high state of development and it does not seem unreasonable to say that nearly every company of any size has a program that contemplates one or all of these activities. A recent exhibit of the Employees' Mutual Benefit Association of Milwaukee illustrates the wide range of benefits promoted and made possible through co-operation and recognition of public service duty in this modern business organization. Then there are the many other instances of similar activities in the railway field, notably in Philadelphia, Kansas City, St. Louis and other places. They are cited merely to show that industry is recognizing its obligations and to give an idea of the extent to which the program suggested by Mr. Swope has been anticipated in some instances.

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Chicago's Dilemma Illustrates the Evils of the Fixed Term Franchise

In the Year of the Chicago Surface Lines' Highest Revenues and Most Efficient Performance the City Is Far from a Solution of Its Difficulties—One of the Underlying Companies Thrown Into Receivership on Account of the Fictitious Crisis Created by Expiration of Surface Lines' Franchises on Jan. 31, 1927

WITH the approach of Jan. 31, 1927, comes the fateful day which will mark the political crisis that confronts the Chicago Surface Lines and the millions of car riders who daily depend on the service of this largest of street railway systems. Though this group of properties is a financial success, and is providing more service and carrying more passengers than ever before, the Chicago Railways Company, comprising the North and West Side lines, has already been thrown into receivership to protect the interests of the investors. The other underlying companies face a similar fate, or at best some form of day-to-day agreement pending solution of the crisis brought on by dilatory tactics on the part of the city in handling its transportation problem.

While the investors in transportation securities thus face a crisis, the car riders of Chicago are also confronted with a serious situation. Under the unification ordinances of 1914, the present operating arrangement was effected, whereby a passenger may travel to any point in the city for a single fare with unlimited free transfer privileges. This arrangement expires simultaneously with the franchise ordinances, and unless some other arrangement is made in the meantime, there is the possibility that the car riders may lose the important advantages of a completely unified system serving the entire city.

The present crisis is in no way attributable to the operating results on the property. Physically, the property is in fine shape. It gives good service and has a substantial degree of public good-will. Its earnings have shown a steady increase, and the combined system carries annually about 850,000,000 passengers. The increase in passengers carried and in gross revenue is running better than 4 per cent above 1925.

The present dilemma in Chicago is the most remarkable example that the industry has yet seen of the situation resulting from the operation of a permanent investment on a fixed-term franchise. Coincident with the expiration of the twenty-year franchises on Jan. 31 next, some $146,000,000 of underlying bonds fall due. Banking interests sponsoring these bonds are unanimous in declaring that financing of new issues cannot satisfactorily be made with a twenty-year franchise term, and at the same time provide the new money necessary for improvements. On the other hand, the Illinois state law does not, at present, permit franchise terms of longer duration.

Subways are demanded which, with extensions and new lines, will require many million dollars of new capital. There is practical unanimity of opinion that the elevated and surface lines systems must be consolidated under one operating company. This alone is a stupendous task.

Two proposed plans of settlement have been submitted to the voters of Chicago and defeated. One attempt to make possible a terminable permit failed in the 1925 Legislature through opposition on the part of the city of Chicago and some down-state interests. The problem thus involves co-ordination of the elevated and surface lines, the state Legislature, the City Council and, above all else, the people of Chicago, in order that the many millions of dollars for extensions and subway development may be obtained.

Regardless of the expiring franchises and underlying mortgages, the Surface Lines group has made steady progress until it is now in its highest state of efficiency. More passengers are carried, more money is earned, more and better service is supplied than ever before. Loop movement has been speeded up by extensive rerouting, eliminating many turns, and the new traffic light installations. One hundred cars have been purchased at a cost of $1,600,000 during the last twelve months, bringing up the total to 445 new cars in about three years. This has made possible the addition of half a billion seat-miles in the same length of time. Yet Chicago today is unprepared with a solution whereby this greatest of all surface line systems may continue to serve except through protection of the court or by some day-to-day agreement that it may effect with the city and the bondholders.

Besides providing operating expenses the car riders have contributed considerably more than $100,000,000 in public benefits during the last twenty years. The $45,000,000 traction fund representing the city share of surplus earned has already been mentioned. In addition street paving has required $16,000,000, maintenance of paving $6,000,000, street cleaning $10,000,000 and general taxes $30,500,000.

Chicago Surface Lines an Operating Organization

To understand the situation in Chicago it is necessary to visualize the financial and corporate structure. The Chicago Surface Lines is an operating organization formed with the passage of the unification ordinances in 1914. The four companies operated under this plan are the Chicago Railways, constituting 58 per cent of the capital value of the entire group; the Chicago City Railway, 34 per cent; the Calumet & South Chicago Railway, 7 per cent, and the Southern Street Railway, 1 per cent.

At the time of the adoption of the present 20-year

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franchise in 1907 the value of these properties was fixed by appraisal, the companies agreeing to a considerable reduction. Provision was made that additions to the properties should be recognized as additions to capital, thus establishing a definite value at any period which must be considered the purchase price should the city decide to take over the lines. This combined value, as of Jan. 31, 1926, is $163,253,374. It is generally recognized that this is far less than the reproduction value of the properties, which is variously estimated at from $200,000,000 to $250,000,000.

The Chicago Surface Lines operates the four roads as one property, residue receipts being distributed to them after the payment of all expenses in accordance with their shares in the total capital.

The total outstanding bonded indebtedness of the properties is $146,371,275, of which $103,226,275 has been issued by the Chicago Railways, $36,747,000 by the Chicago City Railway and $6,398,000 by the Calumet & South Chicago. All of these bonds mature on Jan. 31, 1927, coincident with the expiration of the franchises. Since the operating agreement establishing the Chicago Surface Lines also expires at that time, steps must be taken not only for the protection of the investment but also for the continuance of unified operation under some new plan or through the extension of the present arrangement.

The Traction Situation Was Thought Settled Twenty Years Ago

With the approval of the 1907 ordinances the people of Chicago felt that their transportation troubles were over. The franchises were hopefully called the settlement ordinances. They were evolved after many years of dickering and discouragement. The disorganized street car systems of the south and north and west sides were brought into co-operation and machinery was set up for the rehabilitation and extension of the properties.

When the settlement ordinances were followed seven years later by the so-called unification ordinance, requiring the operation of the four companies as a transportation unit, the one-city-one-fare idea became a reality.

Like most franchises of twenty years ago, the 1907 ordinances fixed the maximum fare at 5 cents. They required the companies to pave, maintain and clean the part of the streets occupied by the tracks. In addition, 55 per cent of the net receipts (after deducting 5 per cent of valuation) must be paid to the city and set aside in the city treasury as a traction fund to be used for the improvement of transportation or in acquiring the properties for the city.

Relief from the restriction to a 5-cent fare was obtained in 1919 when the Illinois Public Utilities Commission determined that operation could not be continued on the basis of this rate after the War Labor Board had practically doubled wages. A 7-cent maximum was granted. There was some fluctuation between 7 cents and 6 cents until on July 1, 1920, an 8-cent fare was established. This was maintained until June 14, 1922, when an effort of the state commission to restore the 5-cent fare resulted in court procedure. A 7-cent fare, three tokens for 20 cents, has been in effect since that time.

One of the features of the 1907 ordinances which has been most beneficial in stabilizing maintenance and investment of new capital is the Board of Supervising Engineers, a non-political body created by the ordinances for the purpose of administration. The chairman of the board, Col. Bion J. Arnold, was named in the ordinances and the city and companies each selected an engineer to constitute the membership. Colonel Arnold and the engineers who have served with him have been practical men, most helpful in their attitude toward the development of the system.

Many Comprehensive Plans Have Been Made

During at least half the life of the present franchise there has been a series of efforts to work out a comprehensive plan which would provide a unification of surface lines with the elevated lines and make possible the construction of subways throughout the congested area of the city.

The first concrete suggestion with this end in view was made in 1916 by the so-called Parsons-Ridgway Commission, composed of William Barclay Parsons, chairman; Bion J. Arnold and Robert Ridgway, commissioners, and Walter L. Fisher, special counsel. The commission was empowered by a resolution adopted by the City Council "to make a study and report on a unified system of surface, elevated and subway lines." Its elaborate report has been the basis of practically every study made since that time and its recommendations for unification, subways and service at cost are still accepted as the best solution of the local transportation problem in Chicago.

In 1918 the City Council passed an ordinance known as the "new traction ordinance" providing for the development of a transportation system based largely upon the Parsons-Ridgway-Arnold recommendations. This ordinance provided for the unification of surface and elevated lines, the development and extension of rapid transit facilities by the expenditure of some $76,000,000 over a stated period and the extension and improvement of surface line facilities by the expenditure of $2,500,000 per year. It also provided for the construction of a subway through the congested Loop area to take surface cars off the streets. It was based upon service at cost and provided for continuous development.

The proposed ordinance was indorsed by the Chicago Association of Commerce and practically all civic and commercial organizations in the city. It was approved by the Council over the Mayor's veto, but at the referendum election on Nov. 5, 1918, was defeated by a small majority.

This ended traction discussion for a time, but the evident necessity for some solution soon aroused a new interest and the committee on local transportation of the City Council in 1923 instructed Major R. F. Kelker, Jr., consulting engineer, to make a study of the local transportation situation and report on a physical plan for a unified system. Major Kelker's report gave ample statistics on existing facilities and on present and future needs of the city and recommended the consolidation and co-ordination of all transportation lines so as to permit unified operation, the establishment of a single fare on the unified system within the limits of the city with transfers between rapid transit and surface lines, the construction of subways and the expansion of the existing elevated and surface railways. This development was to extend over two periods of construction based upon the relative necessity of the projects.

A new ordinance was framed embodying the prin-

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ciples of these recommendations. It provided, as did the 1918 ordinance, that control should be vested in a municipal railway board. Municipal notes of indebtedness were to be issued by the city in payment for the properties and for extensions and improvements. These certificates of indebtedness, to be redeemed out of earnings, were to be secured only by the property and were not to be a general obligation on the part of the municipality. Service at cost and an indeterminate permit to operate were features of this ordinance. It was submitted to a vote of the people on April 7, 1925, but, like the 1918 ordinance, was defeated.

Following the defeat of the 1925 proposal the committee on local transportation of the City Council has made considerable effort to develop a new plan. An ordinance was drafted by Francis X. Busch, corporation counsel, at the request of the local transportation committee to serve as a basis for discussion. This draft provides for unification of the properties, for the construction of subways to be paid for in part by special assessment upon adjacent real estate, for an indeterminate permit to be issued by the city, for a city board to take over the duties now exercised by the State Commerce Commission and the operation of the properties on a service-at-cost basis.

Hearings on this proposed ordinance soon developed the fact that it would not only require legislation which must be approved in its entirety by the Illinois General Assembly before the ordinance could become effective but that it contained many features which were objectionable to practical transportation engineers.

Representatives of the transportation companies who had attended hearings on this ordinance were requested to suggest a plan of their own. But it was objected on the part of Henry A. Blair, president of the Chicago Surface Lines, and some others, that until legislation could be secured removing the statutory twenty-year limitation on franchises and permitting unification of elevated and surface line companies it was useless to attempt any adequate solution. Studies are being made, however, with a view to determining exactly what should be asked in the form of legislation.

State Legislation Needed to Effect Solution

Mr. Blair, as early as October, 1924, informed the City Council that it would be impossible to refinance the properties, secure unification and subways and provide the necessary additional capital for extensions and improvements, the latter estimated at about $250,000,000, on the basis of twenty-year franchises. A bill establishing the terminable permit for all utilities in Illinois in lieu of definite term franchises was introduced in the General Assembly in 1925, but largely because of opposition on the part of the city of Chicago and some down-state interests no effort was made to pass it. A legislative commission was created, however, to investigate the operation of the terminable permit in other states and its feasibility in Illinois, and to report to the next General Assembly. This commission has now practically completed its investigation and its report will be made, in all probability, some time in January. It is hoped that the report will embody the draft of a bill providing for some form of terminable permit. It is highly improbable, however, that the necessary legislation will be passed before the expiration of the franchise.

Apparently there is no objection to the substitution of terminable permits for the definite term franchise law, but there is considerable difference of opinion as to whether the permits should be issued by the Illinois Commerce Commission or by the City Council. The Chicago city administration, although agreeing to terminable permits in principle, is on record against any legislation which does not invest the city with the right to issue the permits and to exercise all of the regulatory powers over local utilities now vested in the State Commerce Commission.

Recent Proposals a Further Complication

In the meantime the situation has been complicated by the submission of a proposal by F. J. Lisman & Company to form a company and take over the properties operated by the Chicago Surface Lines without waiting for legislation. Fifty million dollars in new capital would be provided under this plan for extensions and improvements of the Surface Lines. Junior securities would be issued for the outstanding bonded indebtedness on the properties. It is proposed to provide on a service-at-cost basis for the retirement of the $50,000,000 of new capital in the twenty years of the ordinance period, but unless the ordinance period could be extended, no additional capital could be put into the properties and no provision could be made for the retirement of the other securities. Worst of all, from the public policy standpoint, however, the elaborate scheme of unification and subway construction so incessantly demanded throughout the years as the only feasible solution of the problem could not be realized.

The latest development is the proposal of the Chicago Motor Coach Company to substitute buses for street cars upon the expiration of the franchises. Since it contemplates the destruction of these great properties and a wiping out of the entire capital investment it hardly seems possible that the proposal will receive serious consideration. The manifest impossibility of meeting the enormous transportation needs of the city with motor buses alone must be apparent, even to those who would have no compunction in destroying property and shaking the faith of capital in utility investments.

Busy Year for Indiana Public Service Commission

IN THE fiscal year which ended Sept. 30 the Indiana Public Service Commission authorized the issuance of $467,130 of bonds by municipally owned utilities, $45,761,805 of securities for private utilities and $255,628 for other purposes, making a total of $48,484,564. These figures are contained in the annual report of Howell Ellis, secretary of the commission. This total was $24,948,880 less than the total for the previous year. The sale of 197,025 shares of common stock of no par value also was authorized. Total fees collected by the commission in the year amounted to $295,962.

The service department of the commission disposed of 342 adjustment cases. The engineering department in the year made appraisals of utility property totaling $27,929,824, in addition to the appraisals for current securities for sales purposes.

The total expenditures of the commission for the year were $144,355. The appropriation for the commission was $170,000.

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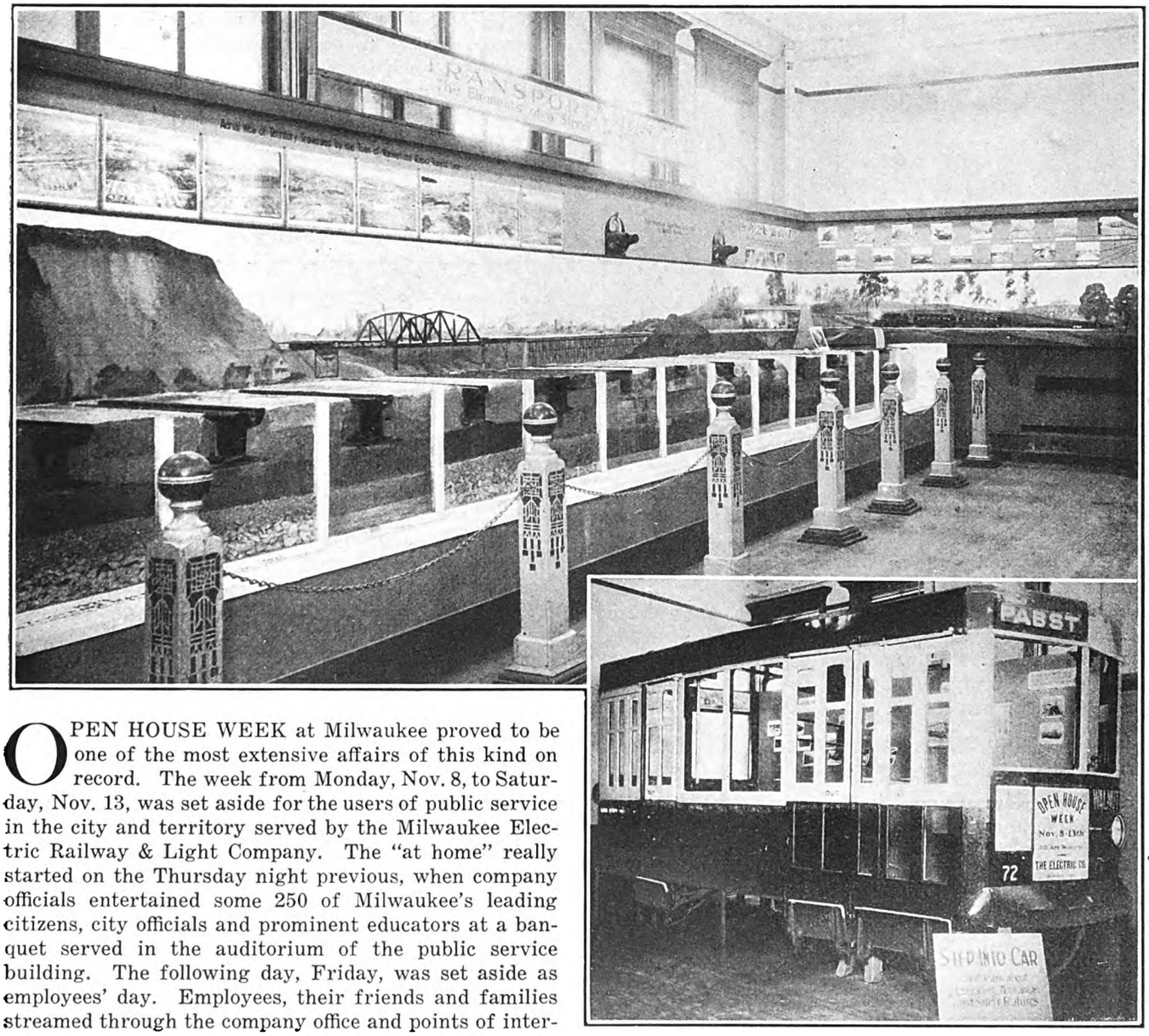
Milwaukee Holds Open House

More than 69,000 People Visited Exhibits of the Milwaukee Electric Railway & Light Company During Open House Week—Among This Number 9,479 of the Company's Stockholders Attended on a Day Set Aside for Them



Some Convincing Demonstrations of Equipment Given to Guests of the Milwaukee Electric Railway & Light Company

In the background of the transportation exhibit (upper view) was a miniature railway train that set in motion signals of various types. In the foreground were sample rail and paving sections showing the heavier construction required for modern day traffic.

One-man operating features (lower view) were explained to the visitors during Milwaukee Open House by means of this life-sized model.

OPEN HOUSE WEEK at Milwaukee proved to be one of the most extensive affairs of this kind on record. The week from Monday, Nov. 8, to Saturday, Nov. 13, was set aside for the users of public service in the city and territory served by the Milwaukee Electric Railway & Light Company. The "at home" really started on the Thursday night previous, when company officials entertained some 250 of Milwaukee's leading citizens, city officials and prominent educators at a banquet served in the auditorium of the public service building. The following day, Friday, was set aside as employees' day. Employees, their friends and families streamed through the company office and points of interest. **On Saturday, by special invitation, 9,479 stockholders of the company came in actual contact with the facilities in which their money was invested and the personnel in charge of operations.**

The exhibits were set up in seven different groups, as follows: Public service building, Lake power plant, Cold Springs shops, Oneida steam heating station, substations at eight different locations in the city and suburbs, street car stations at West Allis, Oakland Avenue and Fond du Lac Avenue and the Kinnickinnic bus garage. Features of outstanding importance were the opening of the electrical store and the prepared exhibits at the public service building and the starting on Nov. 6 of the new 1,200-lb. pressure steam boiler and turbine unit at Lakeside station. This turbine delivers 7,000 kw. and exhausts steam at 300 lb. pressure for operating the older steam turbine units. Powdered coal is used to fire this new boiler and the older units as well.

One of the rooms at the public service building was devoted to railway exhibits. A miniature train operated over an extensive track, depicting a portion of an interurban line, set in motion actual block signals and high-

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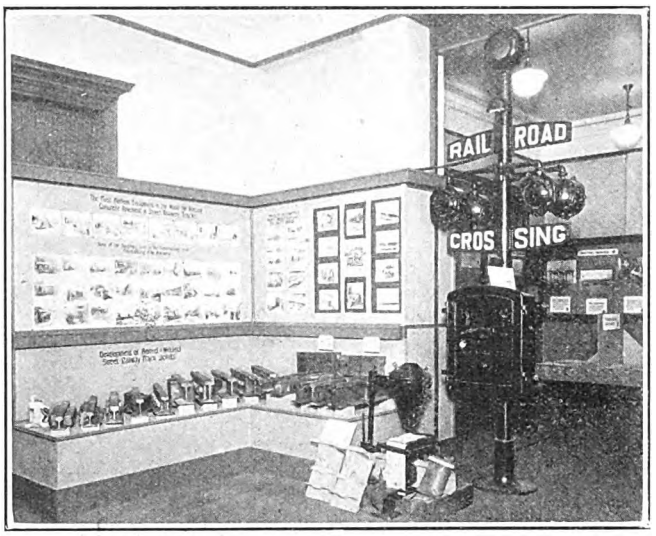
way crossing warning units, so that the public could observe the mechanism and operation of each type of signals.

Assembled in a row were typical track and paving sections used at different periods in the history of the electric railway in Milwaukee, all the way from the first rail types, consisting of flat iron bands on wood string-



An Angle on Rail Joints and Track Construction
A corner of Milwaukee's transportation exhibit during Open House Week was devoted to track details. Actual rail joints of various types used on the property were shown as well as photographs of actual track construction.

ers with open track or paving consisting of loose gravel, up to the present 151-lb. grooved and 102-lb. tee rail types in use today. The concrete or brick surfaced paving required under modern day conditions was illustrated in section by looking through the glass end of each sample of track construction. Parts of car equipment were exhibited, opened up to show the interior workings. A complete working section of a one-man car 18 ft. long was set up.

WHERE JIMMIE WORKS

One of the features of particular importance on this property centers around the Employees' Mutual Benefit Association and the educational and other work accomplished by it. The educational department has just been moved to new spacious quarters on the fourth floor of the public service building. In the auditorium on the second floor, used for many E.M.B.A. functions, was shown a recently completed film entitled "Where Jimmie Works."

In this building the medical department is located and its many rooms and laboratories were open to the visitors. Members of the medical staff showed visitors how health is promoted among the employees and their families.

In the "thrift" exhibit it was shown that the employees of the company operate the third largest building and loan association in the State of Wisconsin, with total assets exceeding $7,500,000. Of all the married employees in the company 80 per cent own their own homes.

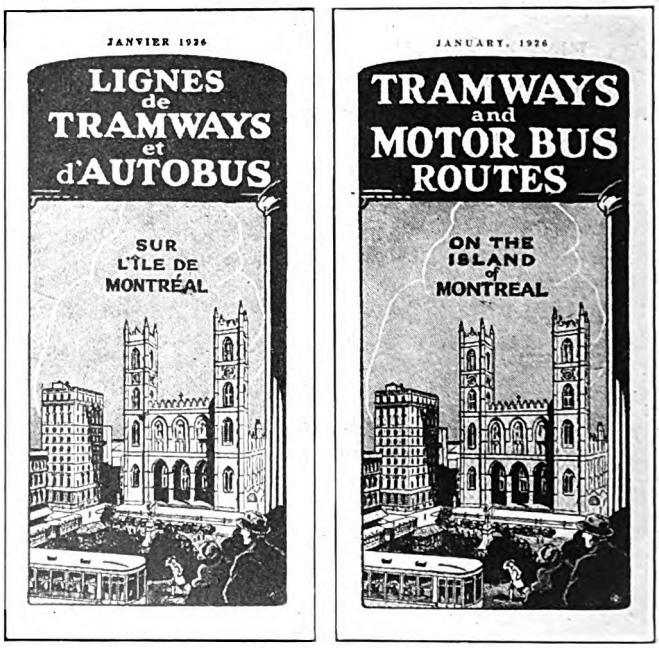
Naturally the Cold Springs shops of the company, representing approximately $1,000,000 of investment, were of interest. Work of car rehabilitation and overhauling was under way and the visitors could see the extensive processes used in the maintenance of equipment. At the Kinnickinnic garage spray cleaning, improved oiling and greasing methods and oil reclaiming processes were demonstrated. The floor type of dynamometer used to give a bus an inside "road test" proved of interest.

In addition to these exhibits the company's substations and carhouses were open to the public, guides being provided to explain their use in providing service.

Of interest to electrical men was the new store for merchandising and servicing electrical appliances. Not only are units displayed, but the method of display, even to the type of show windows, has been worked out, to illustrate the possibilities to store owners in other lines of merchandising. An electrical house is not uncommon nowadays, but in the basement level of this new store is a permanent house completely fitted out in which architects and private home builders may seek advice and have demonstrated not only the most modern electrical equipment but the most modern methods of installation.

How to Get About in Montreal

"LITTLE Lessons for Beginners in French" might well be the cognomen applied to a handy route book just issued by the Montreal Tramway, Montreal, Que. You can take your choice. Pick it up casually and you will perhaps find yourself glancing through a complete outline of the company's tramway and motor bus routes—all purveyed in the most meticulous of English. Turn it over in your hand and again you will find the same information, but this time in fluent French. Phrase by phrase the contents of the "Siamese" booklets are identical, so that neither constituent part of the French-Canadian population may cry "Discrimination!" The larger share of the population of Montreal is of French persuasion. It was decided to carry out this unique idea of a dual booklet in order that the maximum of accommodation might be provided for all users of the tramway and bus lines. In addition to in-



Both Covers of the Montreal Route Guide Are Front Covers

formation regarding the various routes of the company, a number of hints to the traveling public are included on such matters as paying fares, entering and leaving cars, etc. The booklets are furnished free of charge to patrons of the tramway and bus lines.

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Mr. Storrs Comments on Conditions in Europe

Managing Director of A.E.R.A. is Struck by Interest in Improved Rolling Stock and by Conviction on Part of European Managers and Public Officials That Complete Co-ordination of all Forms of Public Transport Is Essential to the Public Interest

BASED ON AN INTERVIEW BY
Charles Gordon

IMMEDIATELY following the strenuous work of preparation for the Cleveland convention, Lucius S. Storrs, managing director of the American Electric Railway Association, took a much-needed rest in the form of a brief trip to England, France, Germany and Italy. Although this was primarily for pleasure and rest, he took advantage of the opportunity to look over electric railway properties in the cities which he visited, and brought back a number of comments which should prove of interest to American operating executives.

LUCIUS S. STORRS
Managing Director
American Electric Railway Association

Two primary things stand out from Mr. Storrs' observations. First of these is the conviction that seems to be general throughout Europe that the electric railway continues to offer the best agency for the basic transportation service of modern cities, supplemented of course by the bus in a large measure. Transportation executives both in London and the large cities of continental Europe have not only been giving careful study of the bus in their own and neighboring countries, but have also been watching its development in America through articles in the technical press and by personal trips of inspection to this country. In addition, particularly in London, Paris and Berlin, experience with the bus antedates, in some cases by many years, its extensive introduction in this country.

Having in mind the growing realization on the part of the public and the transportation companies in the United States of the necessity for a complete co-ordination of all means of public transport and the need for a more thorough understanding of the transportation problem on the part of public officials and the people generally, as well as the necessity for better understanding of the public's needs and viewpoint on the part of transportation officials, Mr. Storrs noted particularly the progress which has been made in this direction in Europe. Here he was impressed by the strides which have been taken toward reduction of the waste, congestion and confusion produced by overlapping of transportation agencies and the obstacle to community progress which is caused by failure to consider all forms of public transportation from the standpoint of the community's needs as a whole.

In this instance Mr. Storrs found that we in America are not taking the leading position that we assume we are and on which we flatter ourselves. Throughout Europe there is an almost universal agreement on the need and advantages of co-ordination, and a determined interest by railway executives and public officials to effect such complete co-ordination of all public transport facilities as rapidly as possible, and solely in the public interest. Buses form an important part of the transportation systems, in small as well as large cities. But in each case they are co-ordinated so as not to duplicate in kind the service on rails. In providing service to sections of cities not reached by railways, and on streets where the character of the thoroughfare would make rails undesirable, they are performing useful and efficient service. In such cities as Nice, Genoa, Rome, Florence, Bologna and Munich buses are operated, but they have been co-ordinated with existing rail lines.

As a result of their experience and observations, Mr. Storrs found transportation executives, and city officials as well, convinced that adequate transportation facilities for their cities and the proper co-ordination of buses is dependent on intensive development and modernization of the electric railway systems. To this end extensive programs of improvements are under way, and

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many experiments are being conducted for the purpose of developing improved forms of rolling stock.

Like all American visitors to Europe, Mr. Storrs was struck by the comparative quietness of foreign rail operations. This he attributes to the high standards of track and equipment maintenance. In comparison with American conditions, he found this to be a point of marked superiority. Operating speeds in Europe, however, he found to be generally lower than in this country, and the introduction of one-man operation has lagged both because of the difficulty of fare collection under the zone system so generally in use and also because of the lower scales of platform wages.

Another feature with which he was impressed was the general adherence to electric braking. He was of the opinion that this increased the weight of motor equipment required and also held back the introduction of air-operated door equipment for inclosed cars. To this he attributed some measure of the responsibility for low schedule speeds.

The progress made in car improvements in Berlin and the extensive program of modernization there was the subject of particular observation and comment. Since the war approximately 25 miles of new rail lines have been built. Introduction of all-spring suspended motors and totally-inclosed bevel gear drive, with the gears immersed in oil, has passed the experimental stage and has been adopted as a definite design practice. He found the management of the Berlin surface car lines enthusiastic over the results obtained with this form of construction and considered the subject of similar improvements, one to which American operators and manufacturers could well afford to give increased attention.

An extensive program of car modernization is already well under way in Berlin. This includes attention to the matters of car appearance and other features to make the service more attractive to riders. A similar appreciation of the advantages of car improvement was evidenced in discussions with railway executives in other cities in continental Europe and in London.

Still another feature of Berlin and Paris practice is the definite commitment to single-deck cars. The management there has become convinced that the double-deck car, while it seems to afford more seats per given unit of street space and track capacity, is so slow in loading and unloading as seriously to cut down schedule speed. The net result is that all traffic is slowed down to an extent which cuts the effective transportation capacity of a given line below that obtained with single-deck equipment, when advantage is taken of modern methods for increasing the speed of passenger interchange.

Mr. Storrs was further impressed by the general use in Europe of anti-friction bearings, and the satisfactory results reported for them. In some cases, experience has extended over a number of years, and in Berlin roller bearings have been adopted as standard for all new equipment. In Paris the practice is to use ball bearings. Approximately 1,000 new cars have been put in service in the German capital, replacing older, heavier and less attractive equipment. These consisted first of four-wheel motor and trail cars, having two axle-mounted motors on one car. These are being changed so that there will be one motor on each car, driving both axles through bevel gears, and with the two cars permanently coupled to permit double end operation. Wheel brakes are being abandoned in favor of clasp shoes on axle disks or armature mounted drums.

In London two new types of double-deck surface cars are being developed with a primary view to increasing schedule speed through the provision of more ample facilities for the rapid interchange of passengers. These cars are also being designed with a view to decreased weight and increased attractiveness through the application of automotive ideas to car design.

Paris, likewise, is giving close study to car development with a view to improving the character of service rendered. In that city and in Berlin the cycle of car design has been similar. Early single-truck cars of short wheel base were followed by double-truck cars of considerably increased weight. The latest practice is in the direction of four-wheel cars of comparatively long wheel base, with oil tight bevel gear drive.

Chicago "Tribune" Defends Safety Island Regulations

COMMENTING editorially on a tour of investigation recently taken by its automobile editor, J. L. Jenkins, the Chicago *Tribune* declares that not one motorist in three pays any attention to safety zone regulations at electric railway loading points. The *Tribune*, which has been conducting a vigorous campaign for many months against the incompetent and careless motorists, pointed out that loading point safety zones have two functions—they protect those boarding or leaving street cars and they speed up motor traffic by permitting automobiles to pass a street car halted to take on or discharge passengers. Drivers are called upon to remember that they are being benefited as well as the pedestrian car rider. The writer continues as follows:

There is no safety in a safety island if motorists disregard the rules. Safety islands are safe only when the law is respected 100 per cent of the time. Otherwise the pedestrian's trustfulness merely exposes him to accident.

Safety islands, in the matter of the faith commonly placed in them, rank with boulevard and through street stop signs and traffic lights. People do not trust in speed laws, in headlight laws, in the rules concerning the passing of vehicles, the crossing of streets, or turning corners. They do, however—drivers and pedestrians—trust in stop signs and lights and in safety islands. Violations of these rules should be prosecuted, accordingly, with the utmost vigor.

The tendency to get away with something does not stop at safety islands. A trip on the boulevards is enough to show that drivers are failing to stop or slow down adequately at stop signs; that some of them habitually sneak through the traffic lights. For cars to start up on the yellow light instead of waiting for the green is an almost universal practice; the man who waits for the green received as his reward a raucous chorus of horns from that particular type of boor behind him.

Ganz Develops Single-Phase, Three-Phase Locomotive

ENGINEERS of the Ganz Works at Budapest are developing a type of electric locomotive capable of taking energy from a high-voltage, single-phase overhead conductor and converting it on the locomotive into low-voltage, three-phase current for use in the motors. Two locomotives of this type have been built for the Austrian Bundesbahn for main line service. They weigh about 80 tons each and are rated at 3,200 hp. capacity. A third locomotive of this type is being tested on a 9½-mile section of the Budapest-Vienna line. The Ganz company has also recently built two 3,500-hp. d.c. locomotives for the Paris-Orleans Railway in France.

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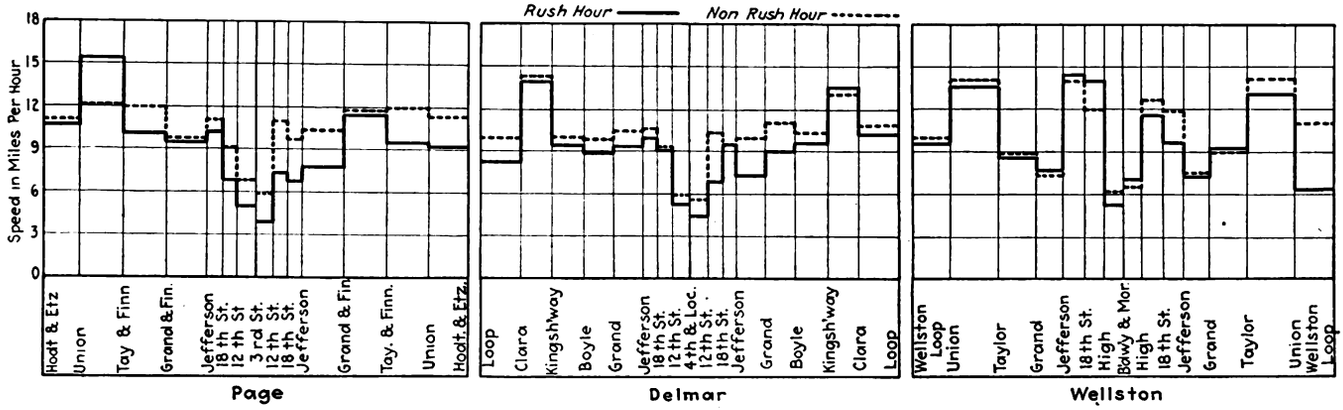
Co-ordinated Transportation Proposed for St. Louis

SECOND ARTICLE

Importance of Higher Car Speeds Stressed and Means Suggested for Gaining Them—Buses Will Not Supplant Electric Cars in Mass Transportation and Are Expensive Substitutes—High Buildings Aid Rather than Impede Better City Transit—Means Outlined for Caring for Future Traffic Needs by Rapid Transit Trains, Buses, Electric Cars and Private Automobiles

IN the issue of Dec. 11 an account was given of the present transportation agencies and transit situation in St. Louis, as outlined in a report prepared for the Board of Aldermen of that city by E. R. Kinsey, president of the Board of Public Service, and C. E. Smith, consulting engineer, St. Louis. The second part of the report analyzes the possibilities of improvement by higher speeds for the surface cars, the use of buses and rapid transit lines and rerouting. An interesting topic considered in this portion of the report is the effect on city transportation of high buildings. While indorsing the principle of decentralization to the extent to which it can be done by the removal outside of the congested center of business or trades which can be transacted as well or better elsewhere, the report declares that transportation problems are simplified when the area of the main business district is kept comparatively small by the erection there of high buildings.

An abstract follows the second part of the report. The first topic considered in this part of the report is car speeds.



Average Speed of Cars on Three Important Radial Lines in St. Louis. The Great Difference between Uptown and Downtown Schedule Speeds Is Very Noticeable

Speed of Street Cars

Before the advent of the automobile, the street car was the fastest means of transportation for use in cities not having rapid transit facilities, and it still is and will continue to be, when properly co-ordinated with bus service, the preferred vehicle for mass transportation. But people are less tolerant of slow motion than ever before and the average of 10 m.p.h. made by the city street cars is no longer attractive. It is noteworthy that the present speed of street cars was reached 25 years ago and has not been increased appreciably since that time. The street car must get in step with the rapidly changing situation and speed up. This can be done in various ways.

In congested business districts where traffic is sufficiently dense to support the investment in underground construction the speed may be raised by running the street cars in subways. But speeds just as fast may be made at much less expenditure on the surface outside of these districts.

Slow Surface Speeds Become Obligatory in Cities

As the districts in which the faster lines are located become built up, the conditions approach those of the slower lines, and the speed will likely decrease. It is necessary for those lines that are paralleled by smooth improved roads on which automobiles and competitive buses may make high speeds to increase their speed. Otherwise the traffic will pass to the fastest means of transport on the public roads.

Car speeds in cities vary from approximately 25 m.p.h. by the express trains of the New York subways down to 3 m.p.h. on the street surface of congested business districts. In St. Louis different speeds are found in various parts of the city under different conditions, as shown in Table I.

Generally speaking, the average car speed in St. Louis is 9½ to 10 m.p.h., while in Cleveland the average speed is 10½ to 11 m.p.h., about 10 per cent faster than in St. Louis. The higher speed in Cleveland is due partly to wider streets and partly to the co-operation of the public, the street railway company and the public

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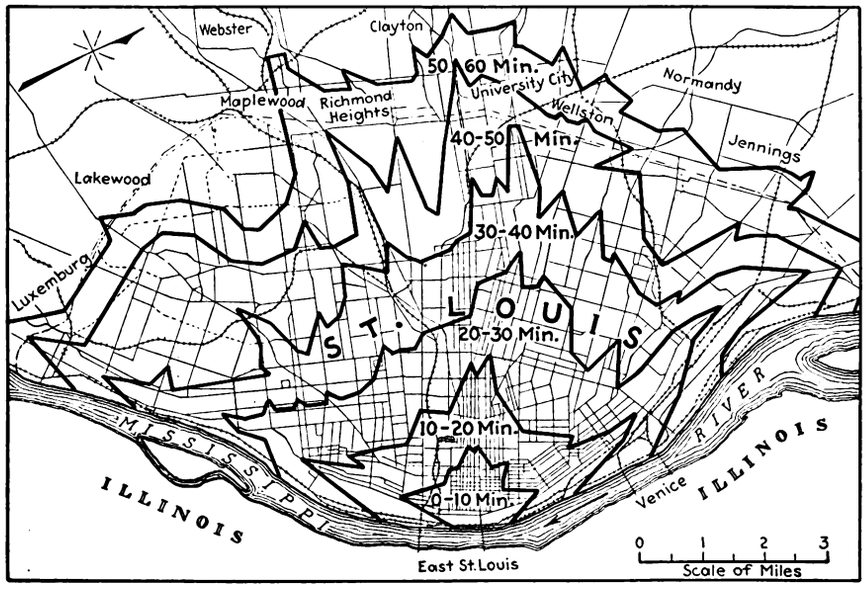
TABLE I—ELECTRIC CAR SPEEDS IN ST. LOUIS

	Miles per Hour
Congested business districts	4
Congested business districts, evening rush hour	3
Streets of ordinary width outside congested districts	8–9
In wide streets	10–12
In reserve strips at center of roadway separated by curbing from other traffic	13–15
In reserve strips alongside city streets:	
(a) When separated by curbing from other traffic	14
(b) When paved over and used by other traffic	13
Express service on private right-of-way with separated crossings	25

authorities in avoiding unnecessary use of street car space by other traffic. In addition, all streets with car tracks have been made boulevards in Cleveland and other traffic must stop before crossing. Careful planning has been given to street car speeds in Chicago and Detroit.

A great deal of the slowing down, especially in the rush hour, is due to the frequent stops. A great deal of



Present Time Zones from the Business District During the Evening Rush Hour by Existing Means of Communication

St. Louis is subdivided into small blocks, about 16 to the mile. When cars make that many stops the convenience of the greatest number is sacrificed to that of the few who desire to secure street cars by short walks. If the cars made only eight to ten stops per mile the longest distance from the stop measured along the car lines would be 300 ft. The length of the average walk would be increased less than 5 per cent, but the speed of street cars would be materially increased.

The diagram on page 1131 shows the average speed of street cars on three of the principal radial lines entering the business district. The average number of passengers per mile of single track per year for the six years 1920 to 1925 for these three lines were: Delmar, 1,213,000; Wellston, 1,200,000; Grand, 1,097,000. In these diagrams the full lines show the speed during the rush hour and the broken lines the speeds during the non-rush hours. Speeds during the non-rush hours are usually faster, as indicated by the broken lines being above the full lines in almost every case. Where the opposite occurs the cause is due either to light traffic or to cars hurrying to make up time lost in congested districts. In each of these diagrams the outlying ends of the lines are at the extreme right and left of each graph and the downtown portion in the center; that is, each graph shows a round trip. In general, the speed through and approaching the downtown end of the line is less than at the outlying ends. Where tracks are located in reservations of the streets and do not have to mix with the other traffic the speed is from 3 to 4 miles above the average.

The remarkable slowing down of street cars in the congested area causes a great accumulation of cars there during the rush hours.

Another way of showing car speeds is by a time contour map, and such a map, reproduced from the report, is shown. It has been calculated from actual speeds during the evening rush hour, the time being taken from the Federal Reserve Bank at Broadway and Locust Street, and a walking time at the rate of 3 m.p.h. has been allowed. Whenever a transfer from one line to another is made one minute is allowed for the change of cars. It is assumed that the fastest route has been taken in each instance.

A second time contour map is reproduced to show the time zones after the second step of rapid transit construction, recommended later in the report, is taken. It shows a saving of approximately twenty minutes to all parts of the city and that 90 per cent of the city population will be within a 30-minute ride of the center of the city.

MAINTENANCE OF SCHEDULE IMPORTANT

The maintenance of regular schedules is as important as faster speed, but, by reason of interference of other traffic, schedules are easily interrupted. Time checks on busy lines in St. Louis showed that time gaps between cars several times the scheduled headway are quite frequent. To show how great is the variation of the actual speed of the schedule and to show the delays in service car performance charts have been drawn for a number of lines. Such a chart for the Delmar line is given on page 1135. It shows the movement of all cars on the line during the day from 6 a.m. to 10 p.m., the slope of the line indicating the speed of the car between any two points. In this chart, lines with dots indicate two-car trains.

Because of the large number of cars on this line the observers were unable to time cars in both directions at once, and so timed eastbound cars on one day and westbound on the next. This accounts for the fact that the delays do not run across the chart. The worst delay shown was a fifteen-minute tie-up of the eastbound cars between 5 and 6 o'clock in the afternoon. The delay just east of Twelfth Street, due to traffic, frequent loading and unloading points, is clearly shown by the upward slope of the lines at this point.

The establishment of express service by the street cars and local service by buses will speed up the service marvelously. This could be worked out very nicely on the east and west lines and on some of the north and south lines. This bus service for local passengers need not be on the same street as the car line if it made junction with it at the express stops. If the street having the car tracks should be made a boulevard so that all cross traffic would have to stop and give the cars the right of way very good speed could be made.

Another method of increasing the speed of cars is

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by a thorough revision of the present car routes. In many cases lines can be rerouted, and while still serving each district adequately, the speed of the line can be increased by reducing the number of turnings and crossings. A suggested rerouting plan forms part of the report.

MOTOR BUSES WILL NOT SUPERSEDE STREET CARS

The advent of the motor bus as an agency of mass transportation is the biggest change that has happened in surface transportation in cities since the coming of the electric car 35 years ago. Among men not expert in transportation matters the idea is prevalent that the day of rail transportation in city streets is gone. But men who have made a lifetime study of rapid transportation, including those who have had most experience in operating motor buses, do not share that view. They are firm in their opinion that the motor bus will never successfully handle mass transportation in large cities. This is true except possibly under a system of rapid transit with motor bus feeders and auxiliaries.

The consensus of opinion seems to indicate that there is no place in any city except possibly the few very largest cities for the motor bus in competition with the street railway, because such competition inevitably renders adequate service by the street railway impossible, if it does not actually ruin it, while after the ruin takes place the motor bus cannot handle the load, particularly during the rush-hour peak.

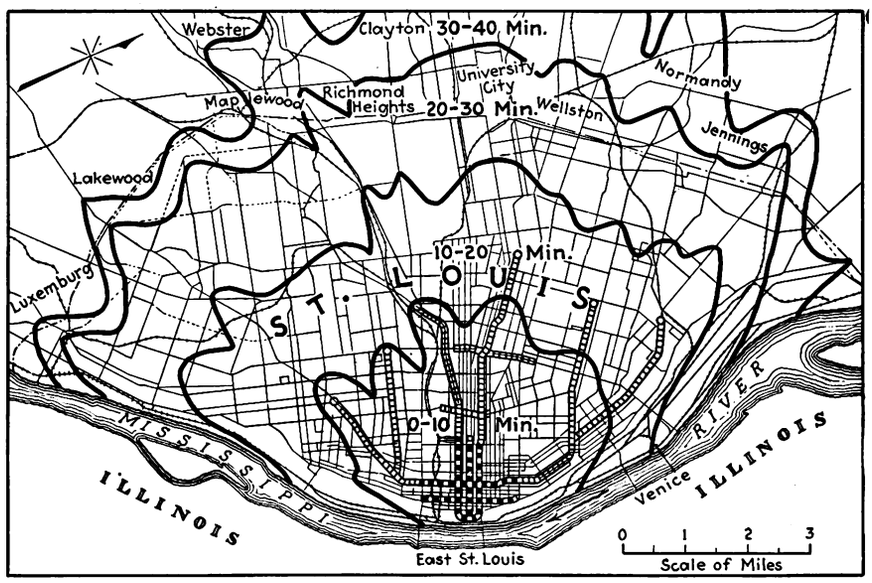
The motor bus, however, can be of inestimable value as an adjunct to the electric railway when accepted in the proper spirit as supplementing rail service and providing a class of transportation that many people desire, even at a higher cost. In cases of this kind they should be provided with that transportation to the extent to which it can be provided at the price they desire to pay for it, but it should be established as a co-ordinated branch of the street railway service and not in competition with it.

It is surprising what a large element of the population, even including men of large affairs and a big business, believes that competition in city transportation is beneficial and tends to reduce cost. Of course it is axiomatic that to the extent to which competition brings about unnecessary duplication of service the cost will be increased, and the inevitable result will be an increase in street car fare. When buses are operated as a parasite on the street railway system, reducing the profits on the profitable lines, the ability of the latter to carry the unprofitable street car lines is reduced to such an extent that fares must be increased or service reduced over the entire street railway system.

DIFFERENCE BETWEEN 7-CENT AND 10-CENT FARE

A sociological question is involved in the difference between a 7-cent street car fare and a 10-cent bus fare. The difference between these two rates means an average increase for transportation of about $50 per year per family. No doubt in any community 5 or 10 per cent of the families can easily absorb such an increase, but the great multitude of the families cannot contemplate or undertake with equanimity an increase of $50 in the family budget. To avoid that, the cheaper means of mass transportation by street cars in the larger cities must be continued with full vigor and at the least cost. This cannot be done if they are subjected to unregulated competition of favored subsidized motor bus lines.

The extent to which motor buses in St. Louis have been favored and subsidized is indicated by the fact that they are permitted to charge a 10-cent fare while the street railways are limited to a 7-cent fare. The street railway company contributes to the city about 12 per cent of its gross revenues in various forms of taxation and paving costs, the motor bus company approximately 4 per cent. The motor bus company is not compelled to provide any particular quantity of service during the rush hour, but is permitted to choose the number of passengers for which it is willing to provide seats; the street railway is compelled to provide a fixed number of seats and a fixed area of standing room for all passengers and carries the burden. The motor buses wear out pavements provided by others; the street car company pays for pavements used by others. There is no obligation on the bus company to continue service on any line.



Time Contours After the Second Step of Rapid Transit Recommended Has Been Made. Here Practically the Entire City Is Within the 30-Minute Time

The speed of the buses on the lines in St. Louis radiating from the primary business district is a little slower than the street cars. The buses average about 9 to 9½ m.p.h., the street cars nearly 10 m.p.h. But because the buses do not run as frequently as the street cars, the longer time spent waiting makes the trip take still longer. The map which appears on page 1136 shows the present street railway and bus lines in St. Louis.

Before the advent of the buses in St. Louis the 7-cent fare of the street railways was adequate, and without bus competition would be more than adequate today. But with the competition, principally because of unnecessary and wasteful duplication of service, neither company is making money. The bus fares cannot be raised. Under present riding conditions it is possible that the street railway company can be made whole by an increase in fare, and if that causes traffic to be diverted to the bus company, possibly both would be

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TABLE II—SUMMARY OF TRAFFIC COUNT INTO AND OUT OF BUSINESS DISTRICT

	10 A. M. to 4 P. M.			Maximum Hour (P. M. Peak) Leaving District One Way			Entire Business Day 7 A. M. to 6 P. M (Both In and Out)		
	Per Cent of Total		Passengers	Per Cent of Total		Passengers	Per Cent of Total		Passengers
	Vehicles	Passengers	Per Vehicle	Vehicles	Passengers	Per Vehicle	Vehicles	Passengers	Per Vehicle
Street cars	7.5	55.4	28.5	8.3	72.9	73.5	9.6	63.5	32.7
Private automobiles	89.7	36.4	1.6	89.4	20.1	1.9	87.3	28.8	1.6
Buses	2.0	7.9	14.3	1.2	6.4	45.2	1.9	7.2	18.0
Service cars	0.8	0.3	1.5	1.1	0.6	4.4	1.2	0.5	2.2
Total or average	100.0	100.0	3.8	100.0	100.0	8.5	100.0	100.0	4.9

on a better basis. But that step would be a direct penalty of a higher fare against the 90 per cent who ride in street cars in order that 10 per cent may ride the buses at still higher fares.

Notwithstanding the harm that has resulted to the United Railways from motor bus competition, the motor buses have come to stay, and when the unnecessary duplication of routes and service is ironed out the ultimate result will be beneficial.

Motor Buses Are Expensive Substitutes

It might be argued that if electric car lines could be suspended and the entire traffic thrown to the motor bus lines, the latter could succeed. The evidence all seems to indicate that under such conditions the motor bus service would result in higher fares. Having no fixed property there is no assurance of the continuation of all the bus lines, particularly the non-profitable lines. To the extent to which the newer means are justified, they should be adopted by the electric car company.

High Buildings in Primary Business Center Versus Decentralization

Is it better to permit buildings to go to any limit, as in New York, Chicago and most other large cities, or to restrict the height as has been done in Boston for 25 years? The statement has frequently been made that it is impossible to provide transportation for the congested section of Manhattan Island. The real trouble is that transit facilities there have not been provided in pace with other developments and the increased business is served by facilities built for lesser businesses.

For about 25 years Boston has had a stringent law restricting building heights to slightly over 100 ft. This has caused the business district to spread over a large area and apparently has brought into the district many automobiles for transacting business which might not have been needed if business were transacted in a smaller area. There is nothing in the Boston situation that would indicate that the restriction of building heights has ameliorated the traffic congestion there. Quite the contrary may be assumed, for recently the building height restrictions have been raised.

It is worthy of discussion whether traffic congestion is increased more by high buildings than by the increased travel made necessary when business is transacted in smaller buildings spread over a larger area. Certainly the cost of transacting business over a larger area is more expensive and raises the question whether concentrated business or traffic congestion shall control.

To minimize the amount of expensive rapid transit construction in large cities, it does not seem logical to keep the congested districts small and to concentrate the business and improvements there by permitting the maximum number of large buildings.

Decentralization has been suggested by many as one permanent solution of the traffic problem; that is, the development of a number of secondary business districts. This is apparently taking place to a greater extent than ever before, as a study of any large city will show, but there is no indication that it will materially decrease the importance and expansion of the main business center, where most of the congestion troubles are. There is no doubt that decentralization will result in increasing the amount of automobile traffic in the various centers, while at the same time street car travel will also be increased correspondingly, and means will have to be provided to furnish mass transportation among them.

Traffic conditions in the congested centers can be relieved by moving out of them certain lines of business or trade that can be transacted as well or better elsewhere. This has been done with the fruit and produce business in Chicago and has been proposed in New Orleans. It should be done in St. Louis.

With subways into the St. Louis primary business district it would be possible to move several times as many people in and out as are now being moved on street cars, but underground sidewalks would be needed along all streets having subways, and probably along all streets in that district.

Further development of the congested downtown area will depend in part on relief from automobile congestion as well as on the solution of the transit problem. With street cars removed, the streets will be available for trucks, private automobiles and pedestrians. But private automobiles must have somewhere to stand elsewhere than on the streets. Garages contiguous to the edge of the business district will help materially, but when a quarter to a half mile away from one's place of business are not altogether satisfactory. To provide for them, there should be a separate floor in every large building built in congested areas. This is believed preferable to the provisions of large open parking spaces around the edges of the primary business district.

Relation Between Street Car and Automobile Traffic in Congested Districts

The number of automobiles and automobile passengers entering and leaving the downtown congested district in St. Louis was counted on several normal days during August and September, 1925, in order that a comparison might be made between the occupancy of streets by automobiles, street cars and other traffic and the number of passengers carried by each. Altogether, during the entire business day from 7 a.m. to 6 p.m., 100,509 passenger vehicles and 37,850 commercial vehicles entered or left the business district. Of this number 10,399 passenger vehicles and 2,722 commercial vehicles left the business district during the maximum hour in the afternoon peak. Table II shows the percentages of vehicles during the non-rush hours and afternoon rush hours as well as during the entire day with average number of passengers per vehicle. This table proves that where the bulk of the transportation business at all times is done by the street cars, they carry a greater percentage during the rush hours than during the non-rush hours, and that the motor buses do not carry as large a percentage of the rush-hour traffic as during the remainder of the day.

In other words, the street cars lose most business at

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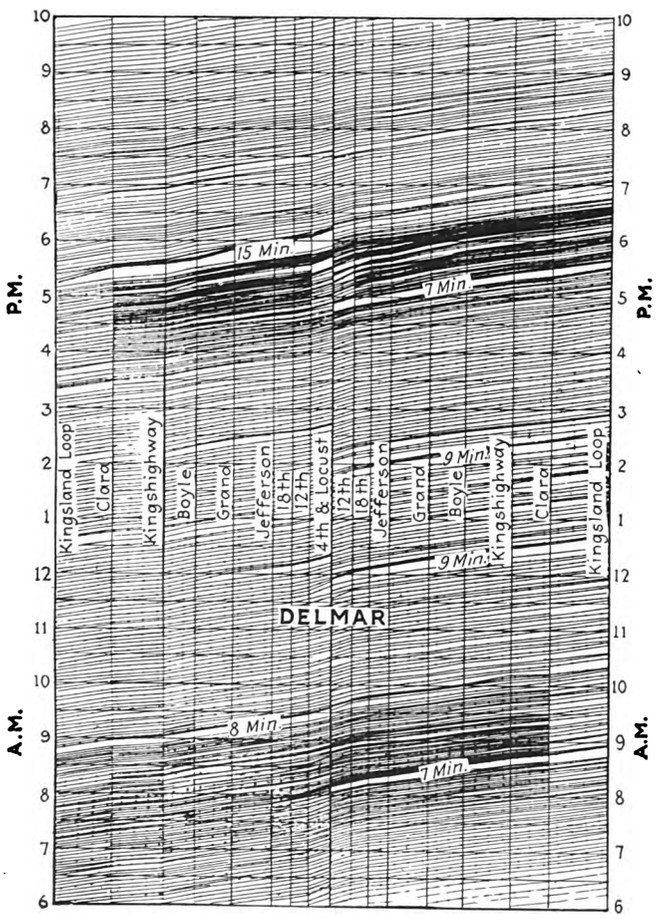
times when they have ample capacity to carry it and to furnish seats for every passenger. It is lost during non-rush hours when schedules are at a minimum and headway at a maximum and consequently when service may not be decreased proportionately without further loss. The only possible cure for this is to speed up the service and make it more attractive.

These traffic studies show very decidedly that some remedy to the present situation must be applied if traffic



Running Time Graph of Cars on Delmar Line, Showing Irregularity of Schedules in Morning and Evening Rush Hours in Downtown District

is to be kept moving at all. In the congested district the solution is to place the agency for mass transportation —that is, the street cars—on a separate level of the street, underneath the present level, and in the outsections of the city to place them in reserved strips in the center of boulevards or on separate levels either above or below the present street surface.

Another reason for the separation of traffic is that, although the passengers carried by street cars are greatly in excess of those riding in private automobiles, it must be admitted that in purchasing power and presumably from other standpoints, the automobile riders are of more importance to the primary business district than their numbers would indicate.

Effect on Car Speed of Parked Automobiles—Prohibition of Parking Considered

The survey discloses that the street cars are seriously handicapped in their movements and slowed by the congestion caused by parked automobiles. It does not seem to be a proper use of the streets to permit automobiles, which carry only a small per cent of the public, to occupy the streets so as seriously to interfere with the 60 to 75 per cent of the people who must be carried on street cars. As the survey showed reserve parking capacity outside the congested district, the remedy would seem to be to permit parking for 30 minutes to one hour, and to have parking places convenient for those who want to remain longer or all day. This might lead to each large building assigning the entire basement or an upper floor to automobile parking.

The time consumed by street cars in round-trip routes or through runs through the congested business district was checked with and without parking of automobiles during rush hours.

The first count was taken early in 1925, during which time automobiles were permitted to park at the curb for a period of one hour, and the curb space was always fully occupied during the rush hour. The second count was taken in September, 1925, after regulations had been in effect for several weeks prohibiting all parking within the district between 4:30 and 6 p.m. The regulations were well enforced and the curbs were kept clear of automobiles. The time in minutes spent by all cars in the district was reduced from 264 to 247, a reduction of 6.5 per cent, amounting to a saving of 0.9 minutes per car. The speed in miles per hour was increased from 5.29 to 5.54, an increase of about 4.7 per cent.

Even under the more favorable condition of no parking, the actual speed was about 10 per cent slower than the scheduled speed, due to delay caused by more moving automobiles during the rush hour and to the time spent in taking on passengers.

If it be a fact, as retail merchants have complained, that the complete prohibition of parking has an adverse effect on business, the slight advantage of moving street cars through the districts at an average of one minute faster would not seem to justify irreparably damaging the merchants, and parking during the rush hours might better be continued for their benefit under regulations that would avoid delay to street cars.

Automobiles should not be permitted to park so close together as to delay other traffic when getting to and from the parking space to the curb. This can be accomplished by marking berths for automobiles 5 to 6 ft. longer than the average automobile. This would seem to be preferable to the entire prohibition of parking at any time. On the other hand, there is no justification for all-day parking anywhere in or around congested districts.

Movement of Automobiles on Streets With and Without Car Tracks

A count of automobile traffic in and out of the congested districts shows that the automobile capacity of a street with no car tracks is greater than that of one with car tracks, and other studies indicate that the presence of street cars on any street reduces the capacity of the street for other traffic. This indicates the desirability of concentrating street cars on the fewest possible streets. By doing so, the streets not used by street cars can handle more automobiles at faster speeds, while the avoidance of the street car streets by automobiles—which is possible when adjacent streets are free of street cars—enables the street cars to move faster, due to less interference.

The concentration of street cars on the fewest streets practicable also permits better automatic traffic control to be adopted on those streets without street cars. Street cars in narrow streets in the congested districts cannot be adjusted satisfactorily to automatic traffic

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control because the loading and unloading of passengers control their "stop and go" periods in an irregular manner that cannot readily be synchronized with automatic signals.

Reservations for Street Cars Outside Congested Districts

Freedom of movement and relief from congestion increase with the width of streets. With 100-ft. widths further improvement may be made by dividing the roadway into three parts and providing a fast right-of-way for street cars, curbed off in the center, and one-way roadways on each side. This will provide for the separation of vehicles at different speeds, the faster automobiles close to the street car curbing, slower moving vehicles next and cars parked at the curb. On streets of sufficient width, where car tracks are located in reservations and where the density of traffic is sufficient, street cars may be operated express and local

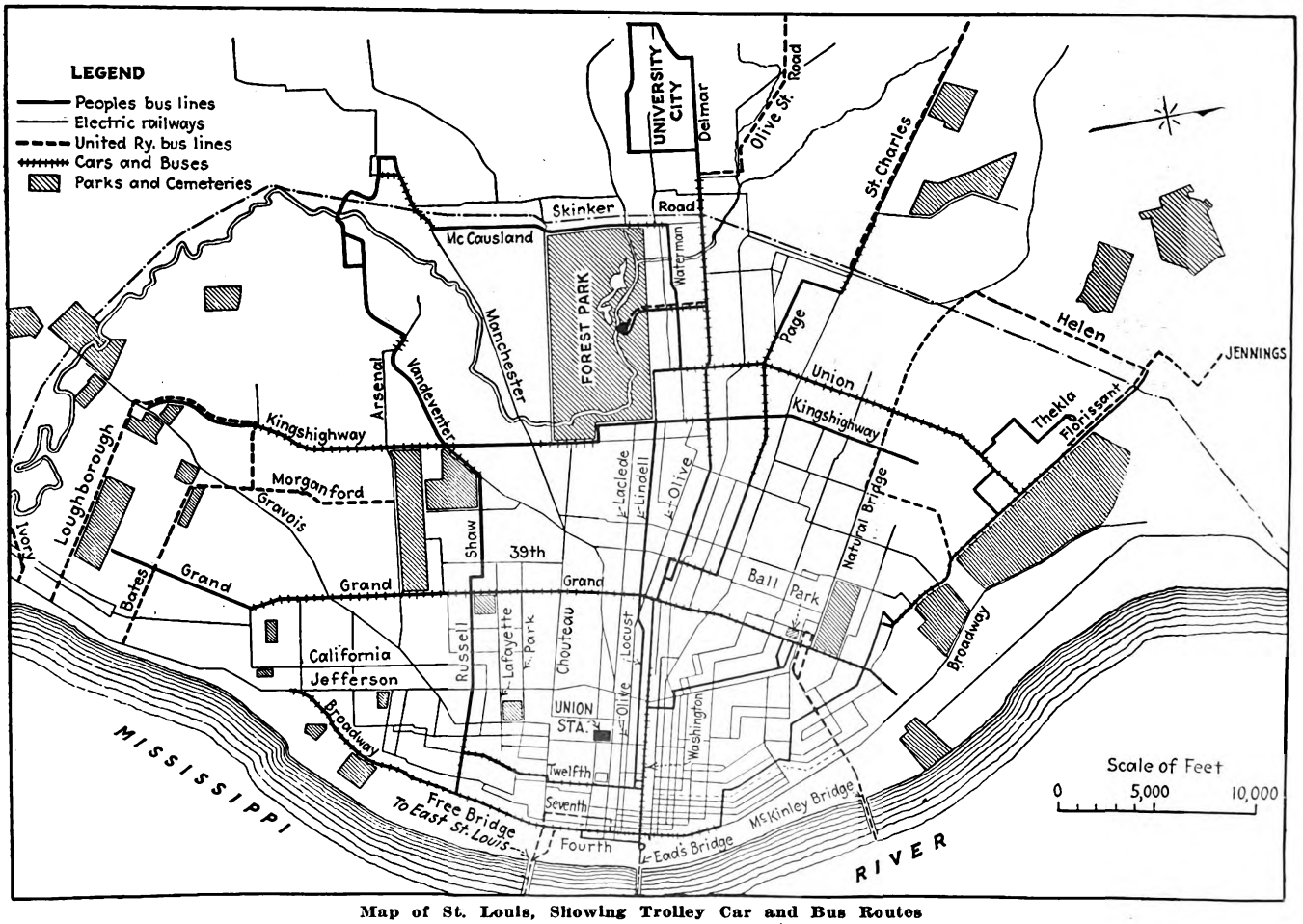
Use as few streets as possible so as to free others of car tracks in favor of automobile use.

Assemble car lines in a manner that will permit their deflection into downtown surface car subways when built, with the least rearrangement.

Loop east and west lines as far east as possible and loop north and south lines through streets as far east as possible. The latter plan offsets in part at least the tendency of business in St. Louis to drift westward and has the additional advantage that the north-and-south lines cross the east-and-west lines where traffic is lightest. Loops and turns in the business districts should be kept at a minimum and left-hand turns eliminated as far as possible.

Proposed Rapid Transit Lines

It is recommended that the first step in the construction of rapid transit facilities in St. Louis be the building of street car subways in the congested districts, as



Map of St. Louis, Showing Trolley Car and Bus Routes

service rendered by buses interchanging passengers with the street cars at important intersections, as already explained. As street car riders constitute about 75 per cent of the traveling public, there is every reason why at least one-third of the roadway should be assigned exclusively to them on streets that are wide enough.

Rerouting

The rerouting of street railway lines in St. Louis in the past has been handicapped by the requirements of old franchises and mortgage obligations, which it is expected will be virtually wiped out by the present financial reorganization and a new modern franchise. In such rerouting the following policies should be kept in mind under St. Louis conditions:

shown by the heavier check lines in the time contour map for the future on page 1133. These subways should be built near the surface of the street, especially at stations. They will be of steel and concrete and contain two tracks. Parallel underground sidewalks should be built in the subways as part of the structure. Each subway will take up nearly the entire width of the 60-ft. street and the stations and underground sidewalks will have to be built inside the property line. These subways will be built for surface cars in the first instance, but will be so designed that when extended in the future they may be used by rapid transit trains.

Such a plan would have notable advantages over a single rapid transit line, such as one through the city from east to west. Such a route would stimulate fur-

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ther intensive development along a narrow strip, whereas the plan proposed would not favor any one section of the city to the disadvantage of the others and would solve the entire street car delay problem in the congested districts. Thus, by improving the service equally to all sections, it would encourage the orderly utilization of all undeveloped areas within the city. Finally, cars used in the rush hours, to the number of 200, could be stored during the day at the riverfront instead of making return trips practically empty. This would amount to a saving of 2,000 car-miles per day.

The riverfront property between Washington Avenue, the levee, Market Street and First Street would be developed by the construction of a plaza with three track levels. On the first floor, a safe distance above the flood height of the river, would be the rails used by the Olive Street cars. On the second floor would be the Market Street cars and the elevated railroad tracks on the levee. On the third floor would be the Washington Avenue cars, about level with the railroad tracks on the Eads bridge. The roof of this building would be level with the upper or highway deck of the Eads bridge and should be connected with it and finished as a riverfront plaza.

Second Step in Rapid Transit Plan

In the second step of the rapid transit plan trains would carry practically all the heavy traffic. The lines would extend radially from the primary business district to various points, conveniently located for the assembling and distribution of passengers in such a way that the rapid transit lines would be assured of traffic sufficiently dense to justify their cost. These rapid transit lines would handle the business of several street car lines and the street cars would no longer handle the crowds downtown. The suggested routes are shown by the lighter check lines in the map on page 1133. The third and final step would consist of extending the rapid transit lines to the city limits and would involve a system with 28 miles of lines. When this step is completed the city limits would be only twenty minutes from downtown during the rush hours, instead of about one hour as at the present time.

It is expected that the first and second steps, involving the expenditure of $36,000,000, could be completed and in operation within five or six years. This sum is exclusive of about $12,000,000 for tracks, electrical equipment and cars for the operation of the line. This sum would be supplied by the operating company, unless the city should decide to finance this cost.

The time when the third step would have to be undertaken will depend on further developments, following the completion of the second step. The third step comprises 28 miles of line and its estimated cost is $52,000,000.

In the second and third steps it is contemplated that passengers wlll transfer between street cars or buses and the rapid transit lines. This would be necessary, as only a small part of the people would be within convenient walking distance of the rapid transit line. Regular transfer across a platform under cover, or in some cases at different levels, is recommended. This plan has been followed for more than 25 years in Boston and for nearly twenty years in Philadelphia with great satisfaction.

The outlying ends of the six rapid transit lines during the second step, and also after the third step, will be important transfer points and secondary business centers. At these points automobile parking space should be provided at nominal cost for people who prefer their own automobiles to street cars or buses beyond the rapid transit lines but desire the benefit of the latter. These parking areas will further decrease the parking problem downtown.

The 7½ miles of line proposed in the first step are in congested streets and subways are necessary, but the lines proposed in the second and third steps may be either subways or elevated.

"Trolley Bargain Day" in Toledo

Co-operation with Railway and Merchandising Officials on Store's Anniversary Results in Profits for Both—Checks Show Trolley Way the Best Way

"SORRY, madam, we can't accept any fare this trip. Your ride is free, by compliments of New Milner's Anniversary Sale." Such Chesterfieldian greetings to railway and bus patrons of the Community Traction Company, Toledo, Ohio, found neither unyielding nor unprepared riders, as "trolley bargain day" on Oct. 15 had been avidly awaited. For had not all citizens devoured the extravagant street car posters announcing the gala event and all true shoppers and housewives scanned the front page news stories with promises of free rides and half prices? Who among Toledo's

Replica of Free Ticket Presented by Passengers Homeward Bound Whose Store Purchases Were in Excess of $1

womanhood would miss an opportunity to "save with safety at New Milner's"?

This merchandising act, new in the history of Toledo, honored the occasion of the first anniversary of the New Milner's store, the largest department store in Toledo. Under the plan formulated by James A. Greig, sales manager of the Community Traction Company, New Milner's purchased the entire inbound business of the company between the hours of 9 and 10 on the morning of Oct. 15, during which time the fare boxes were covered with canvas hoods. But that's only half of the story. The store also offered each customer who made a purchase of $1 or more a free ticket good for one return or outbound ride. The only restriction on this free return ride ticket was that it had to be used before 4 p.m. on that day. This reservation was interpolated to avoid shopping in rush hours, thus throwing the entire burden of the special transportation stunt into the off-peak hours. The outbound ride ticket was festive looking in its yellow, black and red coloring.

Whatever this advertising stunt revealed in the way of business acumen and efficient management, it also was evidence of the deep appreciation which New Milner's felt for the residents of Toledo who had given their patronage so faithfully during the past year. To the store's executives, a fitting way to express such

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thanks seemed to be found in an appeal to the ladies—free transportation with an opportunity afforded to acquire Axminster rugs, Jap rose toilet soap and black satin charmeuse at specially reduced prices.

In the hectic rush to buy there were some quiescent moments when perhaps the name of the late W. L. Milner was mentioned. He it was who first conceived the idea of the store before G. W. Kidwell, W. P. Emery and Carr Whipple assumed the management a year ago. Oddly enough, this man Milner was also interested in transportation, an evidence of which was noted in his heading a commission which drafted and sponsored the service-at-cost franchise under which the Community Traction lines are operating. His association with both transportation and merchandising endeavors added a certain glamor to this occasion.

But whatever the reasons, the realization of this "trolley bargain day" soared above the anticipation, for when the feverish excitement had died down and emergency policemen had retraced their steps to quieter walks of the city there was still something to shout about, for New Milner's "sale of deeds, not of years" had found many willing buyers and had boosted the trolley way as the ideal way.

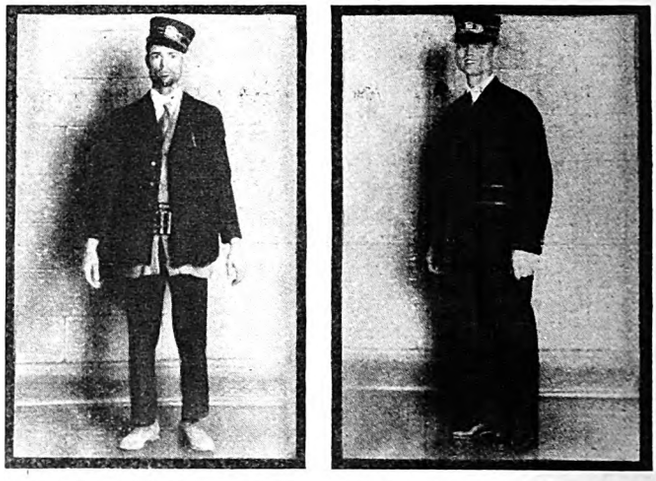
After arriving at the reasonable charge for the leasing of the railway system the amount of normal riding was multiplied by two, as it was presumed the free car ride feature would attract greatly increased patronage. This forecast proved accurate as special service was required on several lines to handle the general increase in riding. In addition, many interesting disclosures were made in this hour of wholesale riding.

Checks made by the Community Traction Company showed that 91 per cent of all persons getting off street cars at the corner of Jefferson and Summit Streets went directly to Milner's store during the special hour between 9 and 10 o'clock. This compared with 20 per cent who went there the preceding Friday at the same time. The total number of persons getting off at that corner during the hour was six times as great as on the previous Friday, and 54 per cent of all passengers riding on Summit Street got off at that intersection. Another tally showed that 1,746 persons entered the store during the special hour, as against 292 persons at the same time the preceding Friday. Unloadings at other important merchandising corners also showed a decrease of 32 per cent compared with the preceding week's checks. On Oct. 16 the check of coupons turned in showed approximately 1,800 issued by the store. An analysis made by the traction company also indicated to the store the exact neighborhoods from which the bulk of its business was attracted. These figures were furnished to the store heads and the results indicated that most of the riders in that hour were Milner's-bound.

"The results exceeded our most optimistic predictions," announced Carr Whipple, executive of the store, following the day's sale. "Certainly the results are a definite proof of the fact that Toledo citizens appreciated the courtesy." More effusive was J. Frank Johnson, vice-president and general manager of the railway, who said that Toledo could well be proud of the distinction that the whole enterprise was an indication of what could be accomplished by real co-operation. "Department stores have long recognized the fact that the great majority of their patronage comes by street car," Mr. Johnson continued, "but this is the first time that a definite check, showing just how much this patronage amounts to, will be available." He added that the results would be closely followed not only by the railway management but by Milner's also.

And now it is being bruited about that Milner's and the Community Traction will—yes—repeat the "trolley bargain day." Meanwhile other department stores in the city are making anxious inquiries on the cost of such service.

A Story Without Words



EFFECTIVE contrast, as shown in the accompanying picture, was recently used by the Utah Light & Traction Company to teach its platform men the desirability of neatness in personal appearance as a means of cultivating the good will of the company's patrons. An impressive story, without words, was told by the poster containing these pictures, of large size, displayed prominently in the trainmen's quarters at the carhouses in Salt Lake City.

Statistics of Interstate Electric Railways

DURING the early part of December, 1926, the Bureau of Statistics of the Interstate Commerce Commission made public its annual schedule of statistics of electric railway companies doing an interstate business. Altogether there are 260 electric railway companies which report to the Interstate Commerce Commission. The largest, in total operating revenue during the year, was the Pacific Electric Railway of Los Angeles, which reported revenues from freight of $5,947,157 and from passengers $12,592,345, making a total operating revenue of $19,514,325.

STATISTICS OF INTERSTATE ELECTRIC RAILWAYS FOR YEAR ENDED DEC. 31, 1925

	Eastern District	Southern District	Western District	Total
Number of roads	172	8	80	260
Miles of roads operated	8,099	467	5,509	14,074
Investment in road and equipment	$806,205,351	$41,865,505	$628,717,637	$1,476,788,493
Freight revenue	15,214,009	2,538,851	21,249,684	39,002,544
Total operating revenues	104,926,687	5,373,939	97,145,412	207,466,038
Total operating expenses	84,969,411	4,018,124	79,758,924	168,746,459
Operating income	28,847,731	1,261,116	18,012,467	48,121,314
Net income	5,067,125	(d) 35,569	8,948,648	13,980,204

(d) Deficit.

Some of the aggregate figures of the Interstate Commerce Commission are given in the accompanying table. The statistics as published give data for each of the 260 companies listed, as well as aggregate figures.

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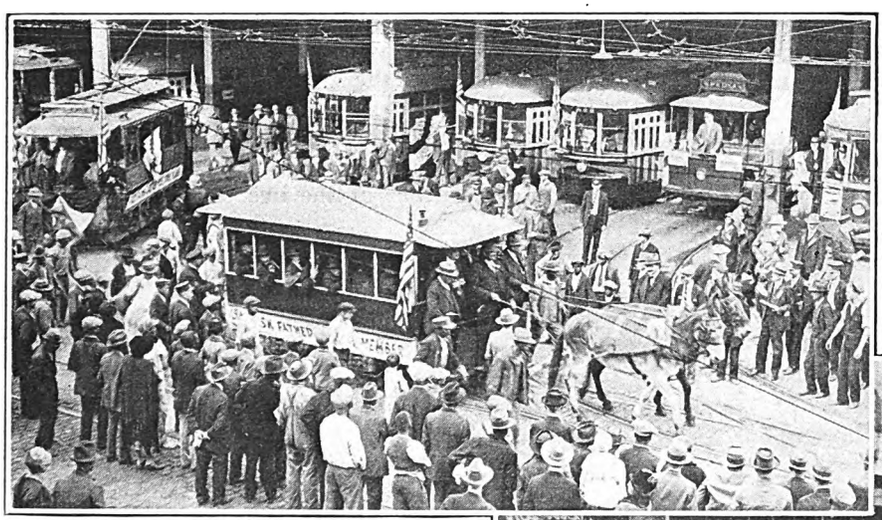
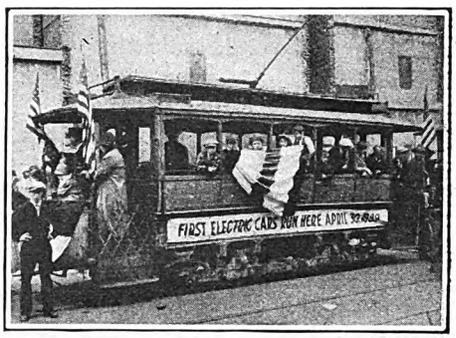
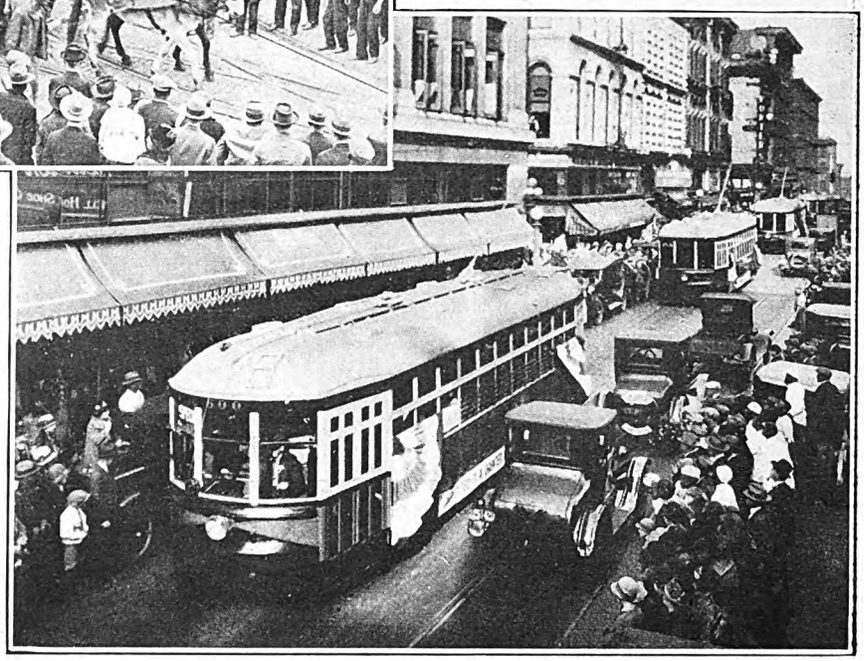
Nashville Celebrates the Arrival of New Cars

Historic Pageant Calls Out Large Crowds—Latest Cars of Modern Type Named After Ten Distinguished Citizens of the State

NEW cars, ten in all, each named after a distinguished citizen of Tennessee, have been added to the rolling stock of the Nashville Railway & Light Company. To celebrate their initial trip, the company held a historical pageant on Oct. 29, with a number of earlier types in line, including the first mule car and the first electric car operated in Nashville. The mule car represented the form of transit begun in Nashville in 1866 and the electric car that in 1889. Later types of cars followed in the procession and finally the new cars, gleaming in bright colors.







Nashville Citizens Reviewing the Progress of Urban Transportation from Mule to Motor

As passengers the new cars carried as guests of honor 500 representative citizens of Nashville, including the Mayor, other city officials, delegates from civic clubs, historians and editors. After a trip through the business district and other parts of the city they returned to a central point, where J. P. W. Brown, vice-president of the company, formally presented ten small models of these cars to Mayor Howse as indicative of their dedication to public service.

Special interest was taken in the mule car, and on the following Sunday it was exhibited on the downtown streets of Nashville to a crowd of approximately 5,000 persons.

Among the Tennesseeans for whom the new cars are named are three former presidents of the United States, Andrew Jackson, James K. Polk and Andrew Johnson. David Crockett and Samuel Houston are names borne by two other cars. A feature of historic interest in the procession was that the car "Andrew Jackson," which led all of the other new cars, bore a fine gold sword which had been presented to "Old Hickory" in Nashville more than 100 years ago. It had been loaned for the occasion from "The Hermitage," Jackson's old home near Nashville.

The city press gave a great deal of space to the parade and the lessons taught by it. One of the newspapers described the crowd as "the largest in downtown streets since the citizen troops came home from France." Another, the *Tennesseean,* said editorially: "It is a fine thing occasionally to have our attention dramatically and forcefully drawn to the rapid evolution of transportation or something else which plays a vital part in our every-day life. We then appreciate more fully the fact that the blessings, the comforts and the conveniences which we enjoy today, and we are unquestionably living in the world's best age, are not ours by mere chance. They are ours because men of prophetic vision, of dauntless courage and of intelligently directed enthusiasm have been willing to labor and to risk that we might enjoy them."

Metallic Emblems Identify Inspectors

INSPECTORS of the Union Street Railway, New Bedford, Mass., are now provided with metallic emblems of gold plate and red enamel worn on the coat lapel. The new insignia is quite distinctive and does not tarnish or fray as was the case with the braided monogram formerly used. The new badges of authority met with the heartiest approval of the men.

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Tucson Buses Make Profit

Fare Is 2 Cents Higher than That of Street Cars—Bus Patronage Has Been Drawn from the Private Automobile Rather than from the Railway

OFFICIALS of the Tucson Rapid Transit Company, Tucson, Ariz., are enthusiastic over the outcome of the first year's operation of buses. Revenue and expense figures compiled by the company show a small net profit. During the twelve months the buses have been in operation the street car traffic has shown a slight decrease. The loss on the railway, however, has been much smaller than the total number of the bus passengers carried, indicating that a large part of the present traffic has been drawn from the private automobile.

Operation of buses by this railway was begun in the fall of 1925 with the purchase of an existing route from a private concern. Seldom had more than 100 passengers a day been carried on this line. When the company took over the equipment and operation it started an additional line and there was an immediate jump in the number of passengers. Approximately 250 passengers were carried the first day. There are now three lines in operation using four buses in regular service with a fifth in reserve for emergency. On peak days as many as 900 passengers have been carried. Garford and Graham 21-passenger buses are used. Each bus averages 300 miles a day.

In Tucson Five Buses of 21-Passenger Capacity Operated on Three Routes Supplement the Rail Service of the Tucson Rapid Transit Company

Typical Advertisement Distributed with Bills to Light and Gas Customers

BUSES HAVE OBTAINED RIDERS THE STREET CARS DID NOT

In advertising the bus service, the management has been careful to do nothing and say nothing that would detract from the popularity of the street car. Bus operation has been inaugurated to serve the city better without the addition of more trackage and to get business that the street cars were not getting. The principal arguments used for riding the buses have been that they save time and eliminate the difficulty of parking private automobiles. The new service has been advertised in the local newspaper and from time to time on handbills distributed to the public. Occasionally the company prepares an advertisement and distributes it as an insert with the bills sent out to electric light and gas customers. A typical example of this advertising used is shown in an accompanying illustration.

Bus stops have been marked in an unusual and effective manner. At every corner where the buses stop for passengers a yellow band has been painted around some convenient electric light pole. The width of the band is sufficient to make it easily visible at a considerable distance. On this yellow background the bus schedule has been painted in black, as well as an arrow indicating the direction of the route. Thus a person can come to the corner, look at his watch, then at the schedule painted on the pole and know exactly how long he must wait in order to get his bus. The company has stressed the importance of keeping close to schedule and seldom is a bus more than a minute off schedule.

For the convenience of the bus passengers a vacant building at the intersection of the two busiest downtown streets has been turned into a waiting room. Comfortable chairs are provided. This facility is particularly appreciated in summer, as there is no other shade in the vicinity and the street temperatures are frequently high.

Bus fares are 10 cents as compared with 8 cents on street cars. A passenger may transfer from a bus to a street car without paying additional fare, while to transfer from the car to the bus the passenger pays 2 cents. Bus tickets may be bought in packages of twelve for $1. These tickets are on sale at a number of downtown drug and grocery stores. Dealers handle the tickets without cost to the company, as they find that this brings additional customers into their stores. To simplify bookkeeping each dealer is advanced one packet of twelve tickets. Additional packets are paid for as drawn. For example, if a new dealer wanted a half dozen packages he would pay the company $5 and owe $1. Thus he remains one package to the good as long as he handles the tickets. Making it convenient for the public to buy bus tickets has had an important bearing in encouraging traffic.

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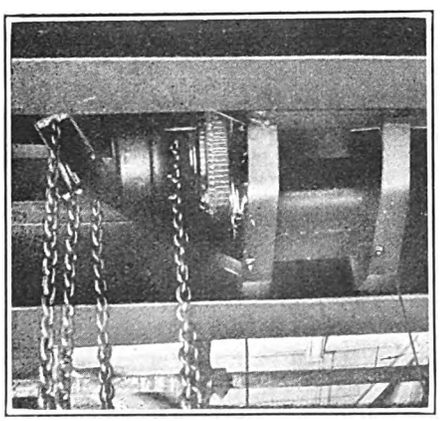
Maintenance Notes

Hand-Operated Chain Hoist Made Motor-Operated

HAND-OPERATED chain hoists with traveling crane carriage have been converted into motor-operated hoists in the shop of the Lackawanna & Wyoming Valley Railroad, Scranton, Pa., at a comparatively small expense. This has been



Hoist, Air Compressor, Driving Chain and Motor Control Ropes in Motor-Operated Hoist

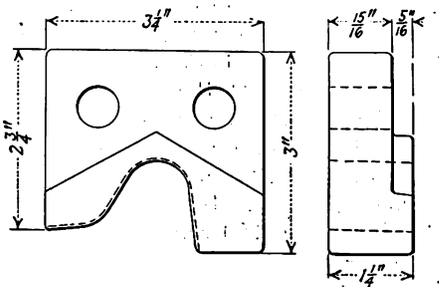
accomplished by machining off the rim of the hand chain wheel and installing a suitable gear rim on this surface. An air compressor motor with pinion installed in a cradle rigidly fastened to the carriage drives the hoist by means of a chain belt. A dial switch installed on the carriage and operated from the floor by means of ropes controls the direction of rotation of the motor.

"Watch your steps."
Keep them in good repair as a safety first measure.

Tool for Turning Wheel Flanges

SO AS to speed up the work of wheel turning in the shops of the Olean, Bradford & Salamanca Railway, Olean, N. Y., a wheel flange tool was developed to cut the flange and part of the tread in one operation. This consists of a flat piece of tool steel about 3 in. x 2¾ in. x 1¼ in. at the wide end and ⅛ in. at the narrow end. The tool is ground carefully to give the proper contour to the flange and has sufficient backlash to obtain proper cutting edges and permit of sharpening. The portion of the tool containing the cutting edges is considerably thicker than the rest to allow sufficient stock for sharpening. Suitable holes are provided to allow for solid installation in the tool support.

The wheels to be turned are mounted in the wheel lathe in the usual manner. The tool is fed against the flange, cutting it to size and at the same time removing a portion of the tread to a depth to correspond to the new flange. The balance of the tread is turned with a flat tool. This tool has afforded a means for a considerable increase in production with a corresponding reduction in turning expenses.



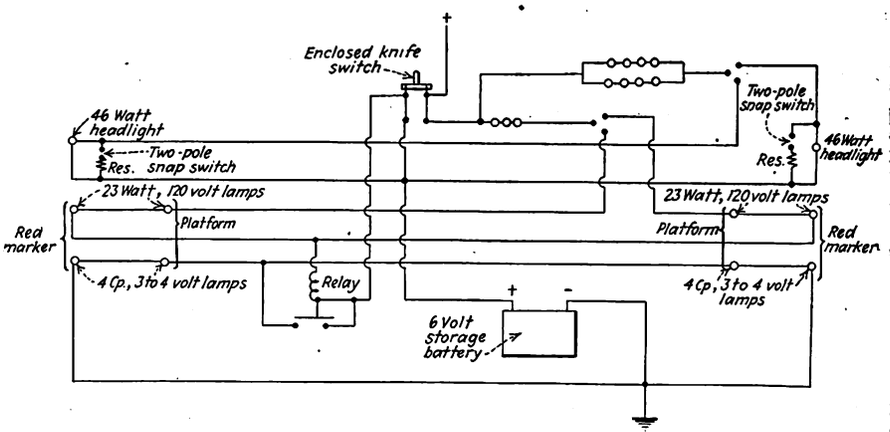
Tool Used by the Olean, Bradford & Salamanca Railway

Rear End and Emergency Lighting Prove Economical

STUDY of the problems from all angles resulted in the Harrisburg Railways, Harrisburg, Pa., installing a combination line and battery electric emergency lighting and rear lamp system for the purposes of assuring continuity of service, promoting greater safety and reducing maintenance expenses.

Heretofore oil lamps were used for rear protection. This involved continual daily maintenance expense in collection, distribution and trimming labor. Again, when the power service was interrupted, the car was in total darkness, causing some passengers to become uneasy. To obviate these objectionable features an electrical installation was made whereby the oil rear lamps were replaced by electric lamps operated from the trolley circuit. In addition a storage battery equipment was installed to permit of lighting the front and rear red dash lamps and platform lamps in case of power interruption.

The equipment consists essentially of two Electric Service Supplies Company's relays and suitable switches, also lamps mounted on either dash, each being equipped with a 120-volt railway type lamp and a 3 to 4-volt lamp and a 6-volt, 100-amp.-hr. Philadelphia Storage Battery Company's battery. All of this apparatus is located conveniently for inspection and maintenance. A



Wiring Diagram Showing Electrical Connections for Headlights, Emergency and Rear Light Installation

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4-cp., 3 to 4-volt lamp is installed on either platform and in series with a similar lamp placed in the dash lamps directly behind the 120-volt lamp lighted from the trolley. This series connection permits of an immediate detection of a failure. The storage battery is connected to the end of the car lighting circuit so that it is charged continually, thereby greatly reducing battery maintenance. Transfer of the rear lamps from the 600-volt series circuit to the 6-volt battery circuit is accomplished by means of an automatic relay which completes the battery circuit when the 600-volt source is interrupted.

This arrangement assures rear end protection at all times, whether the 600-volt power is operative or inoperative, thereby greatly reducing the possibility of rear end collision and at the same time minimizing passenger panic due to darkened cars. It also protects both ends of the car with red lights when the 600-volt power is inoperative.

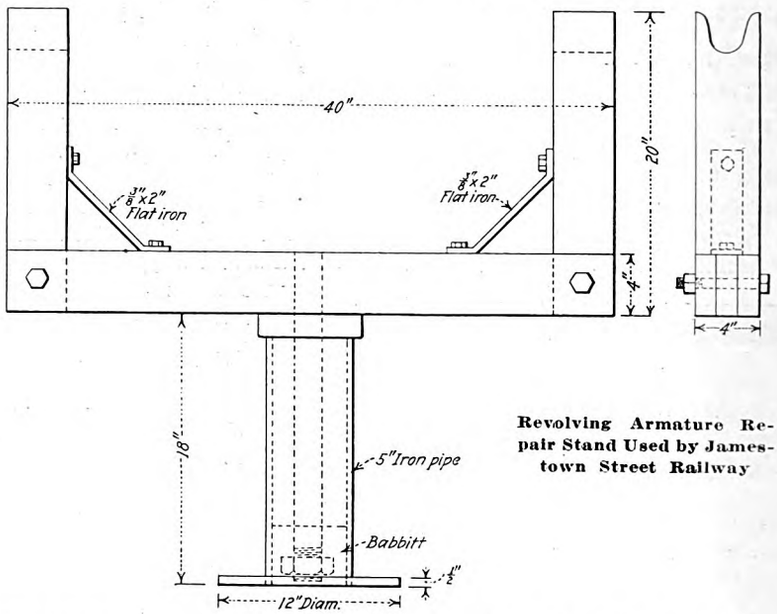
This equipment has cost about $75 per car to install, but the maintenance saving effected by abolishing the oil lamps has already paid for the installation and permitted of a very substantial profit.

Concrete Ties for City Trackwork

REINFORCED concrete ties may be used successfully in street track construction in the opinion of engineers of the Los Angeles Railway. This opinion is somewhat substantiated by the condition of a large number of such ties which have been recently removed from South Broadway between First and Twelfth Streets, a heavy traffic section, after fifteen years of service. The cause of removal was the failure of the rail fastening. In this case a square spike had been driven in a piece of pipe imbedded in the concrete. Corrosion loosened the hold of the spike in the pipe and this, combined with corrosion of the tie plate, also cast in the tie, caused the rails to loosen.

With these difficulties eliminated, which is planned in future ties of this construction, it is believed that a tie will be obtained which will have indefinite life.

Revolving Armature Repair Stand

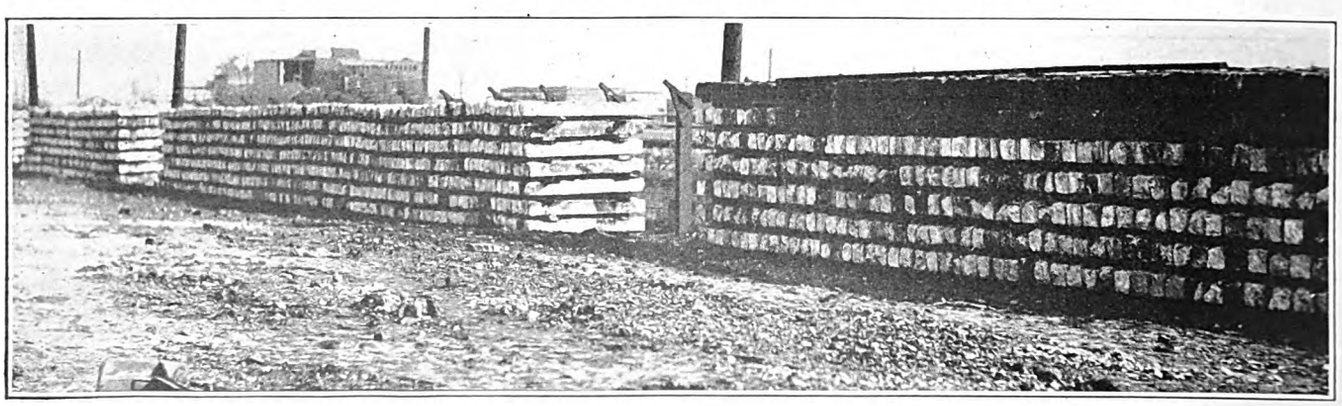


Revolving Armature Repair Stand Used by Jamestown Street Railway

PROVISION has been made for the maximum of daylight on the part of an armature undergoing repairs in the shop of the Jamestown Street Railway, Jamestown, N. Y., by the design and construction of a revolving armature repair stand.

The armature room is surrounded on three sides by a brick wall, so that the daylight working conditions are not of the best. With a non-revolving type of armature repair stand, it was necessary to perform the greater portion of the work by means of artificial light, which in a great many instances was found to be very unsatisfactory. The revolving stand consists essentially of two independent parts, a pedestal and an armature cradle. The pedestal is made of a 5-in. iron pipe about 18 in. long, fastened to a ½-in. steel plate of 12 in. diameter. A 1-in. round rod is passed through the center of this pipe and the bottom fitted with a nut and all securely babbitted in the base of the pipe. The upper part of the rod, held in position by passing through a drilled cap screwed onto the top of the pipe, projects about 4½ in. above.

The cradle is made of 4-in. x 4-in. oak timbers about 20 in. high and 40 in. long. The uprights are recessed to act as bearings for the armature. They are braced to the horizontal section by means of ⅜-in. x 2-in. flat bar. A 1 1/16-in. hole bored in the center of the bottom beam of the cradle slips over the 1-in. iron rod projection on the pedestal. This permits of free movement.



Reinforced Concrete Ties Removed After Fifteen Years Service by the Los Angeles Railway Because of Failure of Rail Fastening. Experiments Are Being Conducted with Similarly Constructed Ties with Difficulties of the Early Tie Eliminated

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This stand allows the turning of the armature to any angle desired to obtain the maximum of daylight. It can be dismantled readily or stored away when desired.

New Equipment Available

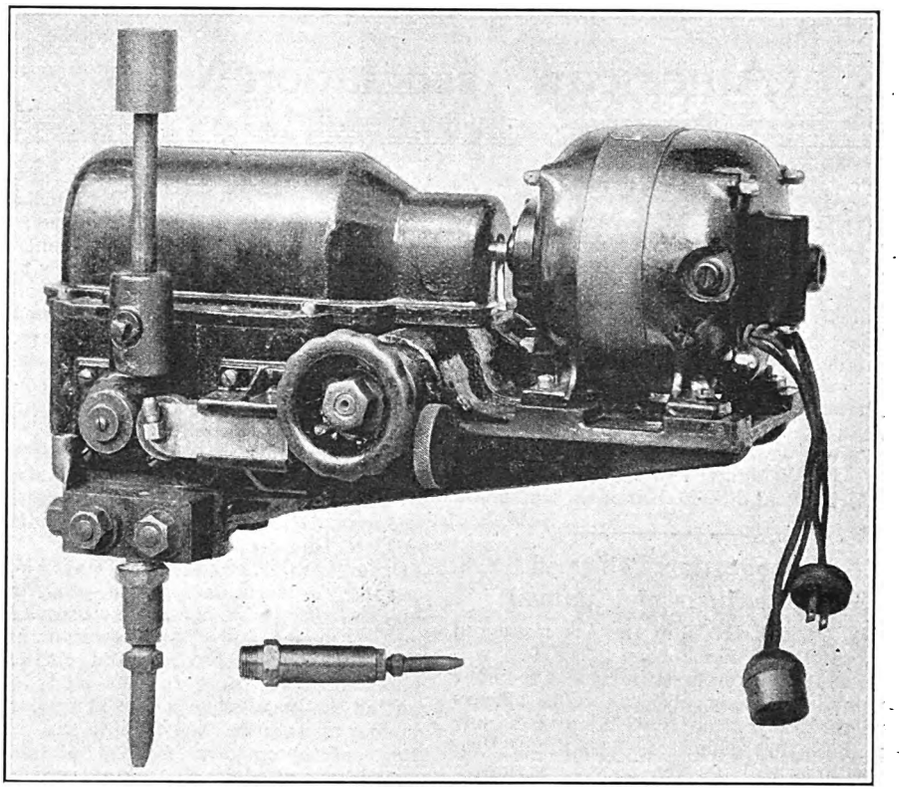
Automatic Welder Speeds Accurate Work

WELDS can be made with great smoothness, speed and accuracy, it is stated, through the use of an automatic welder introduced by the General Electric Company, Schenectady, N. Y. With this equipment, the operator needs but to push a button to start, without any further effort or skill on his part, the sequence of operations which produces the weld.

The new welder starts the arc first by touching the electrode to the work and then withdrawing it. Thereafter a constant arc length is maintained by feeding the electrode wire to the weld at the exact rate of speed necessary to replace the metal fused into the weld. It is claimed that the new equipment will perform these operations more rapidly and with a greater degree of accuracy than is possible by the most expert hand operators.

The automatic welding head incorporates the necessary mechanism for feeding the electrode to the arc and consists essentially of a pair of feed rollers geared to a constant speed motor through a magnetic clutch. The gearing and feed mechanism are contained in one housing to which the motor is bolted.

The rollers feed the welding wire through the nozzle to the arc. The distance and pressure between these rollers is adjustable. Each welding head is equipped with a set of nozzles for $\frac{3}{32}$-in., $\frac{1}{8}$-in., $\frac{5}{32}$-in., $\frac{7}{16}$-in. and $\frac{1}{4}$-in. wire. The speed of wire feed may be adjusted by means of a selective gear changer which adapts the speed of the feed rollers to the size of wire and welding current used. Three gear speed changes can be made. An additional finer adjustment can be made by means of a rheostat in the field of the motor. Provision is made for pointing the electrode backward or forward in the line of weld by rotating the head on its horizontal shaft and for moving it sideways by means of the handwheel on the front of the head.



Typical Automatic Arc Welding Head

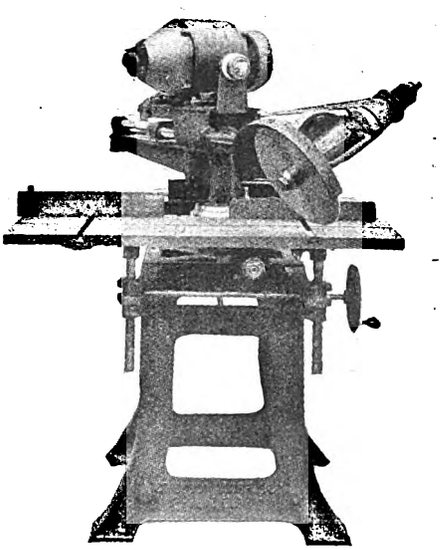
The control equipment consists of a control panel, a meter panel and a push-button station. The control panel mounts the main line contactor for the welding circuit and two smaller contactors for interlocking the travel motor with the arc. By means of auxiliary contacts, the line contactor controls the starting and stopping of the feed motor. The magnetic clutch is operated forward or backward by a voltage relay, the coil of which is connected across the arc. Thus the electrode is fed to or from the work automatically, adjusting itself to any irregularities in the surface of the work. One rheostat controls the speed of the feed motor and the other controls the voltage setting of the arc.

The automatic arc welder will be sold either separately (where the user constructs his own clamps) or as part of a complete welding equipment, including the necessary clamps and framework for holding the work.

Improvements in Wood-Working Machine

SEVERAL interesting improvements have been incorporated in the 20th Century Wood Worker as manufactured by the Cresson-Morris Company, Philadelphia, Pa. A tilting head has been added which makes it possible to cut at a double angle. The rip saw works through an improved cast-iron table, which also serves as an operating table in cross-cutting. The tilting cast-iron fence guide can be adjusted to any angle, thus making possible accurate work.

A new boring attachment and operating table are now standard equipment with this machine. High-speed boring and drilling can be done by using the large belt with which the machine is provided. A special V-shaped belt is also furnished for use in boring when reduced speed is needed.



The New Tilting Head Makes a Double-Angle Cut Possible

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American Association News

Service Betterment

SUBJECTS to be considered during the ensuing year were discussed at a meeting of the committee on service betterment, held at association headquarters, New York City, on Dec. 16. The general topics which will be studied include traffic control, speeding up service, employee courtesy, frequency of service, car design, and acceleration and braking. Members present were C. D. Smith, F. J. Denny, W. J. Flickenger, E. A. Palmer, J. C. Thirlwall and S. E. Emmons, chairman.

New Publication Policy on 1926 Proceedings and Manual

PROCEEDINGS of the American and affiliated associations for 1926 will be available for distribution to member companies early in 1927. The officers of the association have adopted a new policy—that copies of the Annual Proceedings will be sent only to members requesting them. Each company and associate member is entitled to a complete set of the Annual Proceedings and a reasonable number of extra copies without charge. Individual members are entitled to one copy of the Proceedings of the association with which they are affiliated.

The 1926 edition of the Engineering Manual will also be available shortly after the Annual Proceedings are off the press. This will be the second bound edition of the Manual, which is now published every third year, and it will contain all of the revisions and additions made in 1924, 1925 and 1926. The first edition of the Manual contained 1,030 pages. Since that time there have been 700 pages of additional specifications and revisions.

Executive Secretary J. W. Welsh is addressing all members, requesting them to inform him before Jan. 1, 1927, regarding the number of volumes of the Proceedings and of the Engineering Manual which they will require in order to determine the number to be printed.

Purchases and Stores Committee Outlines Work for the Year

SO FAR REACHING is the subject of properly disposing of unused, inactive material that President Durie of the American Electric Railway Engineering Association formally authorized the committee on purchases and stores to co-operate with the purchasing and storeroom accounting committee of the National Electric Light Association in studying the various problems involved. On Dec. 6 the committee on purchases and stores invited members of the N.E.L.A. group to join with it in a meeting at association headquarters in New York City.

Discussion of the subject of particular interest to both groups divulged the facts that the establishment of a bureau to handle the unused materials would involve a rather large expense and that it would have to do a business of $250,000 a year to justify its existence; further, it would meet with considerable opposition from independent dealers in the field. It was also developed that if the plan were to be put into operation on a larger and broader scale, the assessments to member companies would be excessive.

A sub-committee of the committee on purchases and stores was appointed to continue the study of and make recommendations regarding the disposal of this type of material.

Other subjects considered at this meeting, in formulating the program for next year, were the review of existing Purchases and Stores sections of the manual for revisions and corrections; the need for a further study of routine methods to be followed in purchasing and stores departments and the study of a uniform method of distributing materials by supply trains and trucks; a uniform system for inspecting and testing materials, with a view to recommending what classes of materials are to be inspected and tested at the factories and what classes at the point of receipt. Sub-committees were appointed to handle these various phases of the year's work.

The meeting was attended by the following committee members: J. Fleming, chairman, presiding; J. Y. Bayliss, A. C. Duncan, A. L. Fischer, B. W. Forkner, A. E. Hatton, W. E. Scott, W. J. Walker.

Representing the purchasing and storeroom accounting committee of the N.E.L.A. were: E. S. Brock, chairman; D. A. Truax, E. M. Burbank, G. W. Young, C. A. Harris, K. C. Campbell, A. Ziegler, Lewis A. Jones, W. F. Stevens.

Special Bulletins Available

FOLLOWING is a list of special reports prepared by the Bureau of Information and Service of the American Electric Railway Association. They are available to member companies upon request:

Bulletin No. 115. *Wages of Employees Other Than Trainmen.*—This gives for about 230 companies a classification of employees and the wages paid each class in the shop, carhouse, way and structures, car, overhead line, stores and bus maintenance and garage departments. It also gives the number of hours worked weekly, the average weekly wages earned, overtime rates and number of employees in each department.

Bulletin No. 116. *Effect of Fare Changes on Revenues and Riding Habit.*—A group of companies having had two or more fare changes has been selected and a detailed record of their revenue passengers and passenger revenues month by month before and after the date of the fare change, has been compiled. The average daily number of passengers carried and the average daily passenger revenue under each rate of fare is compared, and there is also shown a comparison of the percentage of revenue passengers using transfers and reduced rate tickets under each rate of fare.

Bulletin No. 117. *Analysis of Electric Railway Franchises, Part II.*—This is an identical analysis of twelve recently granted franchises under the following main subjects: General Terms, Public Control, Fares, Regulation of Service, Finances, Capitalization and Accounts, Regulations Governing Company's Use of Streets. Part II covers the last four subjects mentioned.

In addition to the above the following supplements have been prepared, bringing the information they cover down to December 1, 1926:

Supplement No. 15 to City and Interurban Fare Bulletins Nos. 41 and 42.
Supplement No. 2 to Bulletin No. 108, Wages of Trainmen.
Supplement No. 2 to Bulletin No. 109, Wages of Busmen.
Cost of Living Studies (Bulletin No. 118).

Kentucky Meeting Postponed

DUE to a conflict of dates the Kentucky Association of Public Utilities will hold its annual meeting Feb. 18 and 19 instead of in January as previously scheduled. Headquarters will be at the Brown Hotel, where the first session will convene on the afternoon of the 18th at 2 p.m.; following the meeting on this day, will be held a banquet and dance. The second session will open at 9 o'clock the following morning.

W. H. Sawyer, president of the American Electric Railway Association, will be one of the principal speakers.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Jan. 6-7—Midwest Electric Railway Association, midwinter meeting, Mayo Hotel, Tulsa, Okla.

Jan. 7—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

Jan. 10-14—American Road Builders' Association, convention and road show, Coliseum, Chicago, Ill.

Feb. 18-19—Kentucky Association of Public Utilities, annual convention, Brown Hotel, Louisville, Ky.

Jan. 19-20—Central Electric Traffic Association, Fort Wayne, Ind.

Jan. 21-22—Central Electric Railway Accountants' Association, Fort Wayne, Ind.

Jan. 25—New York Electric Railway Association, winter meeting. Hotel Commodore, New York City.

Jan. 26-28—Association of Equipment Men—Southern Properties—Memphis, Tenn.

Feb. 3-4—Central Electric Railway Association, winter meeting, Toledo, O., Commodore Perry Hotel.

Feb. 7-10—American Institute of Electrical Engineers, annual convention, Engineering Societies Building, New York City.

Feb. 10—Central Electric Railway Master Mechanics' Association, Toledo, Ohio.

Oct. 3-7, 1927—American Electric Railway Association, annual convention, Public Auditorium, Cleveland, Ohio.

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The News of the Industry

Dayton One-Man Car Ordinance Unconstitutional

In an opinion handed down recently the United States Circuit Court of Appeals affirmed the decision of Federal Judge Hickenlooper that the city ordinance of Dayton, Ohio, prohibiting the operation of one-man street cars was unconstitutional. The city of Dayton had appealed from this decree, which enjoined the enforcement of the ordinance. On Dec. 14, 1921, the City Council of Dayton passed an ordinance authorizing the installation of the one-man type of car. Later, in 1923, agitation was promoted by representatives of organized labor for the repeal of the ordinance. On Nov. 6, 1923, the first ordinance was repealed and the new law was passed providing a fine of $35 a day for each car manned by a motorman alone. Appeal was taken from this on the ground that it was unconstitutional and a violation of the Fourteenth Amendment in taking away property without due process of law.

Open House a Success in Wisconsin

More than 90,000 persons were shown through 62 public utility plants and offices in 27 cities during the open house show conducted recently by public service companies in Wisconsin, according to a report made by John N. Cadby, executive secretary of the Wisconsin Utilities Association. Mr. Cadby said that since this was the first attempt to hold a state-wide open house exhibition in Wisconsin the public response was highly gratifying. Approximately 4,500 in. of newspaper advertising space was used in the daily and weekly newspapers by the different companies to acquaint the people with the attractions offered in the open house show. By far the largest share of this advertising was prepared by the Wisconsin Public Utility Information Bureau. Most of the success of the exhibition is attributed to this concentrated advertising program. The conduct of the Milwaukee open house show is described elsewhere in this issue.

Mitten Management Makes Good Bank's Losses

Mitten Management, Philadelphia, Pa., has been enabled to fulfill its promise to restore to depositors of the defunct Producers' & Consumers' Bank the full amount of their original deposits. This fact is disclosed in a statement announcing that $175,612 is now credited to the individual accounts of 1,168 depositors of the former Producers' & Consumers' Bank, who accepted the Mitten reorganization plan for straightening out the financial affairs of the bank. The losses of the Producers' & Consumers' depositors, the statement pointed out, have been made up, not out of the profits of the new Mitten bank, but by direct contribution of $175,612 from Mitten Management funds.

The statement made two other interesting announcements. One was that the Christmas issue of *Service Talk* would have something to say regarding the prospects of repayment to the Producers' & Consumers' stockholders "who went along with Mitten in the Mitten Men & Management Bank." The other was that the Mitten Men & Management Bank & Trust Company, which succeeded the Producers' & Consumers' Bank, will move into its new bank building on Jan. 1, 1927.

Changes in New York Regulatory Plan

New Public Service Department Is Created to Be Headed by Chairman of Present Public Service Commission—Will Take Over Public Service and Transit Commissions

NOBODY at Albany seems to know exactly what effect the reorganization of the state government into eighteen departments or groups will have upon the administration of the two bodies now functioning under the provisions of the public service commission law.

On Jan. 1, 1927, a complete change in the administrative structure of the government of New York State will go into effect under the provisions of what is known as the new "state departments law," passed by the Legislature of 1926. Originally advocated by the Constitutional Convention of 1915, this reform was successfully brought about as a part of the program of Governor Smith to increase efficiency in the operation of government. Under the provisions of such law, the Governor will have control over sixteen out of the eighteen groups of governmental machinery.

The experts who drafted the structural law to effectuate the reorganization scheme claim that after Jan. 1 the Public Service Commission and the Transit Commission will continue to function exactly as they have done in the past so far as the regulation of the affairs of public utilities is concerned, and that the only change will be in the physical description of the two bodies. A serious question arises as to whether, in an attempt to consolidate two quasi-judicial bodies under one head and at the same time preserve their individual entity, the effectiveness with which either or both bodies may function may not be impaired.

The new law, which is included in Article 16 of the state departments law, says:

> There shall be in the state government a department of public service. The chairman of the public service commission shall be the head of such department and when acting in such capacity shall be known as the chairman of the department of public service. . . . There shall be in the department of public service a division to be known as the state division and a division to be known as the metropolitan division.

The new law then provides that

> The head of the state division shall be a public service commission, to consist of five commissioners, who shall be appointed by the Governor, etc. A commissioner to be designated as chairman in his appointment as such commissioner shall be chairman of the commission until his term as commissioner expires.
>
> The head of the metropolitan division shall be a transit commission, to consist of three commissioners, who shall be appointed by the Governor, by and with the advice and consent of the Senate, for terms of nine years each. A commissioner designated by the Governor shall, during his term of office, be the chairman of the commission.

It is provided in the law that

> The state division, by the public service commission and commissioners, shall have, exercise and perform the jurisdiction, supervision, functions, powers and duties of the public service commission and commissioners, as prescribed by law when this article takes effect.
>
> The metropolitan division, by the transit commission and commissioners, shall have, exercise and perform the jurisdiction, supervision, functions, powers and duties of the transit commission and commissioners, as provided by law when this article takes effect.

This much of the new law is entirely plain. The next section, however, states:

> The head of the department (Department of Public Service) shall be the chief executive officer thereof (chairman of the Public Service Commission). The appointment or removal of all officers, clerks, inspectors, experts and employees of the department or of any division thereof, and all contracts for special service, shall be subject to his approval. The organization of the existing office of the public service commission is continued as the organization of the state division, and the organization of the existing office of the transit commission is continued as the organization of the metropolitan division, except as provided by this article or otherwise by law.

Read literally, this apparently means that the chairman of the Department of Public Service, who is the head of the state division in relation to the regulation of utility corporations, will have the power to hire, discharge, fix the compensation of the employees and must approve all of the payrolls and other vouchers calling for the expenditure of money of both the state division and the metropolitan division.

He has nothing to say about the personnel of the membership of the metropolitan division, neither does he have any voice in their acts in relation to the regulation of utility corporations.

The metropolitan division; that is,

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the Transit Commission, is supported, in so far as the payment of its employees is concerned, by funds appropriated by the city of New York, so that under the provisions of the new law, if its literal conception be correct, the head of the state division, also the head of the two divisions combined, will be approving the payment of moneys out of funds belonging to the city of New York, as well as the salaries of the commissioners of the metropolitan division, an extremely weird legal situation.

More Moves Contemplated

Governor Smith in a letter addressed to Hon. Walter W. Westall, chairman of the State Reorganization Commission, pointed out on Dec. 20 certain apparent defects in the reorganization plan which becomes effective Jan. 1, and has proposed certain legislative changes. In reference to the Public Service Commission and the Transit Commission, the Governor has this to say:

> In my detailed recommendations you will note that I recommend that these two commissions be combined as contemplated by the constitution and that the head of the department be a single public service commission. If this is not done and the anomalous arrangement in the present state departments law remains, then the functions of the two divisions of the department which are semi-judicial in nature and their decisions in such matters should not be subject to the approval of the chairman of the department.
>
> I believe that the structure for the department of public service set up by the state departments law is unconstitutional, unwise and wholly contrary to sound, administrative practice. Under the present law the department consists of two practically independent divisions, but in order to have a nominal head of the department so as to conform to the letter of the constitution, it is provided that the chairman of one of the divisions shall for purposes of controlling appointments and salaries be the head of the department. This is no real department head and the arrangement can only lead to friction and trouble within a department whose real functions are regulative and judicial. There should be one Public Service Commission at the head of the Department of Public Service and this Public Service Commission should have charge of all of the functions given to the state division and to the metropolitan division in the present law. The chairman of the Public Service Commission should carry out the administrative policies determined by the commission.
>
> By reason of an imminent vacancy in the Public Service Commission the time is now opportune for the consolidation of the so-called metropolitan division and the state division into one commission consisting of seven members, leaving the present incumbents and existing terms just as they are, and providing that the state division chairman shall be the chairman of the commission. I therefore recommend to you that you consolidate the two divisions, abolish the position which is about to become vacant and that you leave the internal organization of the department to be worked out by the commission.
>
> With reference to the public service and public works departments, I strongly recommend that you define more clearly and logically the relative functions of these departments as to grade crossing eliminations. I believe that outside of New York City these eliminations should be initiated and all engineering plans and supervision not intrusted to the railroads should be in charge of the Public Works Department. The Public Service Commission, on the other hand should order all eliminations. The present situation is confusing. There is bound to be duplication of work, and the responsibility is scattered and lost.

The reorganization commission is at work redrafting present statutes to conform with the reorganized scheme of government.

Seattle Decides to Borrow

City Will Take $135,000 from Light Department to Tide Railway Over—Superintendent Henderson Asks for Public Co-operation—Explains Savings by Purchase of 80 New Cars

AN ORDINANCE providing for a loan of $135,000 from the light department to the municipal railway department, at Seattle, Wash., a measure designed to tide the railway over its present financial difficulty, has been passed by the Council and signed by Mayor Bertha K. Landes. The measure becomes effective within 30 days, but it faces the prospect of a test suit in court by a committee of fourteen taxpayers, headed by S. B. Asia, who have at all times protested the invasion of the general fund and who have criticised the Council's policy of borrowing money from one fund for the aid of another. They declare there is no statute authorizing the Council to make these loans.

E. L. Blaine, chairman of the finance committee, declares the city has saved about $30,000 a year by using the idle fund of one uti'ity to assist another utility. He points out that the fact that the city is barred by law from loaning the proceeds of bonds voted by the people does not prohibit it from loaning from one utility to another. He points out that by making use of an idle utility fund it becomes unnecessary to borrow money at 5 or 6 per cent.

In the meantime, Mayor Bertha K. Landes has submitted to the Stone & Webster officials in Seattle a request for a revision of the municipal railway purchase contract that would extend the time on the purchase bonds and thus reduce the annual payments on the contract. The proposal was laid before A. W. Leonard president of the Puget Sound Power & Light Company, and Judge James B. Howe, Western attorney for the Stone & Webster interests. Mr. Leonard advised Mayor Landes that he would recommend an extension of time on the bonds, provided it could be done without affecting the priority of the claim of the bonds.

In this connection, Mayor Landes said that "there has never been as much reason for optimism as there is today" in railway affairs. She declares that this optimism should exist because of the reduction in operating expenses which will be effective on Jan. 1, with an estimated saving of $300,000 a year. With this in view, she deprecated any action on the part of citizens to involve the railway in litigation and urged the co-operation of all taxpayers in furthering the affairs of the lines.

Another possible solution of the railway problem under consideration in the City Council is a plan to ask the taxpaxers, if necessary, to pass a general fund bond issue which would place the railway on its feet. The plan thus far is in only the most tentative state and is meeting some opposition in the Council. Councilman W. T. Campbell suggested the plan, pointing out that the city could issue as much as $1,500,000 in bonds, which would put the railways over the peak, he declares.

The City Council of Seattle has accepted the proffered services of the Westinghouse Electric & Manufacturing Company to have one of its engineers conduct a survey of the municipal railway.

D. W. Henderson, general superintendent of the railway, recently issued a statement in which he said:

> There has been so much misrepresentation and distortion of the facts concerning our street railway system and in particular concerning the purchase of the new cars, that I believe the public is entitled to an unbiased statement of the facts.

Trying to Pay Debt in 20 Years

> We are attempting to pay the entire cost of our system out of its income in twenty years, something which no privately-owned road has ever been able to do. In addition we are paying 5 per cent interest on the amount outstanding, and are charged with 4.2 per cent depreciation. In the last six years we have spent $1,736,744 for converting two-man cars into one-man cars and for new trackwork, both of which items are really capital investments. The sum total of these charges amounts to 16.2 per cent on the original investment, which no privately owned line could or would be permitted to earn.
>
> No accurate or impartial statement has been presented to the public concerning the savings to be effected by the purchase of the new cars. Everyone, from the Mayor down, who has taken the trouble to consider the facts and figures, has become thoroughly convinced of the reality of the savings that can be realized by the purchase of the new equipment. If the people of the city will analyze these figures with the same impartiality that they employ in their own affairs, I am certain that they also will be convinced.
>
> It is significant that modernization of equipment has, in absolutely every case throughout the United States, been the solution of the railway problem, and has invariably resulted in putting street railway properties on a paying basis.
>
> Statistics have been gathered by the American Electric Railway Association, comparing twenty representative roads throughout the country which have modernized their equipment with twenty very similar roads which have not done so. The roads involved range all the way from those of large cities like Boston and Pittsburgh down through those of cities of the same class as Seattle, such as Providence and Houston, to the smaller lines in cities of only a few thousand population. They include strictly metropolitan systems, suburban and interurban systems and combinations of the two. The figures, therefore, represent a fair cross-section of the American street railway industry as a whole.

Quotes "Journal" As His Authority

> The detailed statistics can be found in the Sept. 25, 1926, issue of the ELECTRIC RAILWAY JOURNAL, page 495, which is the technical trade paper of the American electric railway industry. The comparison shows an average saving of 9.65 cents a car-mile. The 80 new cars will be run an average of 130 miles a day for an average of 350 days a year, or a total of 3,640,000 car-miles. If we apply this figure of 9.65 cents a car-mile the gross saving to be expected is $351,260.
>
> I have made a detailed analysis of actual Seattle operating conditions. This shows that due to the very heavy and old equipment which we are now using, and the satisfactory rate of wages paid to our men, a much larger saving is to be foreseen. The yearly totals are as follows:

Mechanical department	$114,840
Track maintenance	28,815
One-man operation	261,632
Total	$405,287

> The interest charge on the new equipment will be 6 per cent and the depreciation rate fixed by the state 4.2 per cent. The total purchase price of the new cars is $1,420,000, so that deducting 10.2 per cent of this sum, or $144,840, from the gross saving, there remains a net saving of $260,447.

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It has been stated that the rerouting plan will eliminate 60 cars and that consequently there will be no use for the 80 new cars. The rerouting plan probably will not save this number of cars, but even assuming that it will, it is nevertheless true that we now are operating 170 old type two-man cars, and it would be economy to place all these old cars in reserve for rush-hour operation and purchase this number of new light-weight cars.

STORAGE AND TRACKAGE AMPLE

No outlay whatever for additional storage tracks or shelter will be required, as the existing carhouses and storage tracks are sufficient to take care of eighty additional cars.

What our street car system needs more than any other one thing is the loyal cooperation and good will of the business men and citizens of the city. Our street car system is vitally important to the welfare of the city and deserves the support of all of our public-spirited citizens. It is certain that obstructionists and pessimists cannot help us. They can only hamper the efforts of those who are trying to do something for the transportation system of the city.

Indiana Commission Under Fire

Foes of the Indiana Public Service Commission are preparing for the coming session of the Legislature, which convenes in January. A bill already is being drafted which will abolish the commission, if it is passed. Samuel Lewis Shank, twice Mayor of Indianapolis and probably the most popular politician in the city, has come out flatfootedly against the commission. He is making addresses at every opportunity urging the people to compel their legislators to pass a bill such as has been suggested.

Fairmont Company Explains How Employee Loans Are Floated

The rules under which the Monongahela West Penn Public Service Company, Fairmont, W. Va., is prepared to make loans to its employees were explained in a recent issue of *Courtesy and Service*, the official publication of the company. Owing to the fact that a mistaken idea was circulated that the company loaned money for various purposes, and because many employees have asked for details, the company, through a resolution of the board of directors, has made it plain that loans can be made only in case of sickness or death in the family of an employee or in other extreme emergencies. The plan of the company is to authorize loans with an aggregate limit of $5,000, with the understanding that no loans shall be in excess of 20 per cent of the yearly salary of the employee.

Loans are to be repaid in monthly installments within a period of one year, with interest of 6 per cent per annum on the unpaid balance. An employee must make written application to the head of his department, supplying proof that the funds are needed for purposes allowable by the company. When the head of the department is satisfied that the request is bona fide he forwards it to the department of public relations, and it goes thence to the treasury department. In case of request for a loan for an emergency other than sickness or death a written request goes first to the head of the department and thence to a committee of three officials, who make recommendations to the president of the company, who passes on it finally.

Kiwanians Reminded of the Value of their Railway

Certain promoters of the public welfare in Scranton, Pa., believe that if trolleys instead of automobiles were used by business men the parking problem in the city would be greatly alleviated. One of these is Otto Conrad of the Conrad Motor Car Company. He has presented to the Kiwanis Club of Scranton 150 trolley tokens and has suggested that business men in Kiwanis start the movement for using the trolleys. He further suggested that Kiwanians might view their city some evening by taking a trolley ride. To the latter suggestion Jilson J. Coleman, vice-president and general manager of the Scranton Railway, replied that he would be glad to provide a special car for the purpose.

In his letter to the president of the Kiwanis Club Mr. Conrad takes occasion to praise the work of Mr. Coleman, who recently purchased new cars "just in order that more people could ride."

Beaumont Motormen Win Accident Pennant

Keen interest was aroused in a contest held by the motormen of the Northern Texas Traction Company, Fort Worth, and other properties recently in an effort to cut down the number of accidents. The city was divided up into eight sections, each section representing a team in the "Texas" League. The plan, then, was to see which team could have the highest percentage for a given length of time. A pennant was the prize.

The team representing "Beaumont" completed the season without any black marks against it. This aggregation, representing about 25 motormen, has been officially crowned champion. "Fort Worth" was a close second. In many cases the mere bumping of an auto fender would cost a "game," so extreme care was taken in all operations.

No Wonder It Ran!

Ever since prohibition the Cincinnati, Lawrenceburg & Aurora traction line has been a daily violator of the prohibition laws—and it didn't know it until yesterday.

A bottle of liquor, good, old-fashioned liquor that makes the mouth water, tumbled out of a compartment under a window of a car that workmen were remodeling. The bottle could have been put there only when the car was built—and it had been in service on that line for 26 years.

For 26 years, then, it was said, the liquor had been reposing in the window compartment, securely sealed from discovery. There's no telling how many passengers had it within elbow reach, so to speak.

Robert Lyons, North Bend, a traction conductor, who traveled around the world with the navy years ago, and who modestly admits he's had experience with the taste of liquor in various parts of the world, sampled the contents just before starting home.

"Boy, it's there," he said. That's all there was. There wasn't any more.—*Cincinnati Enquirer.*

"L" Improvement Work in Chicago Progressing

Work on the platform extensions on the Douglas Park, Logan Square and Humboldt divisions of the west side lines of the Chicago Rapid Transit Company is about 80 per cent completed. Eight-car trains are now being operated in the rush hours on all the other lines and longer trains will be run on the three branches named as soon as the platforms are ready to accommodate them.

Work is now proceeding on the moving of columns on Wabash Avenue at cross street intersections. Thirteen of these supporting columns have to be moved to the edge of the curb, in accordance with an agreement with the city. Four foundations at Jackson, four at Monroe, and three at Washington Street are already completed. Two at Van Buren and Wabash are nearly complete. It is expected that the steel work will be in place around Jan. 1. The cost of this work on Wabash Avenue will be about $125,000. It was necessary to sink the foundations to hard pan, 63 ft. below the sidewalk level.

Casualties Fewer in Westchester

Westchester County, N. Y., reports fifteen dead and 155 injured in automobile accidents during October, 1926, as against sixteen and 180 for a similar month the year previous. Barron Collier, chairman of the Public Safety Bureau, believes the decrease reflects the results of the safety campaign being waged there. He scores, however, the record of one person killed every two days and five seriously injured each day, and suggests that people drive as they would before the accusatory appearance of a policeman so that many lives might be spared and much suffering and misery avoided.

Reference to "Aunty J. Walker" and the safety campaign in Westchester was made in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 27, page 983.

John A. Beeler to Appraise Louisville Property

The appointment of the Beeler Organization, New York City, as appraisers of the properties of the Louisville Railway, Louisville, Ky., was announced recently by Mayor Arthur A. Will. The appointment is subject to the approval of the General Council.

The appointment was mandatory under the new ordinance passed last August for the Louisville Railway. That measure specifies that the property in use and useful for public service will be the basis for the rate of fare. Under the contract with the organization, work will commence within thirty days and will be completed within six months. The railway will pay the costs of the appraisal.

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Five-Cent Fare Zones in Tacoma

According to an agreement between the City Council and the Tacoma Railway & Power Company, Tacoma, Wash., the railway lines on Dec. 20 were to begin operation on the zone basis, with a central 5-cent fare zone. Tokens will remain at the same price as now and will be good for a ride either in the outside zone or through both zones, with universal transfer privileges. For token riders the new system will mean no change except that the pay-as-you-leave system of fare collection will apply to all lines on outbound trips, whereas it was in effect only on the Sixth Avenue and Point Defiance lines.

The idea back of the zone system is to increase the amount of short, downtown and close-in district riding by establishing a cheap fare. Cash fares in the outside zone or for riding through both zones, with universal transfer privileges, will be 10 cents under the new plan; this is an increase of 2 cents. The increase will affect only 10 per cent of the riders living in the outside zone, it is reported by the Tacoma company. Mayor M. G. Tennent pointed out the publicity value of the system, in that any stranger riding from a depot to uptown points would pay only 5 cents, and thereafter think of Tacoma as a 5-cent fare city. The 5-cent fare will carry no transfer privilege and the zone system will cover a period of 60 days.

The six months trial period under which the company has been operating expires Jan. 1, but under the new agreement will be extended to cover the zone test. Under the test agreement the company had the right to demand higher fares for the past three months, but has withheld such demand in the interests of a friendly settlement. Manager Richard T. Sullivan of the company estimates that a gain of $68,184 might be expected under the zone system, but it is pointed out that this falls far short of the yearly deficit of $195,000 which the company claims it would suffer during 1917 if the present fares were maintained.

Wages Advanced in Baltimore

The United Railways & Electric Company, Baltimore, Md., has granted an increase in pay of 1 cent an hour to all motormen, conductors, shop employees and the members of the force of the engineering department and to train dispatchers. The change will become effective on Jan. 1. In addition to this 1-cent increase, the company also has agreed to another increase of 1 cent during 1928.

The agreement was in the nature of a compromise. The United Railways Association asked for an increase of 3 cents an hour, to take effect on Jan. 1. Representatives of the association and of the company were in conference for several hours before the plan of increase agreed upon was worked out. Members of the association were shown by the United officials that an increase of 3 cents could not be granted without an increase in fare.

President Emmons said that it was the company's aim to continue the present 7½-cent fare, but with operating costs increasing constantly on account of traffic congestion it became more and more difficult to do this and give good service.

Following the agreement, Mr. Smith, the president of the association of employees, and George Wolf, chairman of the wage committee, issued a statement as follows:

> The men of the United Railways whom we represent want an increase in wages of 3 cents an hour, but we realize that in the company's present earning condition no such increase in wages is possible unless there is an increase in fares.
>
> We do not desire to subject Baltimore car riders to an increase in fares at this time, since we feel that Baltimore's favorable position as a city of low living cost and hence as a desirable city for the growth of industry and business is largely due to its reasonable rate of fare.

The change will make the minimum wage 49 cents and the maximum wage 54 cents in 1928, with 59 cents for one-man car operators.

The increase will add about $150,000 to the payroll during 1927 and double that amount in 1928.

Buffalo Employees Get Pay Boost

Thomas E. Mitten, president of Mitten Management, announced at a recent meeting of the International Railway Co-operative Association that the basic wage rate of employees of the International Railway, Buffalo, N. Y., would be increased for the year 1927 by 2½ cents an hour. This increase is in recognition of the splendid co-operation of the employees through whose efforts accidents have been reduced 15 per cent in the last two years.

St. Louis Franchise Negotiations to Be Resumed

Resumption of the negotiations between officials of the St. Louis Public Service Company, St. Louis, Mo., and the city authorities relative to a new blanket franchise for the United Railways probably will be resumed during January. In the meantime it is expected the Missouri Public Service Commission will pass on the application of Receiver Rolla Wells for an increase in fares. The Public Service Company seeks to be permitted to earn 7 per cent under a service-at-cost franchise. In the face of the recent United States Supreme Court decision Mayor Miller has not retreated from his position favoring a 6 per cent return. He says he will explain his views to the public.

Survey in San Francisco Started

San Francisco, Cal., city officials have started a survey with the end in view of acquiring the Market Street Railway and consolidating it with the Municipal Railway system. The Board of Supervisors' resolution calling for the survey was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 18, page 1108. Mayor James Rolph, Jr., and City Engineer M. M. O'Shaughnessey were excluded from membership on the joint committee. The first of the Market Street Railway franchises, mentioned in the resolution, will expire in 1929.

Committee Reports on Rochester's Subway Railroad

That the city-owned subway in the bed of the abandoned Erie Canal at Rochester, N. Y., be operated by the New York State Railways under a service-at-cost contract was the recommendation made by the Mayor's committee on subway operation in its report to Mayor Martin B. O'Neil. The report is the result of a two years study by the committee which was named by the late Mayor Clarence D. Van Zandt, Mayor O'Neil's predecessor.

The report suggests a three-year trial under a contract similar to the one by which the railway operates its bus and trolley system in the city, to be under the supervision of Charles R. Barnes, railway commissioner.

Under the plan submitted, the five steam railroads using the city railroad would have individual leases for interchanging freight cars over the line, but the motive power for the operation would be supplied by the New York State Railways. No terms other than that the passenger fare over the new railroad be 8 cents, the same as on the city lines, were suggested.

Under the proposed plan, if at any time returns from operation exceed $100,000, the surplus is to be divided equally between the city and the general fare determining fund set up by the service-at-cost contract. At no time is the city to lose title to the property and at the end of three years a new plan can be tried out if the one suggested is not successful.

The line is nearly completed and it is expected that it will be in operation in the spring. The subway bisects the heart of the city and is designed to relieve traffic congestion by taking over interurban lines now on the surface and also to help industry by providing manufacturing plants with better switching facilities, in co-operation with the steam railroads. The subway is more than 8 miles long and for a mile in the downtown section is covered by an overhead street.

In making the report the committee stated that public service demanded the operation of the line be placed in experienced hands and that diversion of interurban or city trolleys would complicate any plan for operation by a city-owned or independent company. It was pointed out that the New York State Railways had the equipment, the experience and other essentials for carrying out the transportation program. It is generally believed that the New York State Railways will operate the railroad.

The Rochester Bureau of Municipal Research supported the report after an exhaustive study of municipal railroads in the United States. Stephen B. Story, director of the bureau, stated that the bureau's survey disclosed no project like the one attempted in Rochester. Mr. Story recommended an amendment to the service-at-cost contract to protect further the city's interests and asked that the contract be amended before a single car were actually put in operation.

The railway lines in Rochester have been operated for the past five years under the service-at-cost contract.

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Dissension Over Fare Increase

Amsterdam Demands Return to Five-Cent Rate Following New Schedule Approved by Commission

The Common Council of Amsterdam, N. Y., made formal demand of the Fonda, Johnstown & Gloversville Railroad for a return to the 5-cent fare on the West Main Street branch, effective on Jan. 15. The demand is based on terms contained in a franchise granted several years ago for the establishment of the West Main Street division, which stipulates a 5-cent fare "from and to any part of the branch within the corporate limits of the city." A few years ago the Common Council waived this fare clause so that the company might increase the rate to a uniform 8-cent city fare. This uniform city fare was recently declared obsolete by Public Service Commissioner Van Voorhees when company officials appeared before him at Albany and asked for a 10-cent fare. Their request was granted. Amsterdam was the only city affected by the ruling which opposed the increase. In the resolution a provision was included that notice of the Council's action be forwarded to the Public Service Commission.

The Public Service Commission approved a new schedule of passenger fares on Nov. 12 to be charged by the Fonda, Johnstown & Gloversville Railroad on the electrically operated portions of the system. The commission found that the present maximum fares were insufficient to yield a reasonable compensation for the service rendered and that they do not yield a reasonable average return on the property used in public service.

In the commission's order, the fares fixed are as follows:

One-way interurban rate between Gloversville and Fonda and intermediate points and between Gloversville and Schenectady and intermediate points, now fixed at approximately 3 cents a mile, with a minimum fare of 6 cents, may be increased, but not to exceed 3½ cents per mile with a minimum fare of 8 cents. Round-trip tickets may be increased in the same proportion.

Fifty-four-trip commutation rates and 46-trip school rates on the interurban lines from Gloversville to Schenectady, inclusive, between Amsterdam and Hagaman and between stations on the Fonda Division from Gloversville to Fonda, inclusive, may be increased, but not to exceed 25 per cent in advance of the rates now being charged.

Twenty-four-trip commutation rates between Gloversville and Fonda and between Johnstown and Fonda may be increased, but not to exceed 25 per cent.

In all cases where local fares of 8 cents are now being charged the rate shall not exceed 10 cents. This rate is effective in the cities of Amsterdam, Johnstown and Gloversville. In all cases where 12-cent fares are being charged the rate shall not exceed 15 cents.

For school ticket books it shall not exceed a rate of $5.30.

In place of four-strip tickets, for which a charge of 30 cents is now made, and twenty-trip coupon books, for which a charge of $1.50 is now made, good in all cities and villages where the local 8-cent fare now applies, three-ride strips may be issued at a rate not to exceed 25 cents. Between Gloversville and Johnstown and between Amsterdam and Hagaman, where the regular single trip fare is now 12 cents, eight-trip tickets may be issued not to exceed $1.

In the decision of the commission it was shown that $66,982 was available for return on the property investment for the year 1925; this constituted a return of less than 2 per cent upon its cost. This amount is the surplus after deducting from operating revenues the operating expenses, including taxes, and without including in operating expenses the additional yearly charge of 3 per cent for depreciation allowed in a former case involving the rate of the company.

The commission also rescinded its order under date of Sept. 1, 1926, approving a declaration of abandonment of its Vrooman Street line in the city of Amsterdam. This order was based under existing rates of fare. The commission stated it is now of the opinion that the Vrooman Street line should be operated for a reasonable period of time under the new fare rate.

Street Traffic Survey of Chicago Completed

Report Based on Year's Study of Traffic Conditions in Streets—Revised Traffic Regulations Recommended

BASED on studies of traffic conditions in Chicago, made during the course of the last twelve months, the Metropolitan Street Traffic Survey presents a complete and highly informatory symposium on this most baffling of problems. At best, according to the report, the difficulties, bad as they are at present, are only beginning. With the growth of the city and the increased saturation of automobiles the number of vehicles in Chicago will probably increase from 350,000 at present to nearly 900,000 by 1950. Most of this is due to a growth in population, but partly to the increased saturation, which at present is 8.9 persons per car, and is estimated will be five persons per car in 1950.

Performance of street cars, as gleaned from the report, is one of the strongest testimonials for this type of mass transportation that can be found. Nearly a million rides into and out of the central business district are made every day between the hours of 7 a.m. and 7 p.m. on vehicles using the surface of the streets. Nearly 60 per cent of this traffic is in surface cars, which contribute only 8.4 per cent of the vehicles entering or leaving this district. Private automobiles, on the other hand, provide transportation for 33 per cent of the riders, but by using nearly 90 per cent of the vehicles. Accidents are also an important factor, but the street cars and elevated together cause only 5.4 per cent of the accidents in the city at large, while the automobiles cause 94 per cent.

Buses are of almost negligible value. As shown by the report, they provide transportation for only 9 per cent of the daily riders in and out of downtown Chicago. They constitute 1.8 per cent of the vehicles and produce only 0.7 per cent of the accidents.

Interterminal movement of l.c.l. freight is considered one of the most important factors in street congestion.

During March, 1926, 69,508,959 lb. of freight were moved in 13,806 loads over the streets of Chicago in purely interterminal transfer. In addition to this 16,283,879 lb. of freight in 1,803 loads moved between the docks of two boat lines and the freight terminals that are dotted around the edges of the central business districts. Many of these loads pass over the congested streets of the Loop.

The report and recommendations are contained in a printed volume of 292 pages, replete with tables, diagrams and views taken to illustrate the traffic situations discussed. The report proper is presented in thirteen chapters in Part I and the recommendations in two chapters of Part II. Among the latter it is recommended that a street traffic commission be formed and a traffic engineering division, attached to the Bureau of Streets, functioning under the Department of Public Works. A reorganization of the traffic division of the Police Department is given in detail. Firmer and more systematic enforcement of traffic laws is considered essential, and many suggestions are made for traffic signs and signals to guide the motorists in the right use of the city streets.

The report is directed to the Mayor and City Council of Chicago and was made by the Chicago Association of Commerce at the invitation of the Council given in November, 1925. The report was signed by William R. Dawes, president of the association, and Elmer T. Stevens, chairman of the street traffic committee of the Commerce Association. Doctor Miller McClintock, director of the Albert Russell Erskine Bureau for Street Traffic Research at Harvard University, was engaged to direct the studies and prepare the report.

New Office Quarters of Brooklyn Railroads

The Brooklyn-Manhattan Transit Company, Brooklyn, N. Y., has leased six floors of the new Wittemann Building, or a total of 60,000 ft. of space, for a long term of years at an aggregate rental of approximately $2,500,000. The Brooklyn City Railroad has leased an entire floor containing 10,000 ft., at an aggregate rental of about $400,000 for the 20-year period.

The new building is a 35-story structure now in course of construction at De Kalb and Flatbush Avenues on the Flatbush Avenue extension. The present structures occupied by the railways as their office headquarters were owned by the Brooklyn City Railroad, but were recently sold by it. They are in the so-called financial district of Brooklyn, in which there has been a phenomenal rise in realty values in recent years. The building soon to be occupied by the railways for office purposes is equally as accessible from Manhattan as was the old one, and is in a new center of activity close to the business section of the borough.

The B.-M. T. will occupy the eleventh to sixteenth floors inclusive of the new building and the Brooklyn City the tenth floor. Occupancy by them will date from April 1, 1928.

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Electrification Report on Reading Expected Soon

Engineers who have been working out plans for the electrification of some of the lines of the Reading Company at Philadelphia are expected to have their report completed early next year. Before the survey is submitted, officials at the Reading Terminal anticipate, the preliminary plans for replacing steam with electricity will be completed covering the electrification of approximately 40 miles of line on the Chestnut Hill, Bethlehem and New York branches of the Reading system.

About a year ago the directors authorized the management to engage engineers to make a complete survey of the electrification project, but thus far no funds have been appropriated to carry out the operation.

The new service will be installed on the New York branch to Trevose, Pa., a distance of 20 miles from the Reading Terminal at Twelfth and Market Streets, Philadelphia. The company now operates 35 suburban trains daily to and from Trevose and 21 on Sundays.

From Jenkintown to Lansdale will add about 13½ miles more to be electrified on the Bethlehem branch.

The electrification of the Chestnut Hill branch will embrace about 5½ miles additional.

That section of the Reading system between the terminal at Twelfth and Market Streets and Jenkintown is included in the 20 miles of electrified line extending on the New York branch to Trevose. This includes the line from Wayne Junction to Jenkintown.

It is said that power will be purchased from the Philadelphia Electric Company.

Where the Token Goes in St. Louis

The United Railways, St. Louis, Mo., has placed a large electrically illuminated and operated signboard on its property at Grand Boulevard and Park Avenue, to show the car riders passing that point "Where Your Token Goes." The board shows a young lady who deposits her token in payment of fare into the fare box of a car. As the token falls into the box a number of electric lines shoot from the token to various items listed on one side of the board, showing how the token is divided. It reveals, among other things, that 3.5 cents, or exactly half of the token, goes for wages, and another 1.5 cents for supplies.

Rochester Interurban Safety Contest On

An accident prevention contest will start between the trainmen on the Rochester & Eastern division and those on the Rochester & Sodus Bay division of the New York State Railways on Jan. 1. Each month the division operating the most car-miles an accident will be declared the winner and the head of that division will be awarded a banner reading "Safety Division." The number of points charged for various kinds of accidents, and other rules, will be the same as in the contest of the city lines.

An interurban motorman on the Rochester lines operating an entire year (2,700 hours) without an accident point charged against him will receive a $2,000 insurance policy paying $20 a week for sickness and accident disability. Interurban conductors will receive $1,000 in insurance and $10 a week for sickness and accident disability, the same as city conductors. The state appoints a committee for three months, consisting of one motorman and one conductor from each interurban line, who will meet each month in the office of the superintendent of the interurban division to make safety suggestions and review accidents of the previous month.

2,000-Mile Air Service Suggested by P. R. T.

An offer to operate a 2,000-mile air service, passenger and freight, between New York and Atlanta, and Chicago and New Orleans, with the government co-operating, was made on Dec. 7 to Secretary Hoover and Postmaster-General New by Mitten Management, Inc., operator of the Philadelphia Rapid Transit system, Philadelphia, Pa. Both federal department heads have commended the air line which the company established and maintained between this city and Washington for passengers and mail during the Sesqui-Centennial Exposition period, and the transit company has made it plain that it would undertake a more comprehensive service next spring if government support be assured.

In its five months operation the Philadelphia Rapid Transit air service carried 3,595 passengers. In his offer Mr. Mitten stated that the company was satisfied that transportation of passengers and merchandise was not only necessary to the success of commercial aviation, but that the revenue derived from such operation would equal approximately 50 per cent of total costs. The remaining 50 per cent the company hoped to secure through air mail by commitment of cities through which the company operated to use air mail to the extent necessary to assure quantity required.

Free Rides in Seattle Prove Success

The Seattle Municipal Railway, Seattle, Wash., which on two days, Nov. 26 and 27, carried shoppers downtown free for one-hour to start the Christmas shopping season, did a business unprecedented in its history. On Friday, from 9:30 to 10:30, the free hour, R. E. Furse reports the line carried 25,000 people. Fifty additional cars were operated and the passengers were carried expeditiously and without mishap. The railway, it is estimated, gained about $4,000 in revenue during the two days from fares paid by the shoppers on their homeward bound trip. D. W. Henderson, superintendent, believes these shoppers will make frequent use of the cars during the holiday buying season. Downtown stores report the largest volume of business during any two days in November history.

More Men to Share in Los Angeles Awards

The merit and bonus system of the Los Angeles Railway, Los Angeles, Cal., is to be continued for 1927 under a new plan by which a larger number of men will participate in special awards. The main provisions follow:

The management sets aside $5 a month for each man engaged in passenger car service six months or more and who performs satisfactory service, this bonus to be paid on Dec. 15 to those remaining in active service on Nov. 30, 1927.

Work in passenger service shall be construed as meaning the operation of passenger cars as motormen, conductors or safety operators.

No bonus will be paid men on sick leave, leave of absence, or working in other departments. Deduction from bonus will be made for all lost time in each calendar month in excess of five full or ten half days.

For the fiscal year 1927 special awards of two classes will be allowed.

First Class.—To all men in active passenger service who have not lost more than 60 days time, holidays excepted, and who have a clear courtesy and accident record, and who have received no demerits, will be awarded $40 in cash.

Second Class.—To all men in active passenger service who have not lost more than 60 days time, holidays excepted, and who have a clear courtesy and accident record, and who have not been demerited more than three times, there being no repetitions under any one classification, and who have received no demerits for infractions of rules under classifications printed in caps on list of causes for demerits, will be awarded $20 in cash.

Where it is found necessary to assess demerits against a man who has been previously demerited for the same offense during the past or present bonus year, the penalty will be from 25 demerits to removal from the service. Demerits will be assessed on recommendation of division superintendents, supervisors, instructors, safety men and others in authority. Deduction from bonus will be made at the rate of 25 cents for each five demerits assessed (five demerits equal 1 per cent) regardless of the efficiency rating shown on record.

When a man's efficiency rating drops to 75 per cent or below, he is subject to automatic dismissal from service. However, dismissal from service for certain offenses may be made regardless of efficiency rating.

Ten credits will be allowed each month for clear courtesy record, and ten credits for clear accident record.

No credits or demerits will be given during the first 90 days in service, and no bonus will be allowed for the first six months in service.

Demerits will be canceled only in case of an error in the report or extenuating circumstances, which must be explained to the satisfaction of the supervisor of merit system.

Appeals from dismissal must be made within three days. Appeals from demerits assessed must be made within 30 days.

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One-Man Cars Win in Atlanta

The use of one-man cars in Atlanta, Ga., by the Georgia Railway & Power Company was upheld by the State Public Service Commission at a hearing conducted on Dec. 15. A petition asking that the company be restrained from operating one-man cars on two city lines—the South Pryor Street line and the River line, running between the city hall and the Chattahoochee River, —was presented to the Public Service Commission by R. O. Rivers and others representing residents in the sections served by the two lines. There are now more than 60 one-man cars in operation by the Georgia Railway & Power Company in Atlanta.

Utah Company Given Hearing

The case of the Salt Lake & Utah Railroad, Salt Lake City, Utah, which is seeking to retain its right to participate in westbound transcontinental rates and to secure the right to participate in eastbound transcontinental rates, was heard on Dec. 11 before the Interstate Commerce Commission. H. I. Moore, receiver for the company, made the principal argument for the carrier. A few years ago the commission permitted the Salt Lake & Utah to participate in westbound transcontinental rates, but a year later the order was reversed and the right of participation denied on protest of the Union Pacific and other carriers. The Salt Lake & Utah Railroad applied for a rehearing and the argument on Dec. 11 was in support of that application. Mr. Moore filed an extensively signed petition from shippers along the line of his road asking that it be accorded the privilege of participating in transcontinental rates eastbound and westbound and stating that denial of this privilege would work substantial hardship on them. If the last order of the commission should stand, all transit privileges would be denied, as well as the privilege of diverting traffic in transit. If the Salt Lake & Utah were allowed to participate in such privileges its financial condition would be improved, it is said.

Winter Ride-Selling Ideas at Levis

The Levis Tramways, Levis, Canada, whose success in various fare changes was mentioned in an article on "La Passe Hebdomadaire" in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 11, page 1047, has lately added several winter ride-selling ideas under the direction of H. E. Weyman, general manager.

One innovation is an open-air skating rink at the old carhouse property on a hill. This is the first full-size rink ever constructed on the South Shore (opposite Quebec). It is well illuminated and has suitable accommodation for ladies and gentlemen. A popular added feature is a hockey team, which draws good crowds on Sunday afternoons and has induced the formation of other teams on the South Shore. Another feature for stimulating rides in winter has been the erection of a toboggan slide by the local snowshoe club at a location of some advantage to the trolley.

Revenue for the pre-winter period July-November, 1926, shows an advance of 5 per cent over a similar portion of 1925, the increases coming in cash and weekly pass revenues. In this connection it may be well to call attention to the fact that the graph in the Dec. 11 article entitled "weekly passenger revenue only" should have ready "weekly pass revenue only."

Inquiry Into P.R.T. Service

An investigation of transit facilities in Philadelphia, Pa., is to begin shortly. This statement emanated from the Public Service Commission, which met in executive session in Harrisburg on Dec. 20. The state body will review car riders' complaints against alleged curtailment of service by the Philadelphia Rapid Transit Company and protests against that company's operating policies, which were brought to the attention of the Governor recently and upon which he ordered an inquiry.

Holyoke Makes New Contract for Power

The Holyoke Street Railway, Holyoke, Mass., has contracted to take power for the operation of its railway system from the Holyoke Water Power Company. The change went into effect on Dec. 5 and the power was generated at the No. 2 plant, which furnishes 2,000 hp. It is estimated the Holyoke Water Power Company will supply 500,000 kw.-hr. per month.

News Notes

Headquarters Changed.—The Connecticut Company has decided to remove its headquarters at Manchester, Conn., and combine it with operations at Hartford. Formerly runs to Rockville, Stafford Springs and other points had their headquarters at Manchester. These and also the Hartford-Manchester run will operate out of Hartford. This means that all rolling stock will be housed at Hartford and the old carhouse at Manchester will be sold.

Wages Increased.—Four hundred and fifty trainmen, employed by the Union Traction Company of Indiana, Anderson, Ind., are receiving pay under an increase in hourly wages recently granted. A flat raise of 2 cents an hour was granted. The new scale for city trainmen is 32 to 39 cents an hour. The new scale for interurban trainmen ranges from 41 to 46 cents an hour, based on the length of service.

Would Operate Over Extensions.—The Fresno Traction Company, Fresno, Cal., has applied to the Railroad Commission for a certificate of public convenience and necessity to operate over McKenzie Avenue and Fresno Avenue extensions of its line. These extensions were constructed under a franchise issued Dec. 21, 1922.

Retires After Fifty-seven Years.—Brayton D. Sweet recently retired as superintendent of the Mount Pleasant division of the United Electric Railways, Providence, R. I., after serving the company for 57 years. Mr. Sweet is 73 years old and has been enrolled on the pension list. When invited recently to drop around to the carhouse a radio set was presented to him.

Trolley Guide in Washington.—With the co-operation of the Washington Railway & Electric Company and the Washington Rapid Transit Company, the Capital Traction Company of Washington, D. C., has printed a new issue of the trolley guide. The guide was designed primarily to assist visitors to the capital in finding their way to points of interest. It contains much valuable information for local residents, particularly those not entirely familiar with all the transportation lines of the city. It contains a map in red showing all the local transportation lines, street railways, the bus lines of the Washington Rapid Transit Company, the feeder bus lines of the two street railways and the route of the Chevy Chase Coach line.

P.R.T. Gets Radio Privilege.—A resolution giving the Philadelphia Rapid Transit Company, Philadelphia, Pa., exclusive use of the Camden municipal broadcasting station for one hour on alternate Mondays for six months beginning Jan. 3 was passed on Dec. 16 by the City Commission of Camden. While it is understood by the commission that the station will be used by the company mainly in sending out entertainment programs, no restriction was made in the broadcasting of other matter.

$8,035 in Accident Bonus.—The Memphis Street Railway, Memphis, Tenn., will distribute among its crews $8,035, being extra pay earned by the men in reducing the cost of accidents for the past three months. The savings effected during November were $2,056. This sum added to the savings effected during September and October makes for the three months the total above.

New Directory in Baltimore.—The United Railways & Electric Company, Baltimore, has just issued a railway directory of the city as a help to all car riders. This has been sent out without charge with an attractive Christmas and New Year card inclosed. The public also has been invited to request copies of the directory. The directory includes a large map showing the route of every line operated by the company. Legends also show the terminals of the lines, Blue Bus lines, auxiliary bus lines, trackless trolley lines and short line routes. The routes of all the lines also are given in the directory. Other information of value to the car rider consists of the routes of all-night cars, a schedule of the first and last cars on weekdays, the routes of the buses and trackless trolleys.

New Arrangements for Supplying Current.—The Kewanee Public Service Company, Kewanee, Ill., may dismantle the old Wethersfield power house, which furnished current for the railway, and rent the property. Ten old cars are to be junked as the company will retain only the newer equipment. Current will be supplied through a hook-up with the interurban power line.

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Recent Bus Developments

Would Stop Competitive Bus Operation in Louisville

James P. Barnes, president of the Louisville Railway, Louisville, Ky., and Churchill Humphrey, general counsel, are seeking to block the proposed bus endeavors of the People's Transit Company, which plans to operate buses in Louisville in competition with the railway. Threats of legal action were sent to Robert L. Page, attorney for the People's Transit Company. Mr. Barnes' letter reads as follows:

The Louisville Railway has seen your announcement that you propose to operate buses in competition with street cars on Broadway, Market Street and other streets.

Before seeing you invest your capital in the prosecution of an enterprise of this kind I want to call your attention to the fact that such operation is a violation of the franchise rights of the Louisville Railway.

I also wish to advise you that in order to protect its franchise rights the Louisville Railway is prepared to, and will, invoke the full remedy afforded a property owner by the laws of the land.

A start was promised with the new service on Dec. 15, but institution of the service has been postponed.

Straps in New Jersey Public Service Buses

An order for hand straps for about 375 of its new gas-electric buses has been placed by the Public Service Transportation Company, Newark, N.J. These buses are already equipped with hand rails in front of the longitudinal seats on either side, but it is believed the hand straps attached to the hand rails will be an added convenience to passengers, especially in rush hours.

It is planned to install twelve hand straps in each bus, six on either side. The work of equipping the buses with these straps will be started as soon as the first consignment of the straps arrives.

Bus Substitution Opposed

Whether the United Railways shall be allowed to substitute bus service for railway service in Portland, Ore., on a line from 23d and Washington Streets to Mount Calvary Cemetery is under discussion. The matter was referred to the City Council by W. F. Turner, president of the United Railways and the Portland, Spokane & Seattle Railway. The Council, in turn, has placed the matter in the hands of Commissioner Mann.

The railway line affected starts at the end of the King's Heights line to the cemetery. The Mount Calvary line was built at about the same time as the King's Heights line and was connected with the lines of the Portland Electric Power Company and operated by that company. W. H. Lines, vice-president of the Portland Electric Power Company, stated that the abandonment of the Mount Calvary line would have no immediate effect on either the Kings Heights line or the Arlington Heights line, not owned by the P.E.P. company but operated at a loss.

H. M. Easterly, attorney for property owners who object to the removal of the tracks, stated that the United Railways, essentially a steam carrier, was obligated to continue the service as part of the price it agreed to pay for the use of street ends adjacent to the water-front, and that people had established their homes in the district under the impression that electric railway service was assured.

Transfers Bus Rights. — The Union Traction Company has been granted permission by the California Railroad Commission to transfer to the Auto Transit Company the operative right of the former for a bus service between Santa Cruz and Capitola and Santa Cruz and Twin Lakes and intermediate points. The purchaser is authorized to operate the same under the conditions now maintaining.

Want Bus Line.—People in the Farmington Avenue section of Bristol, Conn., have petitioned the Bristol & Plainville Electric Company to establish a bus line to cover their section of the city. This section is growing rapidly and many residences are under construction at this time and new subdivisions are being planned for spring expansion. The Bristol & Plainville Electric Company has surveyed suburban sections and found that so many house owners owned cars it would be unprofitable to open new lines. However, the section referred to is more densely populated now.

Bus Service to Open Soon.—Seven of the thirteen motor coaches which are to be operated in Nashville, Tenn., by the Tennessee Transportation Company are expected to arrive from Chicago shortly. The five routes they will serve have been approved by the City Council. The coaches, representing an investment of $120,000, are of the street car type and equipped with every modern device. Each seats 29 passengers. The service to be operated is supplemental to and will be co-ordinated with the railway service of the Nashville Railway & Light Company. The coach lines extend principally into the rapidly growing suburban districts which are not afforded transportation facilities at the present time.

Allowed to Discontinue Bus Service.—The Aurora, Elgin & Fox River Electric Company, Aurora, Ill., has been authorized to discontinue its bus service between Aurora and Yorkville, marking the withdrawal of the utilities company from the down-river territory. The commission has granted the Cannon Ball Coach line a permit to cover that route. The interurban line was abandoned in 1924 and tracks and all equipment removed, after the line had been showing a deficit for several years. The bus line, which competed with the Cannon Ball, although the latter was restricted from serving the Aurora-Yorkville territory, but included territory beyond those points, also failed to support itself.

Allowed to Provide Bus Service.—The Willapa Electric Company, Aberdeen, Wash., has been granted permission by the Department of Public Works to provide motor passenger service between Raymond and South Bend.

Bus Permit Granted.—A certificate has been granted by the Railroad Commission to the Los Angeles Railway Corporation, Los Angeles, Cal., to operate coach service for the transportation of passengers between Los Angeles and Culver City.

No Opposition to Bus Petition.—The Public Service Commission on Dec. 13 heard the application of the Eastern New York Transportation Corporation, a subsidiary of the Eastern New York Utilities Company, for a certificate for the operation of a bus line in the city of Hudson and town of Greenport and for permission to issue capital stock and sell the same to the Eastern New York Utilities Company. The purpose of the petition is to secure commission approval for the substitution of bus for railway service in the city of Hudson. No opposition was voiced.

Buys Bus Line.—Edgar L. Shepardson, president of the Templeton-Gardner Street Railway, Templeton, Mass., has announced the purchase of the Gardner to Winchendon bus line from the Flanagan Bus Company. Two modern buses are included in the deal, which it is expected will be approved by Selectmen of Winchendon, Baldwinsville and the City Council of Gardner.

Bus Extension Serves Rapidly Growing Section.—The San Diego Electric Railway, San Diego, Cal., has extended its bus service on the El Cajon Avenue line from Euclid Avenue to 56th Street at Redland Gardens. Although the railway felt that the bus line at this time would not entirely pay its total expenses, it believed that that section of the city was rapidly growing and that continual growth would bring about in time a profitable return. The through service to Redland Gardens is operated on a 40-minute headway. The extension from Euclid Avenue to Redland Gardens is covered by an additional 5-cent fare zone. However, the $1 school pass is honored to the end of the line for students in that vicinity.

Will Fight for Bus Service.—The Key System Transit Company, Oakland, Cal., desires to substitute bus service for railway service on San Pablo Avenue between MacDonald Avenue and Alvarado Park, in Richmond, Cal. The City Council received a letter recently from George H. Harris, general manager of the company, asking the Council to reconsider its resolution of Nov. 9, when the railway was urged to double track the Alvarado Park line and make a complete loop connecting with the 23d Street line at San Pablo. Mr. Harris declared that a railway was dangerous to passengers boarding and leaving cars; that the large capital outlay in new rails and street paving was not justified; that the car line was operated at a loss, and, further, that bus service would be adequate for the district.

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Financial and Corporate

Ogden Property Passes to New Hands

Control of the Utah-Idaho Central Railroad, Ogden, Utah, passed to new owners on Dec. 14. The line was purchased on Nov. 5 at a receivers' sale by a committee of bondholders for $1,500,100. Acting under an order made by Judge Johnson of the United States District Court, P. H. Mulcahey, receiver and former general manager of the company, made the sale.

The present Utah-Idaho Railroad is an outgrowth of the joining of the street railway systems of Ogden and Logan. The consolidation was made in 1914 when the company was building the present line, which extends from Ogden to Preston, Idaho. When the company was formed it was known as the Ogden, Logan & Idaho Railroad. Early in 1919 the name was changed to the Utah-Idaho Central Railroad. Reference to the boldholders' taking over the Utah property was made in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 20, 1926, page 948.

Commenting on the purchase the Salt Lake *Tribune* says that it is understood Mr. Singleton represents Kuhn, Loeb & Company of New York, the same concern which is behind the Missouri Pacific. The Missouri Pacific is half owner of the Denver & Rio Grande Western, which gives it a close connection with Salt Lake and an outlet over the Western Pacific to California. With the purchase of the Utah-Idaho Central and the expected extension of that line, it would provide, the *Tribune* says, not only a competing line into Idaho, but perhaps the northwest as well.

Small Illinois Properties Would Abandon Service

The Murphysboro & Southern Illinois Railway, which operates between Murphysboro and Carbondale, Ill., a distance of 8 miles, applied recently to the Illinois Commerce Commission for permission to discontinue service and did so on Dec. 13 on its line between Murphysboro and Carbondale.

The Murphysboro Electric Railway, Light, Heat & Power Company, operating in Murphysboro for 2 miles, has also asked for permission to quit the railway business, pointing out that it has not operated passenger cars since March 18, 1925, and that its freight business does not meet expenses.

Chicago City Protective Committee Appointed

M. A. Traylor, president of the First National Bank of Chicago, and John W. Esmond, vice-president of E. H. Rollins & Sons, have been elected members of the committee representing holders of Chicago City Railway first mortgage 5s and Calumet & South Chicago Railway first mortgage 5s. Mr. Traylor also was elected acting chairman. Mr. Traylor is known nationally as a banker and corporation executive. He was recently elected a director of the General Electric Company.

Control of New York City Line Passes

Representatives of Fifth Avenue Coach Company Are Elected to Board of Surface Line

Improvement of the equipment of the New York Railways, New York City, operating about 70 miles of underground conduit railway, mostly in the Borough of Manhattan, is promised by John D. Hertz, chairman of its board of directors, in announcement of the policy of the new board elected as the result of the acquisition of control of the company by the Fifth Avenue Coach Company.

Mr. Hertz said:

> It is our idea to make electric surface transportation in New York the best possible. This will involve an immense expenditure of money, even though the company is not earning a fair return on its present investment.
>
> But, firm in the faith that we shall have the full co-operation of the public, we are about to begin an extensive program of improvements.
>
> One of the first things to be done will be to array our equipment, so to speak, in a new suit of clothes and to keep the cars at all times fresh and clean.
>
> We have the full co-operation of our employees, and a committee appointed for this purpose by the New York Railways Brotherhood has made suggestions to improve traffic conditions, which will be brought to the attention of the authorities.
>
> Should motor coaches be required as the facility best adapted to the ends in view, the company stands ready to introduce them. In this the company has the advantage of connection with the Fifth Avenue Coach Company, the mother company of all city motor coach operation.
>
> In a word, we aim to give the kind of transportation which will serve the public best and give the city of New York a pride in its existence. This is modern transportation.

Mr. Hertz announced the full board of directors of the New York Railways, the election of himself and seven other Chicago men having been made known previously. The Chicago members of the board are, in addition to Mr. Hertz: Edward N. D'Ancona, Albert Ettlinger, Leonard S. Florsheim, Albert D. Lasker, Charles A. McCulloch, Stuyvesant Peabody and John A. Ritchie.

Other new members of the board are John C. Jay, Robert Lehman, Grayson M-P Murphy, Charles H. Sabin, Elmer Schlisenger, David A. Schulte, Frederick Strauss, Edmond E. Wose and Frederic T. Wood.

Members of the old board who were re-elected are Harry Bronner, J. P. Cotton, George B. Gibbons, Samuel L. Martin, H. J. Sheeran and Willis D. Wood. Five members of the old board resigned, Haley Fiske, Henry V. Poor, Boykin Wright, J. J. Heffernan and W. G. Strait.

The New York Railways, with the Fifth Avenue Coach Company, is an applicant for a bus franchise for Manhattan.

Depreciation Credit Systems Made Uniform in Washington

The Capital Traction Company, Washington, D. C., has been ordered by the Public Utilities Commission to change its system of accruing depreciation so that it will conform to the method tentatively adopted in the commission's valuation order of 1919. The order was issued as a result of a conference with officials of the company.

In 1919, when the commission laid down a rule for depreciation, various terms of obsolescence were fixed for the respective items of the equipment of the railways, which resulted in a bookkeeping charge roughly averaging 2.52 per cent of the total value. The same year, and again in 1920, the Capital Traction Company increased its depreciation reserve so that it finally became about 3 per cent. The Washington Railway & Electric Company made no change in its system of accounting for depreciation so that the commission's order makes the method of accruing depreciation uniform.

Passenger Figures at Madison

Figures filed with the Railroad Commission of Wisconsin by the Madison Railways, show that for the first ten months of the year the company carried 325,158 railway passengers compared with 325,665 for the similar period in 1925. However, 32,100 motor coach passengers were carried up to the first of November this year, compared with only 11,537 during the corresponding months last year.

The report on October business reveals that while the number of street car passengers fell off as compared with the 1920-1924 four-year average, the total of street car and motor coach passengers carried in October, 1926, was 531,105 as against 528,388 in October, 1925, an increase of 2,717. Other figures on the Madison Railways business for October, 1926, follows:

Total railway passengers, October, 1926, 479,473; railway passengers for the four-year average, 1920-1924 (average), 572,565; gross railway and motor coach revenue, October, 1926, $36,295; gross railway and motor coach revenue, October, 1925, $36,077, an increase of $218.

Unification of Lines in Hannibal

Controlling interest in the Hannibal Railway & Electric Company, Hannibal, Mo., has been purchased by stockholders of the Hannibal Transportation Company, operating the city bus company. The properties will be unified on Jan. 1 with an interchange of transfer and transportation facilities. Under the new ownership officers of the Hannibal Railway & Electric Company are: Frank T. Hodgdon, president; Carl D. Sultzman, vice-president; Dan H. Hafner, Jr., secretary, and S. O. Oserhout, treasurer. Clair Mainland remains as general manager of the company. Carl D. Sultzman is president of the Hannibal Transportation Company; Dan H. Hafner, Jr., secretary, and S. O. Oserhout, treasurer. The electric railway recently sought permission to curtail service.

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Lincoln Ready to Relinquish Railway Lines

The Lincoln Water & Light Company, Lincoln, Ill., has notified the City Council that within six months it will relinquish operation of the railway, originally a municipal project. After the city failed to operate the lines at a profit, they were taken over by the Lincoln Water & Light Company with provision that either could cancel the contract on six-months notice. A few months trial convinced the utility that the lines could not be made to pay.

Orders Abandonment of Kite Route

Judge J. Foster Symes, in the federal district court at Denver Col., Dec. 10, instructed W. H. Edmunds, receiver of the Denver & Interurban Railroad (Kite Route), operating between Denver and Boulder, to cease operation of the railroad. The court's order was the result of the suit brought by the Guaranty Trust Company, New York, trustee, representing the holders of $1,250,000 in bonds, on which interest is in default, and the further proof that so far this year the road has been operated at a loss of $57,000, with a cumulative loss of $75,000 during the past five years.

The date for cessation has not been announced. The owner, the Colorado & Southern Railroad, is operating its steam trains daily as well as a bus line between Denver and Boulder.

In passing upon the contract between the electric line and the city of Boulder, the court said such contract did not bind the road to operate at a loss. Attorneys for the city of Boulder told the court that it had unlimited power to issue receiver's certificates and should do so to keep the road in operation. The court answered that it did not so understand the law and that there was no visible means of the road improving its earning power. The contract mentioned expires in June, 1927.

Will Seek Tax Reduction.—The city of Hutchinson, Kan., will not take over the Hutchinson Interurban Railway and operate it as a municipal utility although the company is about to be sold because of failure to pay back taxes. The City Commission was considering taking over the railway and operating it, but finally decided to make an appeal to the State Tax Commission for the reduction of assessments. The system now is operating under a trustee for the bondholders.

Railway Traffic to Be Rerouted.—Mayor Jermyn of Scranton, Pa., recently announced that the Scranton Railway had agreed to carry out its part of a rerouting program and had made provision in its 1927 budget for the work. The scheme is to be tried out for some time before any of the proposed abandoned tracks are removed. This rerouting of street car traffic in the central part of the city has been suggested as an aid in eliminating much of the traffic congestion.

Would Issue Common Shares.—For the purpose of reimbursing its treasury for money which it said it had spent out of its current income, the Interstate Public Service Company of Indianapolis, Ind., an Insull utility, has asked the Indiana Public Service Commission for authority to issue 8,370 shares of common stock of no par value. It expects to derive $627,716 from the issue. The money was spent, the petition said, to make up deficiencies for refunding purposes for which a $7,384,900 refunding bond issue was approved by the commission on Dec. 7.

Additional Issue Offered.—A syndicate headed by Harris, Forbes & Company is offering at 97 and interest, yielding about 5.20 per cent, an additional issue of $7,500,000 Illinois Power & Light Corporation first and refunding mortgage gold bonds. The series, known as "C," 5 per cent thirty years, is dated Dec. 1, 1926, and is due Dec. 1, 1956.

Authorized to Sell Bonds.—The Key System Transit Company, Oakland, Cal., has been authorized by the California Railroad Commission to issue and sell for cash on or before April 30, 1927, at not less than 96 per cent of face value, plus accrued interest, $1,500,000 of its series "D" first mortgage 6 per cent bonds, due July 1, 1938, and to use $770,161 of the proceeds to reimburse its treasury for expenditures for additions and betterments.

Substitutes One Line for Another.—The Sacramento Northern Railway, Sacramento, Cal., has been authorized by the Railroad Commission to discontinue railway service and to abandon and remove its tracks and equipment on its Park Avenue, Sixteenth, Mulberry Streets branch and to substitute in place thereof an extension of its Sixteenth Street line to Twentieth Street.

Track Abandonment Approved.—The abandonment of car tracks on Indiana Avenue in Toledo, Ohio, sought for several years, has been approved by the City Council at its meeting Dec. 6. Provision is made that the tracks must be removed before April 1, 1927. The line was one of those running into a territory which was considered to have adequate service from parallel routes.

Would Abandon Interurban. — The Portland Electric Power Company has filed with the Public Service Commission of Oregon a petition asking for permission to discontinue its interurban railway service between Montavilla and Troutdale by way of Ruby Junction. This division, the company claims, has been a money loser for years and shows a deficit of $34,074 for the first ten months of 1926. The steady decline in revenues in this territory is said by the Portland Electric Power Company to be directly attributable to bus and truck lines which have established service on the route. The company is faced with the need for rehabilitating the road physically, and says the expenditures that would be necessary for this purpose are not warranted by prospective business.

Increased Patronage Reported.—For the first time in weeks the report of the Omaha & Council Bluffs Street Railway, Omaha, Neb., shows an increase. The last nine days in November, as reported to the Nebraska Railway Commission, show a 2.16 per cent increase in the number of passengers carried over the corresponding period of 1925, the respective figures being 1,428,400 in the year 1926 and 1,398,106 in the year 1925.

Conspectus of Indexes for December, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War High	Since War Low
Street Railway Fares* 1913 = 4.84	Dec. 1926 **7.42**	Nov. 1926 **7.42**	Dec. 1925 **7.30**	Nov. 1926 **7.42**	May 1923 **6.88**
Electric Railway Materials* 1913 = 100	Dec. 1926 **159.2**	Nov. 1926 **156.6**	Dec. 1925 **153.9**	Sept. 1920 **247.5**	Oct. 1924 **148.5**
Electric Railway Wages* 1913 = 100	Dec 1926 **226.3**	Nov. 1926 **226.3**	Dec. 1925 **223.0**	Sept. 1920 **232**	Mar. 1923 **206.8**
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	Dec. 1926 **203.2**	Nov. 1926 **203.7**	Dec. 1925 **202 2**	July 1920 **256.4**	May 1922 **167.4**
Eng. News-Record Construction Cost (General) 1913 = 100	Dec. 1926 **210.8**	Nov. 1926 **210.8**	Dec. 1925 **206.0**	June 1920 **273.8**	Mar. 1922 **162.0**
U. S. Bur. Lab. Stat. Wholesale Commodities 1913 = 100	Nov. 1926 **148.1**	Oct. 1926 **149.7**	Nov. 1925 **157.7**	May 1920 **246.7**	Jan. 1922 **138.3**
Bradstreet Wholesale Commodities 1913 = 9.21	Dec. 1 1926 **12.78**	Nov. 1 1926 **12.74**	Dec 1 1925 **14.41**	Feb. 1 1920 **20.87**	June 1 1921 **10.62**
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	Nov. 1926 **161.6**	Oct. 1926 **160.0**	Nov. 1925 **167.1**	July 1920 **219.2**	Mar. 1922 **138.7**
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	Nov. 1926 **168 2**	Oct. 1926 **167.2**	Nov. 1925 **171.8**	July 1920 **204.5**	Aug. 1922 **154.5**
Steel Unfilled Orders (Million Tons) 1913 = 5.91	Nov. 30 1926 **3.807**	Oct. 31 1926 **3.684**	Nov. 30 1925 **4.582**	July 31 1920 **11.118**	July 31 1924 **3.187**
Bank Clearings Outside N. Y. City (Billions)	Nov. 1926 **18.24**	Oct. 1926 **19.75**	Nov. 1925 **18.60**	Oct. 1925 **20.47**	Feb. 1922 **10.65**
Business Failures Number	Nov. 1926 **1611**	Oct. 1926 **1420**	Nov. 1925 **1462**	Jan. 1924 **2231**	Aug. 1925 **1353**
Liabilities (Millions)	**56.99**	**39.82**	**42.78**	**122.95**	**27.22**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads.

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James H. McGraw Honored

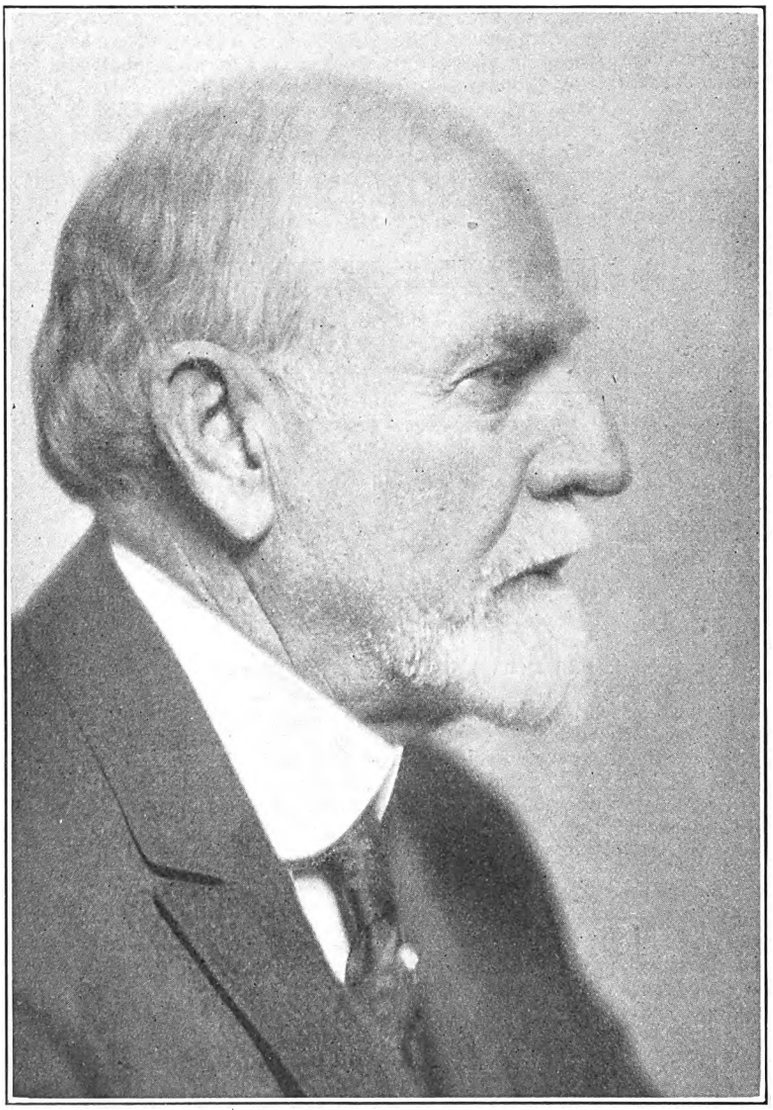
Tribute Paid to Him by Engineers, Industrialists, Educators, Business Associates and Others in Recognition of His Work for Technical and Business Journalism

MORE than 1,000 representative men engaged in engineering, education, publishing and other callings attended a dinner at the Hotel Astor, New York, on Friday evening, Dec. 17, arranged as a tribute to James H. McGraw as a publisher, a leader of industry and a man. The immediate occasion was Mr. McGraw's 66th birthday anniversary, which coincided with the completion of more than 41 years of activity in the field of industrial and technical publishing. In this period the McGraw-Hill Publishing Company, Inc., of which he is president, has grown from small beginnings to its present magnitude.

John W. Lieb, vice-president New York Edison Company, was toastmaster. Before he called on the speakers chosen to represent various business and professional interests, Mr. Lieb sketched Mr. McGraw's career briefly, dwelling for a minute on the comprehensive nature of the McGraw-Hill publications, which, he pointed out, were not confined to the electrical field but covered nearly all branches of engineering and the general interests of industry.

Willits H. Sawyer, president of the American Electric Railway Association, was the first speaker. He told what Mr. McGraw's counsel and leadership had meant to the electric railway industry, recalling that the publisher's first journalistic venture had been in the street railway field 40 years ago. This industry, he said, in spite of temporary adversity, must and will go forward. The McGraw-Hill papers have pointed the road to constructive co-operation and co-ordination in the transportation field. He called the guest of the evening a "fountain of well-directed enthusiasm" and read a testimonial to him on behalf of the A.E.R.A., in substance as follows:

> The electric railway industry appreciates that as head of the largest industrial paper publishing house in the world James H. McGraw is an outstanding, commanding figure in the industrial life of this nation, but we of the electric railway industry regard him as signally our own. Practically since the first of our industry he has been a guilding influence and has given to us largely and extensively of his wise and helpful leadership. His far-seeing vision, his unwavering confidence in our industry, his constructive policies have been the foundation stones upon which we have builded. No one among us has been more insistent that the changed condition of to-day should be met by moderized equipment. At all times he has zealously urged us to sell worth-while, desirable service and freely to utilize frank, attractive publicity, especially of late years when our industry has been pressed by seemingly insurmountable difficulties. His confidence and his guidance have been both a challenge and an inspiration. Over the period of the last 40 years no other man affiliated with our industry has been more of an inspiration or has contributed more to its upbuilding and progress.



JAMES H. McGRAW

Gen. Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, who was called on to represent the manufacturing interests, refused, in a witty speech, to "catalog" Mr. McGraw, but referred to him as a "practical philosopher." Idealism was one of the foundation stones on which the publisher had built. General Tripp suggested that engineers were not sufficiently tolerant of the imaginative and romantic element in their calling. Had they grasped more fully the opportunities to interest the public in this aspect of their work, he thought that Governor Pinchot's visualization of "giant power" and Professor Ripley's attack on holding companies might have lost much of their popular appeal, for the public would have had a sounder conception of superpower and would understand that the holding company is the only feasible instrument by which its advantages can be realized. The speaker suggested in a semi-humorous vein that Mr. McGraw start a new publication devoted to the sociology of business.

Charles L. Edgar, president of the Edison Electric Illuminating Company of Boston, spoke for the light and power industry. He dwelt on the relation between journalism and the industry; he praised the *Electrical World* for its unbiased and open-minded attitude toward all electric light and power problems. Mr. McGraw, the speaker said, had the faculty of making the busy leaders of the electric light and power industry contribute in their turn to the papers he publishes, drawing from these leaders their best thought. He was an outstanding example of the spirit of co-operation.

A scholarly address was contributed by Dean Dexter S. Kimball of the College of Engineering at Cornell University, speaking for engineers. He emphasized the superior endurance of the written word as compared with that merely spoken, and associated Mr. McGraw and the publications of his company with the spirit of engineering and science. For the first time in the world's history, Dean Kimball said, hope of universal well-being is held out to a great nation. The problems of production had been solved in the main; those of distribution were not yet entirely worked out. In their solution and in the promotion of engineering knowledge, for which the people were now eager, and the development of the economic side of industry, the publications of Mr. McGraw were taking a noteworthy part.

Edward J. Mehren, vice-president McGraw-Hill Publishing Company and chairman of the editorial board of the company, spoke for Mr. McGraw's asso-

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ciates in business, dwelling on the principles that the publisher had set up to govern his technical, trade and industrial papers. These papers, he said Mr. McGraw desired to be collectors and distributors of information, interpreters of events and trends in their respective industries and promoters of sound thought and policy. Imbued with an intense spirit of service, Mr. McGraw possessed faith illumined by vision, courage and perseverance. He insisted on a superior product, minute specialization, intimate contact with leaders in the field and intense application characterized by hard work and sacrifice. Mr. Mehren concluded with this tribute to his chief:

HIS EFFORT TO BUILD AN INSTITUTION

"That he might build an institution that could valiantly serve engineering and industry, that could help lead them to higher ideals and greater effectiveness, that could help solve their baffling problems, that could make them better agencies for engineers, owners, managers, employees and the general public, whom, in the last analysis, we all serve—such has been his ambition, such has been his very life."

Responding to the call of the toastmaster, Mr. McGraw thanked his audience for the tribute paid him, but insisted that the leaders of industry who so honored him were themselves worthy of commendation, for without their co-operation his efforts would not have borne fruit.

"It is beyond me adequately to express my appreciation of this tribute," said Mr. McGraw.

"That there has been a certain accomplishment your tribute forces me to admit. I wish that the accomplishment might have been larger and that the service rendered to you, your professions and your industries might have been even more intimate and effectual. But whatever the accomplishment, it would not have been possible without the ardent co-operation of two important groups:

"The first of these consists of my own loyal and competent associates in the McGraw-Hill Publishing Company, the McGraw-Hill Book Company and their subsidiary organizations.

"The second group which has been essential to whatever accomplishment there has been is composed in their entirety of the professions and industries which you represent. It has always been my thought that our publishing enterprises, both magazines and books, have been an intimate part of the professions and industries.

HIS GRATITUDE TOWARD OTHERS

"A great satisfaction that I take out of this evening's meeting is that it gives me an unusual opportunity to express in this public way my gratitude to the engineers and industrialists of America for the parts they have played in making possible McGraw-Hill magazines and McGraw-Hill books. Without you, our work could not have been done. Without you, our institutions could not have existed. I thank you heartily for your help, and believing, as I do, that our institutions can be of still larger service, I pray your co-operation for the future.

"We have never wanted to stand alone in any effort if other agencies could help, nor did it matter whether we or some one else originated the idea. Our part would be played as vigorously in the one case as in the other. We have, therefore, co-operated with all agencies which have worked in a forward-looking attitude for the advancement of the engineering profession and industry; we have co-operated with the engineering societies, national and local with trade and industrial associations of every kind; with government agencies; with research bureaus."

Of his association with men in industry, Mr. McGraw said that the engineers and industrialists with whom he had worked had remade the physical conditions of the civilized world in these 40 years. "To work with you, and the thousands of your fellows whom you represent tonight, has been a source of constant inspiration," he said. "To serve you, to help you in your developments in engineering and industry has been an inestimable privilege."

In conclusion Mr. McGraw said: "For the privilege of having served in this ministry I have you to thank, for your co-operation has made it possible. With all my heart I thank you for the privilege. With all my heart I thank you for your tribute this evening."

At the speakers' table, besides the guest of honor, were Arthur Williams, chairman of the dinner committee; Charles L. Edgar, Thomas E. Murray, Walter R. Addicks, Gerard Swope, M. S. Sloan, W. W. Freeman, E. M. Herr, Frank W. Smith, Willits H. Sawyer, Edward J. Mehren, Dexter S. Kimball, Guy E. Tripp, Philip G. Gossler, Martin J. Insull, William L. Ransom, H. M. Edwards, Robert Ridgway, George S. Davison, E. H. Rosenquest, Calvin W. Rice, Fred R. Low, John V. W. Reynders, A. L. Salt, Philip Torchio, J. Waldo Smith, George F. Kunz, C. Stanley Mitchell and Newcomb Carlton.

Mr. Williams read a telegram from Thomas A. Edison, honorary chairman of the committee, expressing regret at his inability to be present, and similar telegrams from Judge E. H. Gary, Secretary Hoover, Secretary of War Davis, John Hays Hammond and others.

Personal Items

Changes in New Jersey Personnel

Under a rearrangement of positions in the transportation division of Public Service Railway, Newark, N. J., Louis P. Baurhenn, now general superintendent, becomes director of personnel; Arthur T. Warner, now assistant to the vice-president in charge of operation, becomes general manager in charge of traffic, and Martin Schreiber, now manager of the southern division of the transportation lines, becomes general manager in charge of plant of the entire system. All three are newly created positions and the three heads will report to M. R. Boylan, vice-president of the Public Service Railway and the Public Service Transportation Company.

George A. Rothery, chief assistant in the Camden offices, will succeed Mr. Schreiber as southern division manager, and Claude L. Sell, superintendent of employment at the same office, will become assistant manager.

Mr. Warner entered the employ of the Public Service Railway June 27, 1910, as a cadet engineer five days after he was graduated from Lafayette College as an electrical engineer. His first job was in the pits at the Newark car shops. He was made traffic engineer Jan. 1, 1916. He became assistant to Mr. Boylan when the latter was made acting general manager in 1923. He is president of the public service section of the American Electric Railway Association.

Mr. Schreiber was graduated from Ohio State University with the degree of mechanical and electrical engineer. His first street railway experience was with the Cleveland Electric Railway as an electrician. He was appointed manager of the southern division of the Public Service Railway on Sept. 1, 1920. As chief engineer he was in charge of the construction of the Public Service Terminal building in Newark.

Mr. Baurhenn began railway work with a New Orleans company. In 1900 he went to New Jersey to become general shop foreman in charge of transportation of the Bergen County Traction Company at Edgewater. When the New Jersey & Hudson River Railway & Ferry Company took over the Bergen County Company Mr. Baurhenn became superintendent and purchasing agent of the new company and continued after the Public Service took over the latter company in 1911. In August, 1918, he was made assistant general superintendent and on Dec. 1, 1923, general superintendent.

New Personnel on Ogden Property

M. E. Singleton is president of the Utah-Idaho Central Railroad, Ogden, Utah, which recently passed to new owners. Mr. Singleton is president of the Missouri State Life Insurance Company, St. Louis.

A. B. Apperson is executive vice-president of the Ogden property. He is a railroad man and coal operator of Denver. Joseph Scowcroft is vice-president.

Howell Ellis, secretary of the Indiana Public Service Commission since April, 1925, has been appointed a member of the commission to succeed Samuel R. Artman, who was named by Governor Jackson to membership on the State Industrial Board. The appointment is for the unexpired term which ends next May. Before he joined the commission Mr. Ellis covered statehouse news for the Indianapolis *Star*.

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Pittsburgh Plan Operating

Messrs. Loftis, Fink, McCarthy, Bull, Leschke and Williams in New Rôles in Departmental Activities

THE new form of railway supervision, based upon a policy of making each executive assume entire responsibility for his own departmental activities, is now functioning in the Pittsburgh Railways, Pittsburgh, Pa. Approval of this plan, which solidifies and systematizes the entire structure of the organization, was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 6, 1926, page 866.

In this new scheme, J. M. Loftis, veteran superintendent of transportation, has been placed in charge of three distinct functions of street railway transportation, namely, traffic and schedule, car operation and trainmen's instruction, with a superintendent appointed to head each branch. A. J. Fink, formerly assistant to the general manager, has been appointed superintendent of traffic and schedules, with the responsibility of keeping the street cars moving and seeing that the service is carried through. Frank W. McCarthy, who was formerly assistant superintendent of transportation, has been placed in charge of car operation, with the additional task of supervising the activities of the men at the carhouses.

J. M. Loftis

Another, so far unchosen, will be made superintendent of trainmen's instruction and will have charge of training along lines of proper handling of cars, safety and courtesy.

W. T. Rossell, in announcing the reorganization of the transportation department, also announced a reorganization and simplification along similar lines in the mechanical department. Hitherto, in this department, the duties were handled through assistants, but under the present plan one man will definitely have charge of each branch, with closer supervision and increased responsibility.

Direction of both carhouse and shop equipment has been placed in the hands of Richard S. Bull, who was formerly shops superintendent, while all track, right-of-way, buildings and other structures will come under the charge of Oscar Williams, with the title of superintendent of way and structures. A. H. Leschke, formerly maintenance engineer, is now operating engineer, with jurisdiction over both transportation and maintenance, and M. W. Cooke, formerly chief of current control, has been appointed superintendent of power and inclines.

It is believed that with this new method of grouping all of the duties of the departments and allocating them under one head a closer supervision, with a consequent greater efficiency, will result. Brief biographical facts of the new incumbents follow:

CAREERS OF NEW INCUMBENTS REVIEWED

J. M. Loftis, in charge of transportation, started on his railway career in Wheeling, W. Va., in 1888. In October, 1889, he went to Pittsburgh with the Citizens Traction Company, one of the underlying companies of the Pittsburgh Railways, and served in the capacities of track repairman, power house repairman, watchman, gripman on the cable road, dispatcher, inspector, division superintendent and superintendent of transportation.

He was born in Randolph County, West Virginia, and attended public schools there. As a boy he worked in the lumber woods and later in the steel mills.

A. J. Fink, who will report to Mr. Loftis, went to Pittsburgh in 1920 to become associated with Mr. Fitzgerald, who at that time was consulting engineer for the Philadelphia Company working on the reorganization of the Pittsburgh Railways. After the reorganization of the railways in February, 1924, Mr. Fink was appointed assistant to general manager, in which capacity he served until November, 1926, when he was appointed to his present position of superintendent of traffic and schedules.

Mr. Fink was born in Cincinnati, Ohio, and was educated in the Cincinnati schools. In 1905 he entered the service of the Cincinnati Traction Company, being employed in the operating department until the early part of 1920.

A. J. Fink

F. W. McCarthy, another superintendent under Mr. Loftis' supervision, has been identified with Pittsburgh tractions since 1898, when he entered the employ of the United Traction Company in 1898 as cashier. When the United Traction Company was taken over by the Pittsburgh Railways in 1902 he became clerk to the superintendent of the Second Avenue division. The same year he was transferred to the general office, to a position of

F. W. McCarthy

R. S. Bull

A. H. Leschke

Oscar Williams

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clerk to superintendent of transportation. Mr. McCarthy was appointed secretary to the president in 1907 and assistant superintendent of transportation in 1913. On Nov. 1 last he was appointed superintendent of car operation.

Richard S. Bull, the new superintendent of equipment, entered the employ of the Pittsburgh Railways on Oct. 1, 1906. He started as a meter reader, from which position he has steadily advanced through the various stages of draftsman, assistant superintendent of overhead lines and engineer of car equipment, to the position of superintendent of equipment, having jurisdiction over the shops and carhouses of the Pittsburgh Railways.

Mr. Bull received his early education in the public schools of New Hartford, Conn., his birthplace, and the Gilbert high school at Winsted, Conn. He was graduated from Pratt Institute, Brooklyn, in 1906. Mr. Bull's first position after completion of his engineering course was with the United Switch & Signal Company as an apprentice. He remained there only a few months, and then entered the service of the Pittsburgh Railways.

A. H. Leschke, who will serve in both the transportation and maintenance departments, has been connected with both steam railroads and electric railway enterprises. His first position was with the Baltimore & Ohio Railroad, as a student employee, and he subsequently held various positions in the operating vice-president's department. His work was interrupted by the World War, in which he enlisted in the army as a private in 1918 and rose to the rank of first lieutenant in the Engineering Corps. At the close of the war Mr. Leschke returned to the employ of the Baltimore & Ohio Railroad. On Jan. 1, 1921, he entered the commercial development department of the Philadelphia Company as an investigator, later becoming statistician in the office of the financial assistant to the president. In February, 1924, he was made research engineer in the newly organized research department of the Pittsburgh Railways. In July, 1925, Mr. Leschke was appointed maintenance engineer in the maintenance department, and on Oct. 1, 1926, was promoted to the position of operating engineer in the operating department.

Mr. Leschke was born in Hartford, Conn., and attended the grammar schools and high school of that city. He entered Trinity College, Hartford, and later went to the University of Wisconsin, from where he was graduated in the civil engineering course.

Oscar Williams, superintendent of way and structures, entered the service of the Pittsburgh Railways in 1901 in the engineering department as rodman. He rose steadily, becoming supervisor of interurban lines in 1911, supervisor of Pittsburgh and Rankin lines in 1919, superintendent of maintenance in 1924 and a year later superintendent of way. This year he was promoted to the position of superintendent of way and structures.

Mr. Williams was born in Cleveland, Ohio. He received his early education in Pittsburgh schools and in the Central high school.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Buses on the "Air"

Frank Weitz of Lang Body Company Gives a Radio Talk on Development of the Bus Industry

"Bus Transportation" was the subject of a ten-minute radio talk which was broadcasted from station WHK at Cleveland, Ohio, on Thursday evening, Dec. 9, by Frank Weitz, head of the research and experimental department of the Lang Body Company. It was one of the first occasions, if not the pioneer, that this subject had been brought to the attention of the public in such a fashion. Significant was the fact that Mr. Weitz, in tracing the history and development of the bus industry, made it very clear that it is in the field of co-ordinated transportation that the bus has found its greatest sphere of usefulness.

In addition to the talk by Mr. Weitz, the Lang Body Company orchestra played a number of selections. Telegrams and letters from various sections of the country have been received by the sponsors of the program, commending both the orchestra and the speaker upon the excellence and interest of their respective contributions.

First tracing the growth of the transportation industry in this country from its humble beginnings in the days of the stagecoach, Mr. Weitz pointed out the tremendous advances which have been realized in the relatively few years just past by electric and steam railways, and he indicated that the next decade will show even greater progress in modernization work.

Bus Has Rapidly Fitted Itself Into Transportation Scheme

The speaker next discussed the manner in which the bus has established its importance as an aid to flexibility in transportation service:

> Great as the development of the steam and electric roads has been, they have been unable to cope with the ever-increasing demands of our rapidly growing and spreading cities and towns. The enormous cost of trackage, right-of-way, power house equipment and other items incidental to the expansion of steam and electric roads have resulted in creating an imperative need of a more flexible form of transportation—a form of transportation that could at a reasonable cost reach those who have established homes in localities far removed from existing steam and electric lines. This need for a flexible and economical mode of transportation has been filled by the use of motor coaches or buses.
>
> In our modern city today street car service has been supplemented by motor bus or coach service and we reach with ease the most isolated and otherwise inaccessible parts of our suburban and outlying communities. Many independent bus operators reach out into our more distant neighboring cities or towns and there has been developed a network of transportation lines which serve us for our every requirement.
>
> Those accustomed to riding in their own private cars, who have not as yet experienced the thrill and comfort of riding in the modern bus of today, will find quite a surprise in store for them. Those living in the city will find it convenient, comfortable and safe to use bus transportation; the hazard and responsibility of operating your own car and the annoyance of finding suitable parking space when shopping or attending the theater are eliminated. The suburbanite, when using the intercity bus with its comfortable, luxurious seating capacity, will find it is more convenient and more restful than using his own private car.
>
> Electric railways today are operating approximately 6,400 buses, which include both the city and intercity types. Motor bus transportation has invited and brought to it new patrons, among them the traveling salesman, who has noticeably increased his sales volume because the bus enables him to reach isolated points in a very short space of time. The motor bus takes him wherever he wants to go with the least possible inconvenience and loss of time.

After citing a large number of steam railroads and electric railway properties which have entered the bus operating field on a comparatively large scale, Mr. Weitz concluded his remarks with a tribute to various manufacturers of bus equipment, as follows:

> Among those who have been most prominently identified in building bus transportation more efficiently, both from the standpoint of economy to the operator and safety to passengers, are such companies as International Harvester Company, American Car & Foundry Motors Company, Fageol Motor Car Company, Mack-International Motor Truck Corporation, Yellow Truck & Coach Manufacturing Company and the White Company. The Lang Body Company has been identified with all these companies in developing the highest possible type of bus body equipment.

Modern Gear Case Manufacturing

Since its fire last August the Chillingworth Manufacturing Company, Jersey City, N. J., has remodeled its gear case plant and is now manufacturing on a 24-hour daily schedule. The company states that the new machinery and methods which have been recently introduced will augment its ability to manufacture more economically than heretofore by increasing production and permitting more rapid shipments. Modern lighting and heating systems have been installed and a complete set of checking devices provided. On the latter all cases are fitted before shipment and the Chillingworth company feels that it now has one of the most modern and best-equipped gear case factories in the country.

The process of drawing a single sheet of soft steel in the shape of a gear case half has been in use by the company for several years, but it has recently incorporated into this process modern methods of heat treating the steel after it has been drawn into shape. This modification of the process has met with the approval of experts conversant with the best practice for annealing steel. The chief object of this annealing process is to insure a structure of the steel that is particularly required in gear case service, which demands a soft, pliable and tough material.

An invitation has been extended by the Chillingworth company to any users of gear cases who would be interested in observing the manufacture of drawn steel cases.

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B.-M. T. Will Purchase 50 Triplex Articulated Cars

New York Rapid Transit Corporation Charges that the City Has Failed to Comply with Its Obligations to the Company in Withholding Construction of Additional Subway Lines and the Coney Island Shops

WHEN the New York Transit Commission met on Dec. 21 to conduct a hearing on the proposed order to force the purchase of 50 new steel cars by the Brooklyn-Manhattan Transit Corporation it was learned that the need for the hearing had been obviated. W. S. Menden, president of the New York Rapid Transit Corporation, subway-operating subsidiary of the B.-M.T., announced that the company would accept the commission's direction and purchase the cars in the form of 50 triplex units, similar to the articulated equipment now in experimental use on the lines.

Yet all was not smooth upon the surface of this acceptance. Mr. Menden, in a letter to the commission, charged that the city had flagrantly disregarded its agreements which had been definitely contracted for with the company and had failed to construct the Nassau Street subway, complete the Fourteenth Street-Eastern District subway or to supply shops within a reasonable period after the signing of the contract. He declared that the Coney Island shops, which are under construction, were still uncompleted fourteen years after the signing of the contract. He also said because of the lack of shop facilities the company now was forced to keep on freight cars equipment for 67 triplex cars previously purchased by order of the commission, at an expense of $100 a day for demurrage.

Some Wooden Cars Will Be Replaced by Earlier Order of Equipment

In spite of the fact that the city, copartner with the rapid transit company in all new construction work, has allegedly failed to meet its obligations, the B.-M.T. agrees that the new cars will be obtained at the earliest possible date and will further serve to eliminate the unsafe wooden units now in operation. This replacement program will be given considerable impetus by the group of 67 articulated units which were ordered some time ago and which are now awaiting assembling in the Coney Island shops. The Transit Commission has repeatedly avowed its intention to do away with the operation of wooden cars just as rapidly as new steel equipment may be obtained. However, the commission has called the attention of the public to the fact that wooden cars are of necessity used on the various bridge lines of the B.-M.T. where the structures are not strong enough to permit the operation of steel cars.

Mortimer B. Hoffman, counsel for the B.-M.T., announced that half of the new order would be ready for assemblage at the shops as soon as assembling work on the 67 units ordered at the direction of the commission nearly a year ago is completed. This is expected to be in June, at the latest. He stated that the second half of the order now to be placed should be completed by Dec. 31, 1927.

Power Show Exceeds All Past Records

Attendance at the fifth National Exposition of Power and Mechanical Engineering reached the hundred thousand mark. The exposition was held, as usual, in the Grand Central Palace, New York City, the date this year being Dec. 6 to 11, inclusive, and considerably exceeded similar functions in the past in the magnitude and variety of materials exhibited.

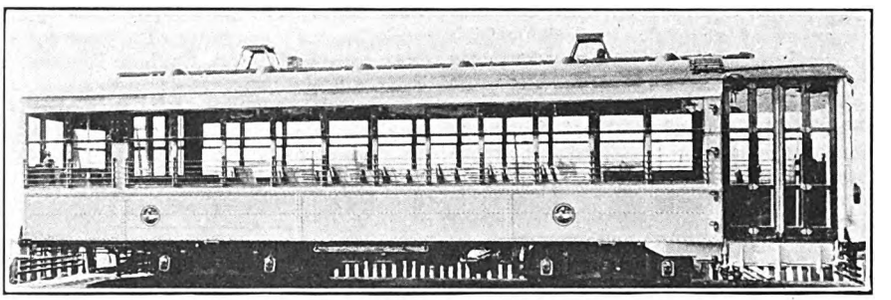
Four hundred and ninety manufacturing firms were represented on the four floors of the building and the exhibit covered practically every phase of the power generating and mechanical engineering fields. A considerable improvement was noted in the methods used by exhibitors in displaying their apparatus.

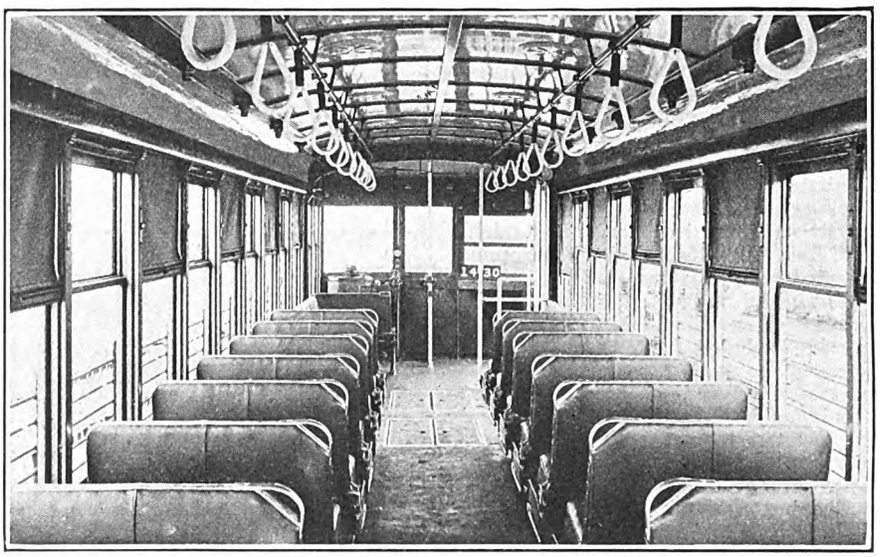
The tremendous influence that welding is having on all types of mechanical equipment was shown by a large number of exhibits of the various types of welding equipment and by a very large number of products manufactured by the welding process.

Many new types of furnaces and boilers were shown. Problems of valve operation were well illustrated and the use of stainless steel trimmings and monel metal trimmings in this field was featured by a large number of exhibitors. Machine tools and various types of shop equipment were amply displayed and the most improved methods for heating, illuminating and ventilating shops and factories were outlined.

Plans are already under way for the holding of the sixth Power Show from Dec. 5 to 10, 1927. The advisory committee which assisted the management in the conduct of the 1926 exhibition consisted of I. E. Moultrop, chairman; W. L. Abbott, Homer Addams, N. A. Carle, W. H. Driscoll, Fred Felderman, C. F. Hirshfeld, O. P. Hood, L. H. Jenks, E. B. Katte, R. T. Kent, John H. Lawrence, Fred R. Low, David Moffatt Myers, R. F. Pack, Fred W. Payne, H. B. Reynolds, Calvin W. Rice and Charles F. Roth.

One of Eight New Street Cars Now Operating in St. Petersburg, Fla.





The Municipal Railway received its new rolling stock in November and has recently placed the units in regular service. They were built by the American Car Company of St. Louis, Mo., and the principal specifications appeared in the ELECTRIC RAILWAY JOURNAL Dec. 4, page 1032.

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Simplified Classification of Scrap

Tentatively Adopted Specifications for Iron and Steel Scrap Now Available in Pamphlet Form

Of real value to railways having quantities of iron and steel scrap to dispose of will be the specifications for different classes of scrap which have just been issued by the National Committee on Metals Utilization in its report to the Bureau of Standards of the United States Department of Commerce. The general campaign for elimination of industrial waste has been carried on for four years by the Division of Simplified Practice of the Department of Commerce, and this particular phase of the work, the simplification of scrap classification, was undertaken about three years ago. Formerly, as stated in the pamphlet just issued, iron and steel scrap has been bought and sold under different classifications which were drawn up to meet the convenience of individual interests, which compelled the dealer to use different classifications to meet the requirements of his various customers. Similarly, when buying scrap the dealer was forced to accept his material according to the classifications under which it was sold to him. This condition caused unnecessary confusion and attendant misunderstanding and loss.

At the present time all classes of scrap have been gathered together into a number of general categories which are designated according to the uses for which they are intended For example, there are the classes of scrap which will be used in blast furnaces, those intended for use in basic open-hearth furnaces, those for use in acid open-hearth furnaces, those for electric furnaces, for gray iron foundry practice, etc. As an example of the specification for scrap under each general classification, the category for use in blast furnaces consists in part of the following:

1. Pipe busheling scrap—Iron and steel pipe and flues (clean), bedstead tubing and similar material cut 8 in. and under in length, free from galvanized material and foreign metals.

2. Mixed borings and turnings—Clean, short steel and wrought iron turnings, drillings, screw cuttings and cast or malleable iron borings and drillings, free from stringy, bushy, tangled, corroded material, lumps, excessive oil, scale, other metals, dirt or foreign material of any kind. Alloy steel scrap may be excluded from these specifications by mutual agreement between buyer and seller.

Included in the pamphlet is a standard contract form for the purchase of scrap which was drawn up at the instigation of the National Association of Purchasing Agents.

These iron and steel scrap classifications have been accepted by the American Electric Railway Association and many other associations and by a large number of individual manufacturing companies. They have been accepted in "principle" by various associations, trade journals, technical societies and organizations approving of the general purpose and program of waste elimination. Among these is the ELECTRIC RAILWAY JOURNAL.

Copies of the pamphlet may be obtained from the superintendent of documents, Government Printing Office, Washington, D. C., at a cost of 10 cents each. Checks or money orders should be drawn in favor of the above-named official. Specifications and the standardized contract form for the purchase of scrap have been adopted for a period of one year, at the end of which time a revision conference will discuss and, if found desirable, modify the classifications. Suggestions and criticisms should be referred to the committee on iron and steel of the National Association of Purchasing Agents, of which H. C. Wickline, Union Steel Casting Company, Pittsburgh, Pa., is chairman.

Union Carbide Elects Two New Officers

W. F. Barrett has been elected to a vice-presidency of the Union Carbide & Carbon Corporation and G. W. Mead was made a director of the company at a meeting of the board of directors in New York on Nov. 23. Mr. Barrett began his association with the Union Carbide & Carbon Corporation in August, 1913, when he became works manager and chief engineer of the Linde Air Products Company, a subsidiary of the parent corporation. Mr. Mead has been identified with the company and its subsidiaries since 1906, when he was elected as the first secretary of the Union Carbide Company. Both of the officials have held many important positions with the Union Carbide & Carbon Corporation and its various subsidiaries and are at present officers and members of the boards of a large number of the companies.

Duluth and Indianapolis Will Use Johnson Fare Boxes

The Duluth Street Railway and the Indianapolis Street Railway have ordered 110 and 370 type D Johnson fare boxes respectively and will place these on all cars. These boxes register pennies, nickels, dimes and ticket tokens. They have two registering dials, one for cash fares and one for metal token ticket fares.

Metal, Coal and Material Prices

Metals—New York	Dec. 21, 1926
Copper, electrolytic, cents per lb.	13.35
Copper wire, cents per lb.	15.75
Lead, cents per lb.	7.80
Zinc, cents per lb.	7.47
Tin, Straits, cents per lb.	68.00
Bituminous coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.325
Somerset mine run, Boston, net tons	2.75
Pittsburgh mine run, Pittsburgh, net tons	1.25
Franklin, Ill., screenings, Chicago, net tons	1.75
Central, Ill., screenings, Chicago, net tons	1.375
Kansas screenings, Kansas City, net tons	2.30
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.00
Weatherproof wire base, N.Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.3
White lead in oil (100-lb. keg), N. Y., cents per lb.	14.75
Turpentine (bbl. lots), N. Y., per gal.	$0.89

Rolling Stock

Toledo, Ohio.—Several of the newly remodeled cars of the 700 type have recently made their appearance on various lines of the Community Traction Company over which one-man cars are in operation. The modernized equipment has leather upholstery, new trucks, various provisions for eliminating noise and complete one-man safety devices. A large number of cars are to be similarly rebuilt in the general program of rehabilitation which the Community Traction Company has undertaken. The new arch-deck roof is a feature of the model cars. The work is being carried on at the Central Avenue carhouse in Toledo.

Track and Line

Memphis Street Railway, Memphis, Tenn., has started work on the extension of the Central-Poplar car line from Tucker Street to Florence Street. The extension, which is to cost $23,000, is to provide turn-back facilities on the Central-Poplar line that one-man cars may be installed. Work will be completed in about 60 days.

Tri City Railway, Davenport, Iowa., is erecting 1½ miles of new trolley line. This improvement will entail a total expenditure of $3,000 or more.

Trade Notes

J. M. Van Nieukerken recently joined the American Brown Boveri Electric Corporation at the Camden, N. J., plant as a railroad project engineer. Mr. Van Nieukerken is a graduate of the Delft Technical University in electrical engineering and was previously connected with General Electric Company, Ltd., Birmingham, England; British Westinghouse Electric & Manufacturing Company, Ltd., Manchester, England; Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and the Cleveland Union Terminal Company, Cleveland, Ohio.

Baltimore, Md.—A corporation is being organized to authorize the manufacture and sale of several new types of car parts. Featured in the line will be the Suarez universal joint coupler, designed especially for articulated cars.

A. W. Scarratt has been appointed assistant chief engineer of the Hyatt Roller Bearing Company, Newark, N. J. Mr. Scarratt is well known in engineering circles through long association with the electric railway and power house engineering fields, as well as with tractor and power farm implement development. He was for many years with the Minneapolis Steel & Machinery Company, and before that spent eight years with the Twin City Rapid Transit Company, five years in the mechanical department and three in power house and electrical development work. Mr. Scarratt still retains the office of secretary of the Minneapolis Section of the Society of Automotive Engineers.

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No. 26

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Recording Accomplishment

COMPLETION of the year 1926 brings to a close another volume of ELECTRIC RAILWAY JOURNAL. In the industry the year has been one of accomplishment. Men in the electric railway business are wide awake and are making progress.

This activity is reflected in the pages of the JOURNAL. They have been replete with information indicative of the new order of things. To illustrate the increase in activity, the index for volume 68, exclusive of title and explanatory pages, published in this issue, fills eighteen pages instead of the usual sixteen. This expansion has been necessary to cover adequately the widened range of subjects and items.

A glance through the index will show more than ever the wealth of material included in the JOURNAL and the thoroughness of treatment. Furthermore, it will show the accessibility to information provided through the careful selection of key words and cross-references, making the location of any article published in the past six months a simple matter. The JOURNAL is the medium for disseminating the best thought of the industry—the semi-annual index the key which keeps it always accessible to the industry.

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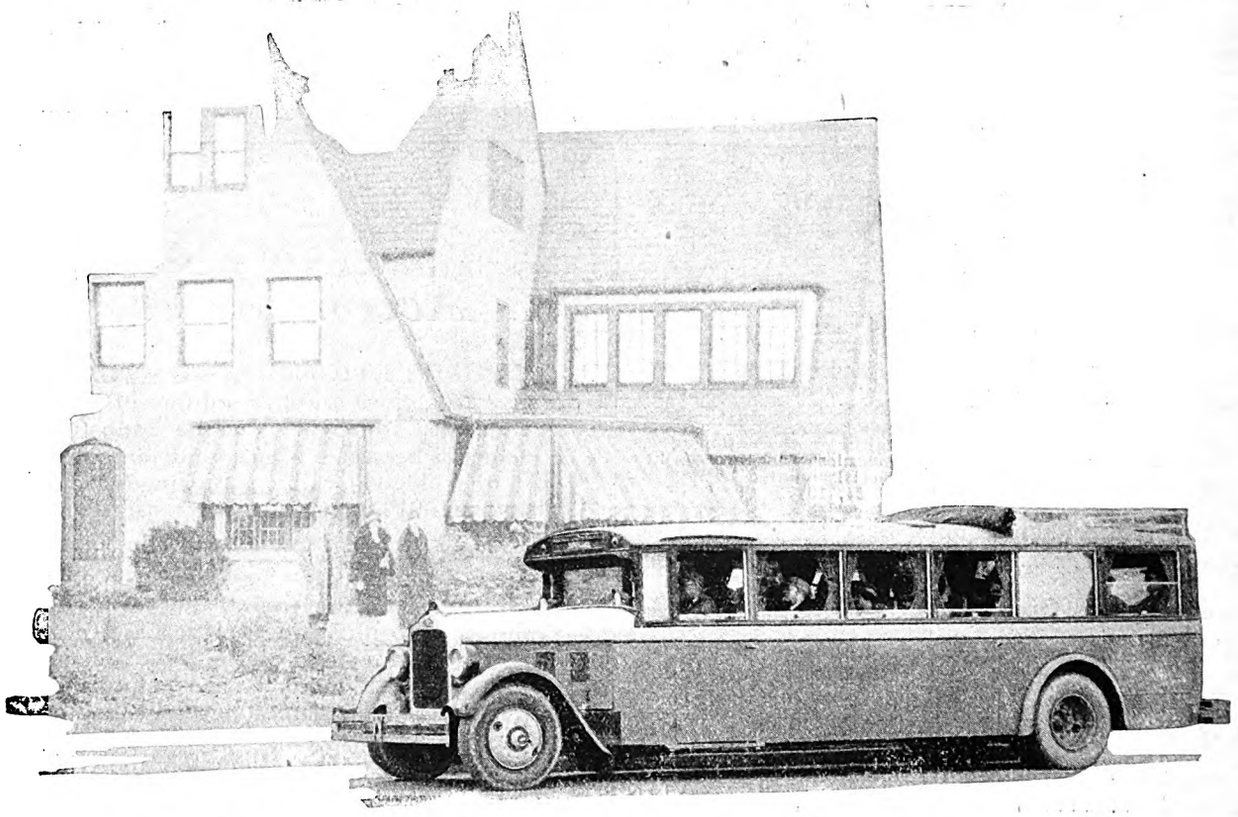

The residential limited

Back from the tracks lies virgin territory as far as trolley invasion is concerned—and consciously so. The inhabitants of these semi-rural sections seek not the inconvenience, but the quietude, although inconvenience is theirs. The ordinary public conveyance is, through its disturbing element, most unwelcome.

Many traction companies are today following the modern trend by moving inoffensively into the suburbs, meeting their patrons and selling their service with luxuriously appointed coaches.

These gasoline parlor cars, bulky as they are, equipped with motors capable of developing speed to compete with electric road schedules, are giving traditional electric road safety through the security of Westinghouse Automotive Air Brakes.

The recognized leaders among builders of highway transportation have accepted Westinghouse Air Brakes as the method of retardation in keeping with modern speed, bulk, and perplexing traffic conditions that are detrimental to security and a sane service with physically actuated brakes.

Illustrated above is the new White, a recent 6 cylinder entrant into the field of highway transportation that is meeting favor among operators, and is, like its smaller brother the four cylinder 50-B, factory equipped with Westinghouse Automotive Air Brakes.

WESTINGHOUSE TRACTION BRAKE COMPANY
Automotive Division, Wilmerding, Pa.

6163

WESTINGHOUSE
AUTOMOTIVE AIR BRAKES

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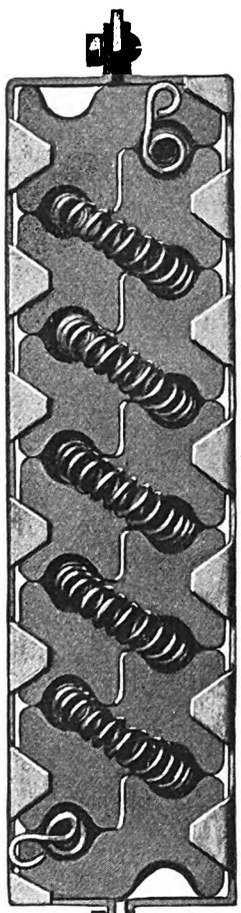
A Resistance Welder Of New and Better Design

Ample capacity, flexibility of control and a rigid arc-welded steel frame



NOT MERELY in one or two details, but throughout its construction is this new O-B Type LW Resistance Welder better built, for maximum reliability, safety, and continuity of service.

It is built of steel, on a unique sectionalized plan. Each of its 14 interchangeable resistance element units may be lifted out separately for inspection. They are arranged in two separate series-connected element blocks instead of in a single block, thus reducing voltage stress by half.

Insulation has been developed to such a degree that shorts and grounds are virtually impossible. And its special refractory porcelain insulators withstand the rapid changes in temperature without harm. In addition, the welder affords exceptional rapidity of heat dissipation. These properties, together with the strength of a rigidly braced, arc-welded steel frame, give you the maximum in possible service.

Use this portable machine for welding rail bonds, building up cupped joints, and for miscellaneous shop work. See how quickly it pays for itself, not once, but many times.

Write for Folder 50B which gives complete details.

Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg. Co., Limited
Niagara Falls, Canada
241B

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LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
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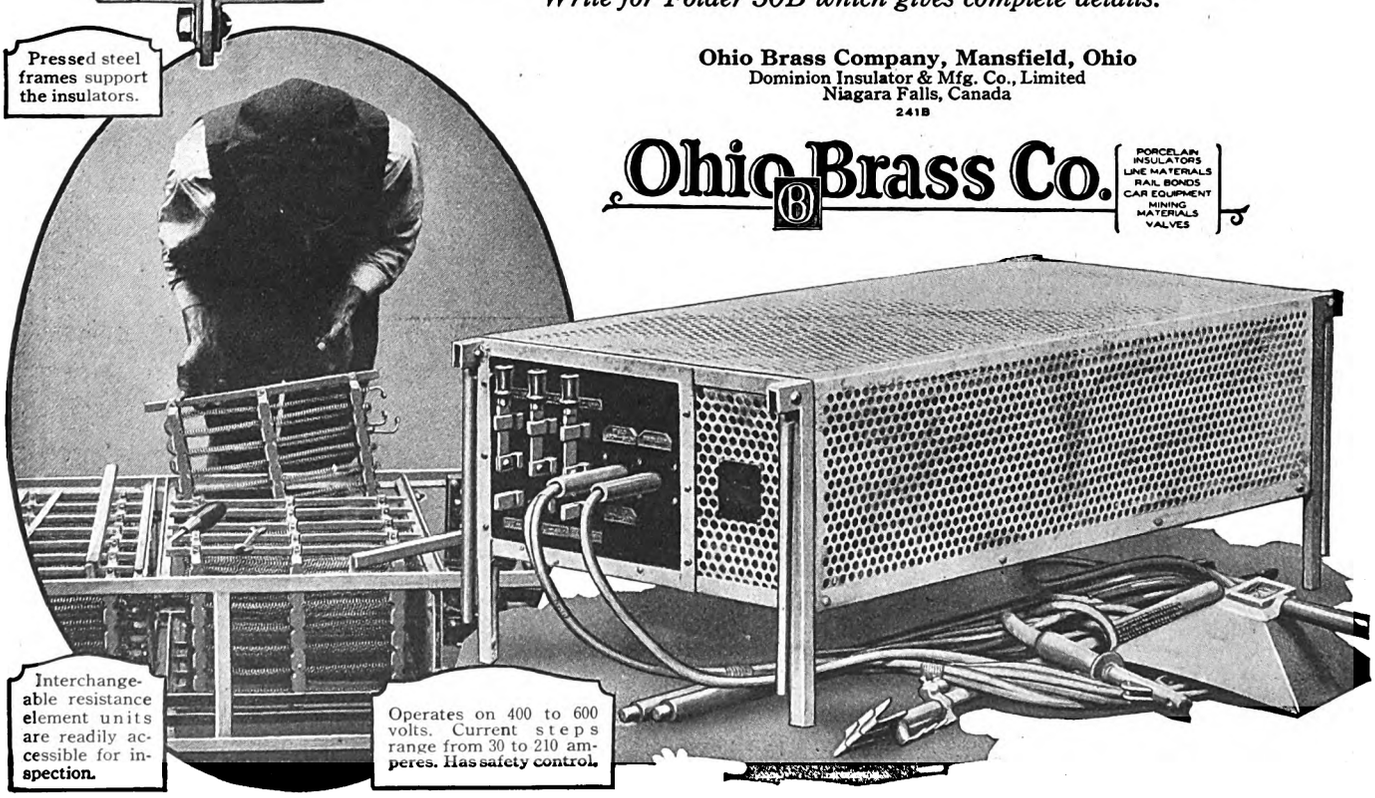
VALVES



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Let us recapitulate the findings on

DUPLEX AIR AND MAGNETIC BRAKES

One of the features of BALANCED DESIGN

From the brake tests conducted by the Buffalo & Erie on July 17, 1926.

Tests were made on both double and single truck cars, first with normal rail and then with 1,075 ft. of both rails greased. Results for the double truck car weighing 37,500 lb. and with air pressure about 70 lb., showed an advantage for the Duplex Brakes of 192 feet and 714 feet respectively, in stopping from a speed of approximately 45 mph.

From further tests conducted by the Buffalo & Erie on July 20th.

Heads of both rails on a straight section of track coated with heavy car oil for 700 ft. Car speed 45 mph. Car stopped in 470 ft. with application of both air and magnetic brakes. Car went through 700 ft. oiled section and 85 ft. on dry track with air alone.

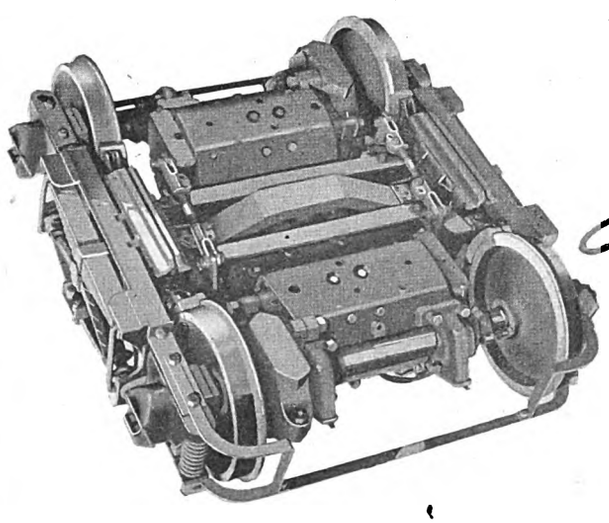
From results of our own tests—

"60 mph to stop in 800 feet on normal dry track."

BALANCED DESIGN resulted in the first practical application of this most modern braking system. It is typical of a modern car building program in which new speed, new comfort, new operating economy and new safety have been made the basis for car designs that are really NEW.

Let us talk it over with you.

THE CINCINNATI CAR COMPANY
CINCINNATI, OHIO



CINCINNATI *New* CARS

A step ahead of the modern trend

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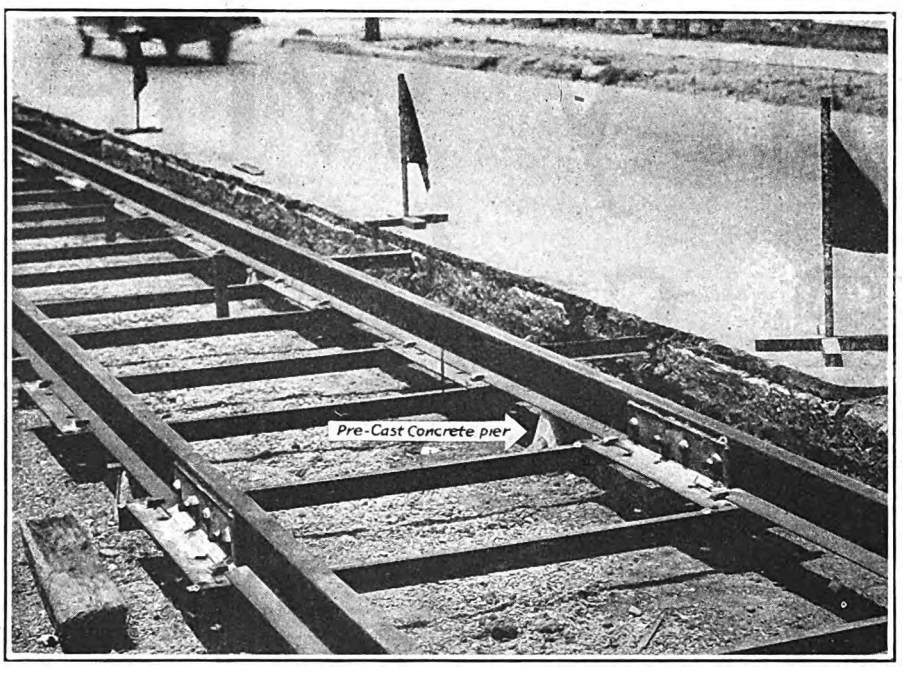

"Perishable materials are sometimes utilized in the construction of track, in the effort to secure flexibility, and *the life of the track is shortened* to that of the perishable material"*

THIS simple idea is one of the fundamentals of Twin Tie construction. The combination of steel and concrete provides a uniform structure in which no part limits, by its shorter life, the life of the whole.

When steel, well proportioned, provides large bearing surfaces, tie members, and reinforcement for the concrete foundation of such construction, the life of the rail becomes the limiting factor in the life of your track.

Initial costs of twin tie construction are very low. Detailed figures from many jobs are available for comparison with your estimate and costs.—Write for them today.

*Quotation from a paper, "Modern City Track," read by Nelson R. Love, Chief Engineer of The Denver Tramway Corporation, at the Mid-West Electric Railway Association Meeting at Denver, July, 1926. We will be pleased to mail a copy of the complete article to those interested.

The International Steel Tie Co.
Cleveland, Ohio

Steel Twin Tie Track

Renewable Track—Permanent Foundation

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Gary wheels are *safe*

Gary wheels are *economical*

Gary wheels are *dependable*

What more can be said?

Illinois Steel Company

General Offices: 208 S. LaSalle St., Chicago, Illinois

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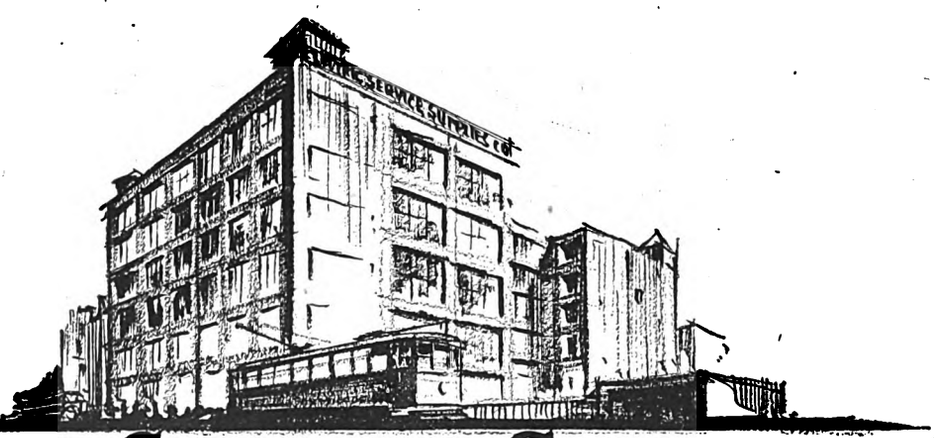
Merry Christmas



ELECTRIC SERVICE SUPPLIES CO.

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Illinois Merchants' Bank Bldg.

PITTSBURGH
1123 Bessemer Building

BOSTON
88 Broad St.

SCRANTON
316 N. Washington Ave.

DETROIT
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Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Vancouver

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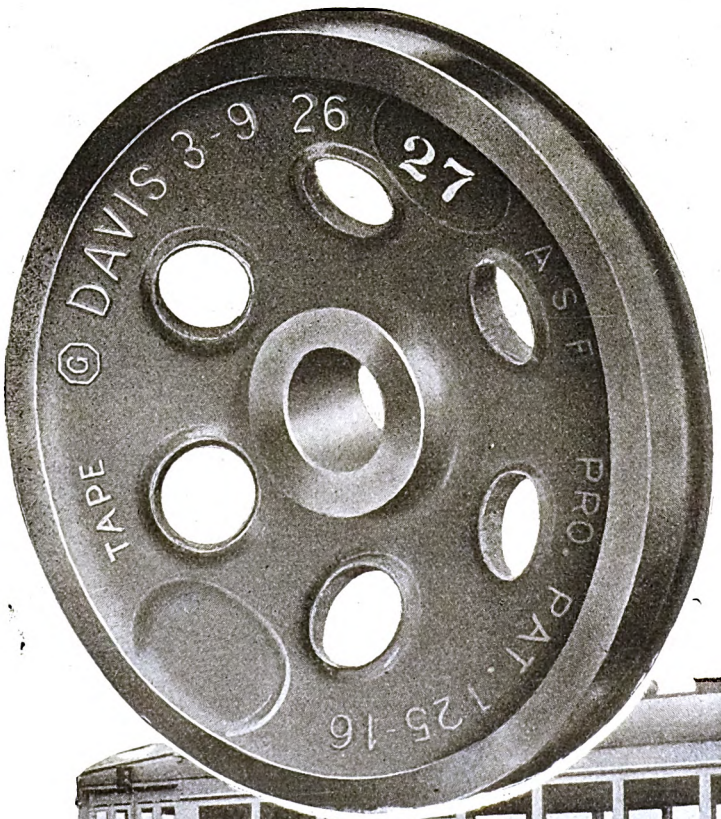
DAVIS "One-Wear" Steel Wheels

—longer life and greater mileage



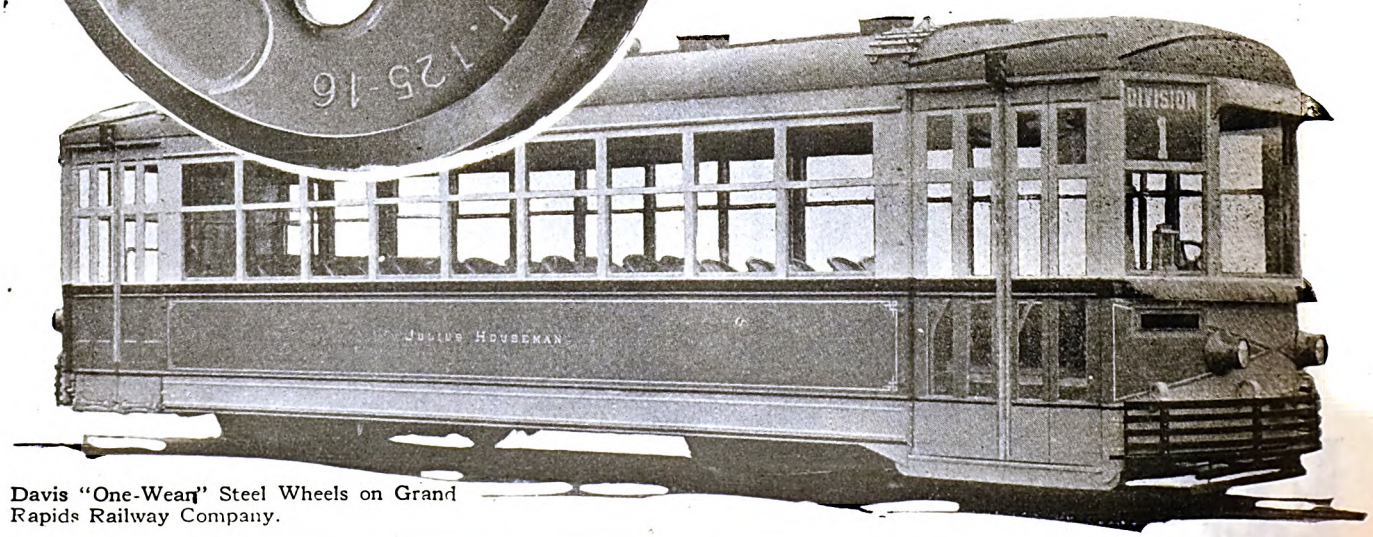
Today, experienced buyers are specifying Davis "One-Wear" Steel Wheels for greater serviceability of equipment. Made from special steel, and heat-treated, the Davis "One-Wear" Steel Wheel is fundamentally strong.

The usual maintenance requirements and expense in keeping wheels in service is avoided. Throughout their longer life, they need no contour reconditioning.

Scientifically made so as to possess greatest strength, they resist the greater stresses of modern operation.

Freedom from flats and shell-outs is worth your investigation.

Why not have this longer life, greater mileage, and real economy.



Davis "One-Wear" Steel Wheels on Grand Rapids Railway Company.

Modern Wheels for Modern Cars

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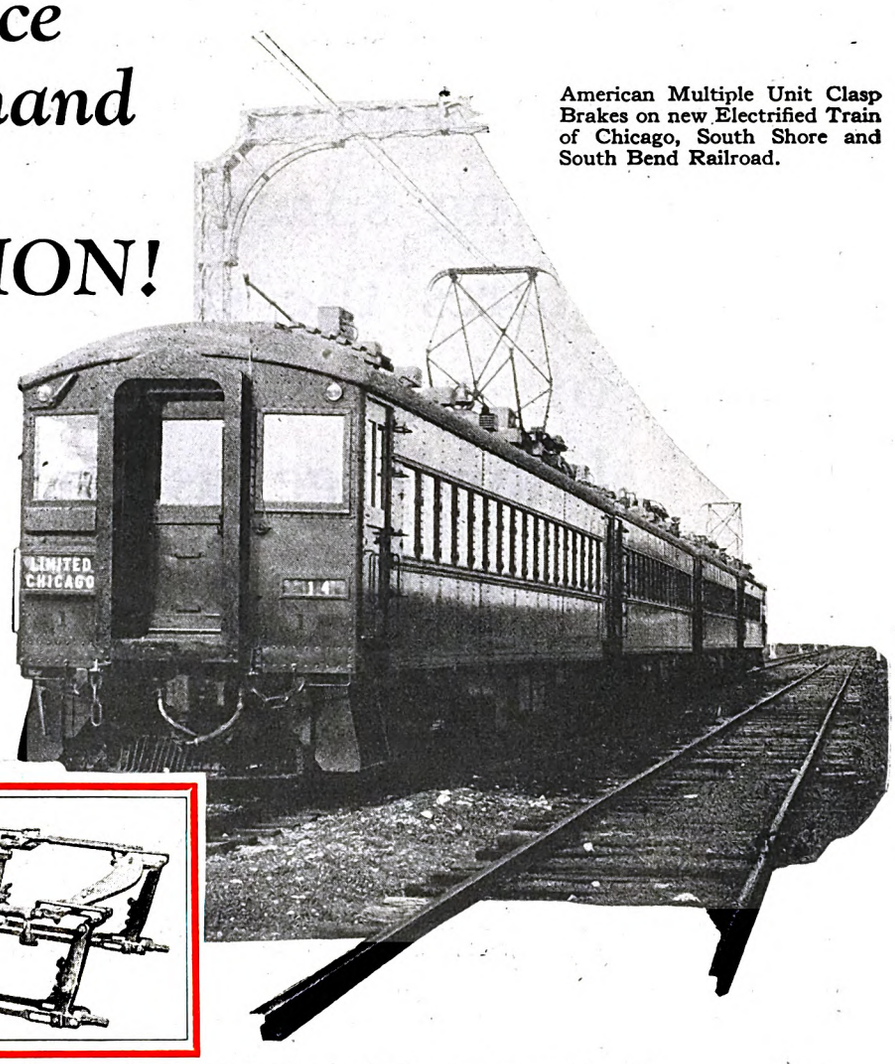
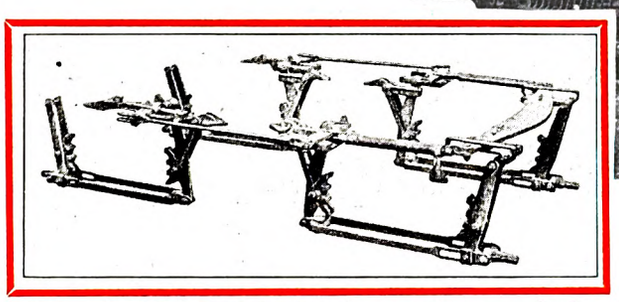
American Multiple Unit Clasp Brake

Speedier Service Schedules demand QUICK RETARDATION!



American Multiple Unit Clasp Brakes on new Electrified Train of Chicago, South Shore and South Bend Railroad.



Time is an important factor in modern suburban and street railway service. Obtaining higher rates of retardation is one way of gaining time and keeping faster schedules. It depends on your brakes.

American Multiple Unit Clasp Brakes balance the forces in the truck and double the friction area of the Brake Shoes.

American Multiple Unit Clasp Brakes are designed and manufactured on a sound engineering basis to produce short, smooth stops that modern service demands.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

Modern Brakes for Modern Cars

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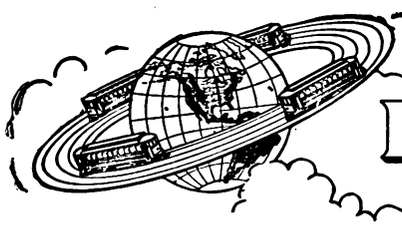
The creation and maintenance of car advertising space values requires the same degree of highly specialized knowledge as the construction and maintenance of railroads. Such tasks should be delegated only to those of widest experience and longest record of success.



Barron G. Collier
INCORPORATED
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Merry Christmas

and a HAPPY · NEW · YEAR

NATIONAL PNEUMATIC COMPANY

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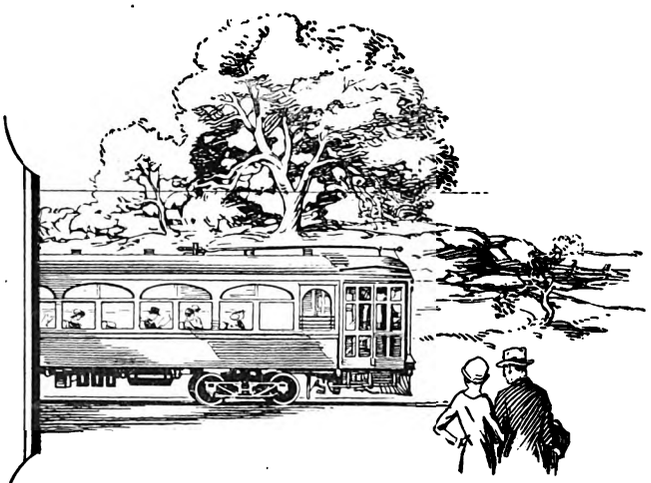
Of all the phases of modernization, increased schedule speed has the most far-reaching effect on earnings. It boosts your "production" per man-hour, and thereby reduces operating cost per car-mile. Most important of all, *it sells more service.*



Do modern cars increase schedule speed?

Here are reports from six roads. Each has improved its schedules during recent years. In each case modern cars were necessary. General Electric car equipment is used on every road.

"New equipment was necessary to maintain the increased schedule speeds in most cases."

LEVIS (P. Q.) TRAMWAYS CO.

"New light-weight cars, weight 32,000 pounds using GE-258 Motors, have been purchased and these accelerate much faster than the older, heavy type of car."

MORRIS COUNTY (N. J.) TRACTION CO.

"Schedule speeds increased by a gradual cut in running time; also through new equipment affording better acceleration."

NEW ORLEANS (LA.) PUBLIC SERVICE, INC.

"Schedule speeds slightly increased. By reducing stand time; also by the use of new equipment."

BIRMINGHAM (ALA.) ELECTRIC CO.

"Our schedule speed has been increased. Made possible by better track conditions; improvements in equipment such as light-weight all-steel construction and improvements in the motor design which give the car a faster acceleration and running speed; giving more attention to schedule maintenance and construction; a more thorough study of traffic conditions."

SAN ANTONIO (TEX.) PUBLIC SERVICE COMPANY

"Schedule speed increased from 8 miles to 9.2 miles an hour. This was accomplished by making a survey and finding every possible place where the speed could be increased, and also by using new equipment in the form of safety cars with a quick pick up and by eliminating all unnecessary lagging."

WISCONSIN POWER & LIGHT CO.

The resources and the service of the entire G-E organization are available to consider the problems of modernization and co-ordination—to find the most effective means of transportation and to build appropriate equipment.

330-19

GENERAL ELECTRIC

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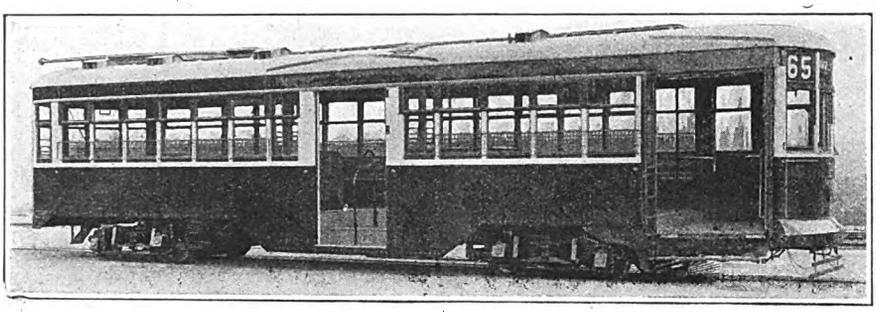


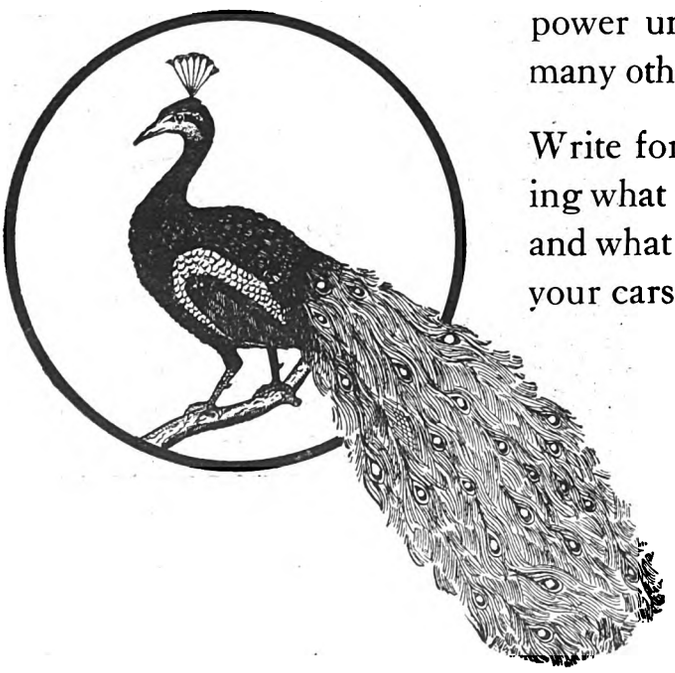
And on Modern Light-weight Combination City and Interurban Cars they specify—

PEACOCK STAFFLESS BRAKES!

Six new light-weight cars recently placed in both City and interurban service in Roanoke, Va., and vicinity, by the Roanoke Railway & Electric Company, are equipped with *Peacock Staffless Brakes!* Most modern cars are!

They have many advantages which especially adapt them to modern car design—improved appearance of platforms—light weight—minimum platform space occupation—chain winding capacity of 144 inches enabling them to develop maximum braking power under all conditions—and many others.

Write for facts and figures covering what they have done for others and what we know they will do for your cars.



National Brake Company, Inc.

890 Ellicott Square, Buffalo, N. Y.

Canadian Representative

Lyman Tube & Supply Co., Ltd., Montreal, Can.

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"Freedom from Tire Failures en Route"

When you have a 280-mile bus run, such as Interstate Stages, Inc., of Detroit, has daily between Detroit and Chicago, you want tire equipment that provides utmost dependability en route.

Mr. E. A. Blake, President of Interstate Stages, Inc., writes that his line has found that equipment in Goodyear Balloon Bus Tires. Mr. Blake's letter reads as follows:

"We have received numerous unsolicited testimonials from people who have enjoyed the riding qualities of Goodyear Balloon Bus Tires, which are standard equipment on all our Fageol Safety Stages, operating daily between Detroit and Chicago, a distance of 280 miles.

"This type of tire has more than met our expectations and is giving wonderful service and freedom from tire failures en route.

"This, in conjunction with their sure-footedness on slippery roads, combined with our air brakes, has earned us the reputation of being the safest and most dependable motor transportation service between these two points."

* * *

You can always depend on Goodyear Tires for active, tractive, economical service on any road.

They are durable. They cushion. And they cost less per tire mile.

* * *

Made with SUPERTWIST, the extra-elastic, extra-enduring fabric developed by Goodyear for Goodyear Pneumatic Tires. Goodyears provide for any motorbus service the last word in bus tire value.

Only Goodyear Tires are made with SUPERTWIST—yet they cost you no more.

More people ride on Goodyear Tires than on any other kind

BUS TIRES

Made with SUPERTWIST

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SALAAM

A doctor is highly honored in China.

Every coolie on meeting one salaams with both hands and sticks out his tongue.

The salaam symbolizes "How-do-you-do-sir."

And the tongue shows "I'm-pretty-well-thank-you."

Those of our readers who have Morganite brushes on their machines provide a similar greeting to the Morganite representative.

With a wave of the hand the operator directs him to the machines—

—and the gloss on the commutator (which is the tongue of the machine) signifies "Doing fine, thanks."

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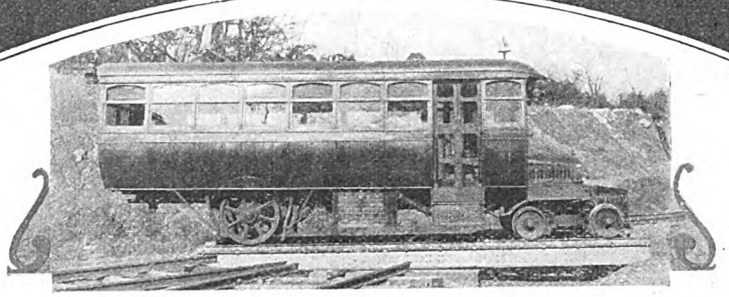

Electric Railways and Bus operators are installing Easton Turntables on account of their economic advantages. The installation cost is low and maintenance almost nil. Expedite the servicing in your shop or garage by using one of the Turntables: don't back around, turn around. They are easily turned, usually by one man, or can be made to be turned by the bus itself.

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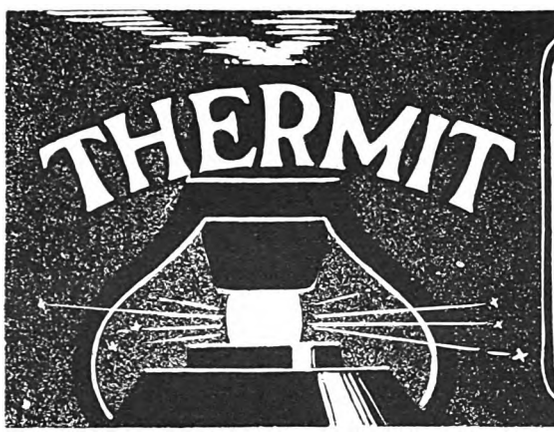

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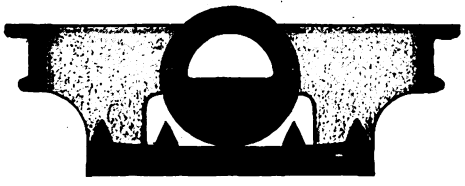

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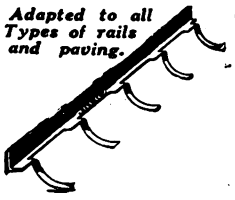

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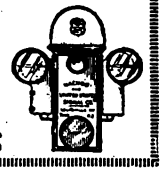

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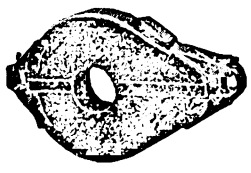

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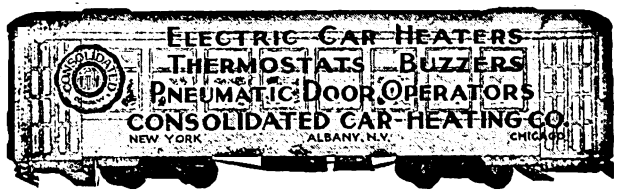

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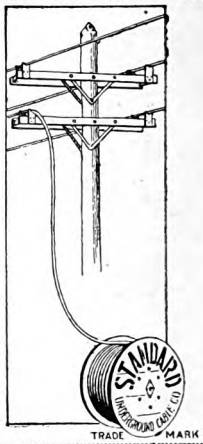

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Collier, Inc., Barron G.

Air Brakes
Westinghouse Air Brake Co.

Air Receivers & Aftercoolers
Ingersoll-Rand Co.

Anchors, Guy
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M Co.

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Columbia Machine Works
Elec. Service Supplies Co.

Automatic Return Switch Stands
Ramapo Ajax Corp.

Automatic Safety Switch Stands
Ramapo Ajax Corp.

Axles
Bemis Car Truck Co.
Bethlehem Steel Co.
Brill Co., The J. G.
Cincinnati Car Co.
Illinois Steel Co.
National Ry. Appliance Co.
Westinghouse E. & M. Co.

Axles, Steel
Carnegie Steel Co.
Ludlum Steel Co.

Badges and Buttons
Elec Service Supplies Co.
International Register Co.

Barges, Steel
American Bridge Co.

Bearings and Bearing Metals
Bemis Car Truck Co.
Brill Co., The J. G.
General Electric Co.
Westinghouse E. & M. Co.

Bearings, Center and Roller Side
Columbia Machine Works
Stucki Co., A.

Bearings, Roller
Timken Roller Bearing Co.

Bells and Buzzers
Consolidated Car Heating Co.

Bells and Gongs
Brill Co., The J. G.
Elec. Service Supplies Co.

Benders, Rail
Railway Trackwork Co.

Bodies, Bus
Brill Co., The J. G.

Body Material, Haskelite and Plymetl
Haskelite Mfg. Corp.

Boilers
Babcock & Wilcox Co.

Bolts and Nuts, Track
Illinois Steel Co.

Bond Testers
American Steel & Wire Co.
Electric Service Supplies Co.

Bonding Apparatus
American Steel & Wire Co.
Elec. Service Supplies Co.
Ohio Brass Co.
Railway Trackwork Co.
Una Welding & Bonding Co

Bonds, Rail
Amer. Steel & Wire Co.
Elec. Service Supplies Co.
General Electric Co.
Ohio Brass Co.
Railway Trackwork Co.
Una Welding & Bonding Co.
Westinghouse E. & M. Co.

Brackets and Cross Arms (See also Poles, Ties, Posts, etc.)
American Bridge Co.
Columbia Machine Works
Elec. Ry. Equipment Co.
Elec. Service Supplies Co.
Hubbard & Co.
Ohio Brass Co.

Brake Adjusters
Brill Co., The J. G.
National Ry. Appliance Co.
Westinghouse Tr. Br. Co.

Brake Shoes
American Brake Shoe & Foundry Co.
Bemis Car Truck Co.
Brill Co., The J. G.

Brakes, Brake Systems and Brake Parts
Bemis Car Truck Co
Brill Co., The J. G.
General Electric Co.
National Brake Co.
Westinghouse Tr. Br. Co.

Bridges, Steel
American Bridge Co.

Brushes, Carbon
General Electric Co.
Jeandron, W. J.
LeCarbone Co.
Morganite Brush Co.
Westinghouse E. & M. Co.

Brushes, Graphite
Morganite Brush Co.

Brushes, Wire, Pneumatic
Ingersoll-Rand Co.

Brushholders
Columbia Machine Works

Buildings, Steel
American Bridge Co.

Bulkheads
Haskelite Mfg. Corp.

Bunkers, Coal
American Bridge Co.

Bus Wheels, Steel
Heywood-Wakefield Co.

Buses
Brill Co., The J. G.

Bushings, Case Hardened and Manganese
Bemis Car Truck Co.
Brill Co., The J. G.
Columbia Machine Works

Cables (See Wires and Cables)

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Mica Insulator Co.

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Consolidated Car Heating Co.
Westinghouse E. & M. Co.

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Bethlehem Steel Co.

Cars, Dump
Brill Co., The J. G.
Differential Steel Car Co.

Cars, Gas-Electric
Brill Co., The J. G.
General Electric Co.
Westinghouse E. & M. Co.

Cars, Gas, Rail
Brill Co., The J. G.

Cars, Passenger, Freight, Express, etc.
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Brill Co., The J. G.
Cincinnati Car Co.
Kuhlman Car Co., G. C.
National Ry. Appliance Co.
Wason Mfg. Co

Cars, Second Hand
Electric Equipment Co.

Cars, Self-Propelled
Brill Co., The J. G.
General Electric Co.

Castings, Gray Iron and Steel
American Bridge Co.
American Steel Foundries
Bemis Car Truck Co.

Castings, Malleable & Brass
Bemis Car Truck Co.

Catchers and Retrievers, Trolley
Elec. Service Supplies Co.
Ohio Brass Co.
Wood Co., Chas. N.

Catenary Construction
Archbold-Brady Co.

Ceiling Car
Haskelite Mfg. Corp.
Pantasote Co., Inc.

Ceilings, Plywood, Panels
Haskelite Mfg. Corp.

Change Carriers
Cleveland Fare Box Co.
Electric Service Supplies Co.

Circuit-Breakers
General Electric Co.
Westinghouse E. & M. Co.

Clamps and Connectors for Wires and Cables
Columbia Machine Works
Elec. Ry. Equipment Co.
Elec. Service Supplies Co.
General Electric Co.
Hubbard & Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Cleaners and Scrapers Track (See also Snow-Plows, Sweepers and Brooms)
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Cincinnati Car Co.
Ohio Brass Co.

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General Electric Co.

Coil Banding and Winding Machines
Elec. Service Supplies Co.
Westinghouse E. & M. Co.

Coils, Armature and Field
General Electric Co.
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Coils, Choke and Kicking
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Coin Counting Machines
Cleveland Fare Box Co.
International Register Co.

Coin Sorting Machines
Cleveland Fare Box Co.

Coin Wrappers
Cleveland Fare Box Co.

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Elec. Service Supplies Co.
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Westinghouse E. & M. Co.
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General Electric Co.

Commutators or Parts
Cameron Electrical Mfg. Co.
General Electric Co.
Westinghouse E. & M. Co.

Compressors, Air
General Electric Co.
Ingersoll-Rand Co.
Westinghouse Tr. Br. Co.

Compressors, Air, Portable
Ingersoll-Rand Co.

Condensers
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Ingersoll-Rand Co.
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Condensor Papers
Irvington Varnish & Ins. Co.

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Standard Underground Cable Co.

Connectors, Solderless
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Connectors, Trailer Car
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Samson Cordage Works
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Cincinnati Car Co.
Ohio Brass Co.
Westinghouse Tr. Br. Co.

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Electric Service Supplies Co.

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Crossing Foundations
International Steel Tie Co.

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Wm. Wharton, Jr. & Co.

Crossings, Frogs & Switches
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Wm. Wharton, Jr. & Co.

Crossings, Manganese
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossings, Track (See Track Special Work)

Crossings, Trolley
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Westinghouse E. & M. Co.

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Brill Co., The J. G.
Pantasote Co., Inc.

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Electric Equipment Co.
Van Loan Corp., Irving S.

Derailing Devices (See also Track Work)

Derailing Switches
Ramapo Ajax Corp.

Destination Signs
Elec. Service Supplies Co.

Detective Service
Wish-Service, P. Edward

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National Pneumatic Co.

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General Electric Co.
Hale-Kilburn Co.

Doors, Folding Vestibule
National Pneumatic Co.

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Electric Service Supplies Co.
Ingersoll-Rand Co.
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Ears
Columbia Machine Works
Electric Service Supplies Co.
Ohio Brass Co.
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Railway Trackwork Co.

Electric Transmission Towers
American Bridge Co.

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Amer. Steel & Wire Co.
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Electrodes, Steel
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Brennan, F. J.
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Holst, Engelhardt W.
Jackson, Walter
Kelker & DeLeuw
McClellan & Junkersfeld
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Sanderson & Porter
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Hose, Bridges
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(Continued on page 28)

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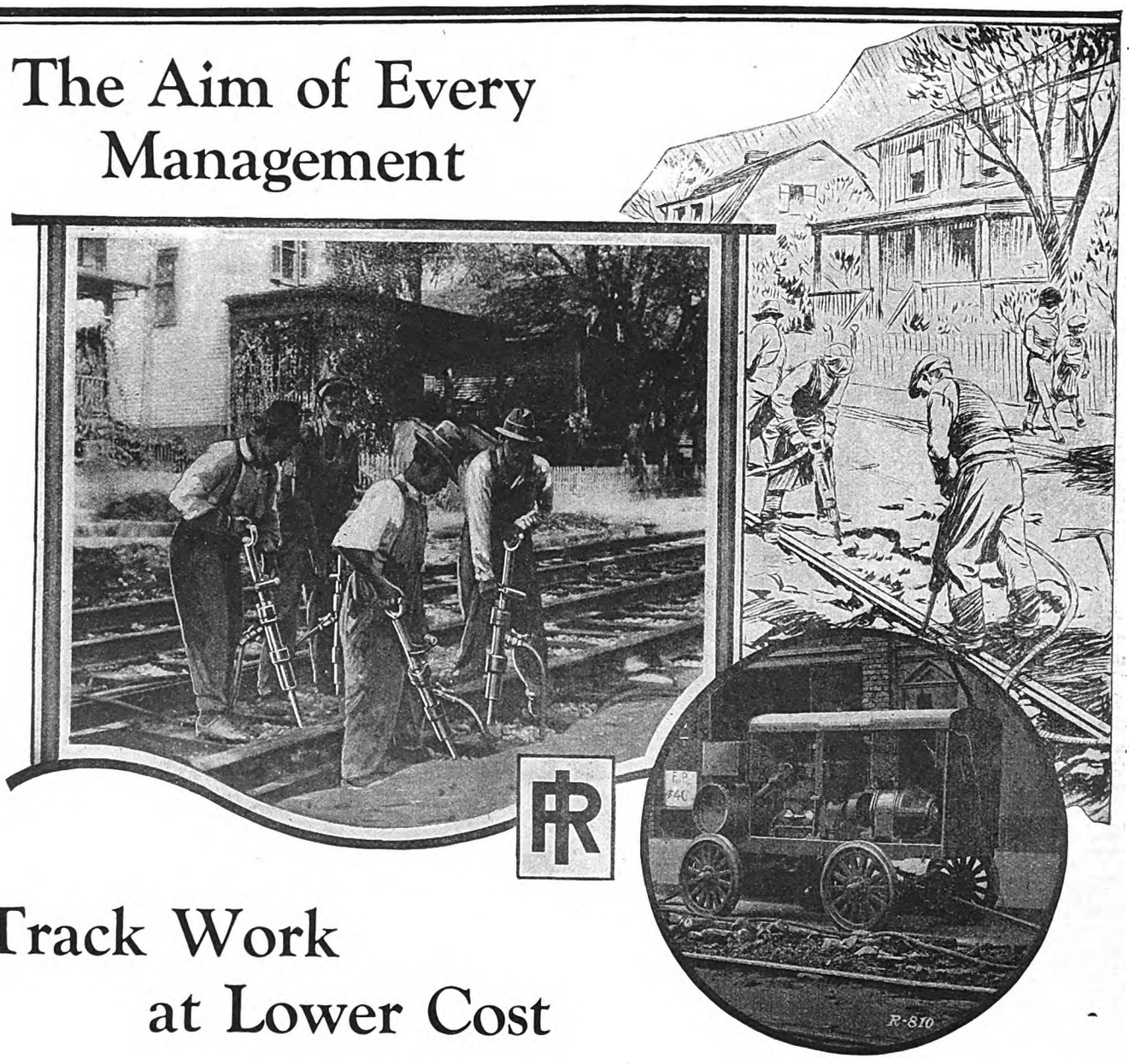
The Aim of Every Management



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Manganese Steel Switches, Frogs and Crossings
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Wood Co., Chas. N.
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Godwin Co., Inc., W. S.
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Pinion Pullers
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Pumps, Vacuum
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Ingersoll-Rand Co. (A. S. Cameron Steam Pump Works)
Punches, Ticket
International Register Co.
Wood Co., Chas. N.
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Ramapo Ajax Corp.
Rail Grinders (See Grinders)
Rail Joints
Carnegie Steel Co.
Illinois Steel Co.
Ludlum Steel Co.
Rail Joint Co.
Rail Joints, Welded
Lorain Steel Co.
Metal & Thermit Corp.
Rail Welding
Metal & Thermit Corp.
Railway Trackwork Co.
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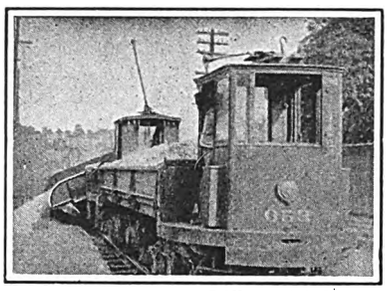

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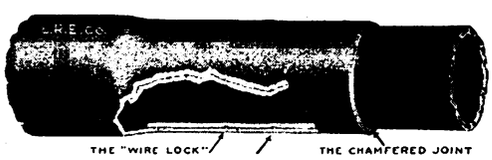

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Lowest Cost **Lightest Weight**
Least Maintenance **Greatest Adaptability**

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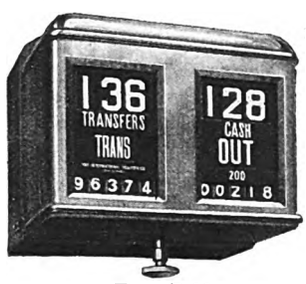

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Double Register

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Made in single and double types to meet requirements of service. For hand or foot, mechanical or electric operation. Counters, car fittings, conductors' punches.

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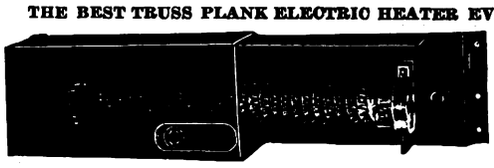

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Trade Mark Reg. U. S. Pat. Off.
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Carefully inspected and guaranteed free from flaws.
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is turned out with equal care in our shops. The orders we fill differ only in magnitude; small orders command our utmost care and skill just as do large orders. CAMERON quality applies to every coil or segment that we can make, as well as to every commutator we build. That's why so many electric railway men rely absolutely on our name.

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Car Heating and Ventilation

are two of the winter problems that you must settle without delay. We can show you how to take care of both, with one equipment. Now is the time to get your cars ready for next winter. Write for details.

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Our advertisement in the issue of December 18 showed how

HASKELITE and PLYMETL

cars require practically no maintenance.

Another ad will appear next week.

HASKELITE MANUFACTURING CORPORATION
133 W. Washington St., Chicago, Ill.

Hale and Kilburn SEATS

Better Quality Seats For Cars and Buses

Hale-Kilburn Co.
1800 Lehigh Ave., Philadelphia, Pa.

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ELECTRIC RAILWAY JOURNAL

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Motor Wheel PRODUCTS

Spokesteel

the New Wheel for Buses and Trucks —by

THE finest material ever possible in metal wheels has been combined with the undeniable advantages of spoked construction. Absolute surety, reduced weight, simple mounting and easy inflation save trouble, tires, and time. Sponsored by the world's largest wheel makers. MOTOR WHEEL CORPORATION, LANSING, MICHIGAN

Motor Wheel

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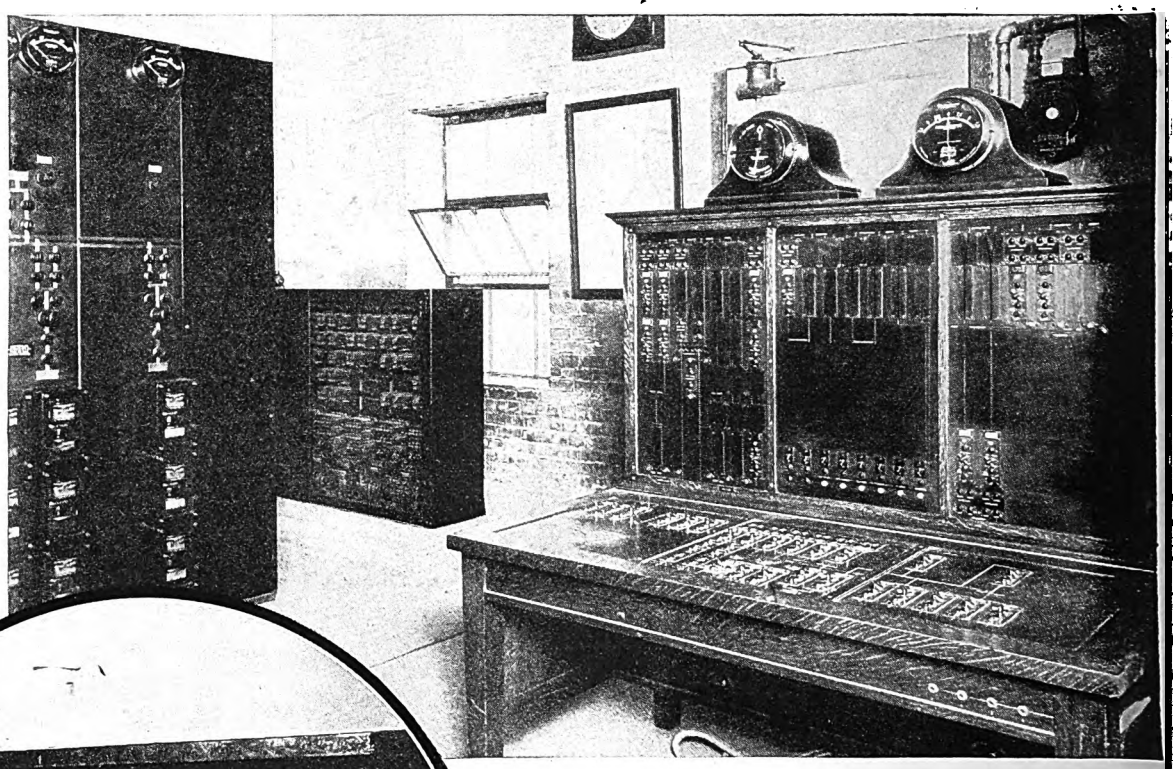

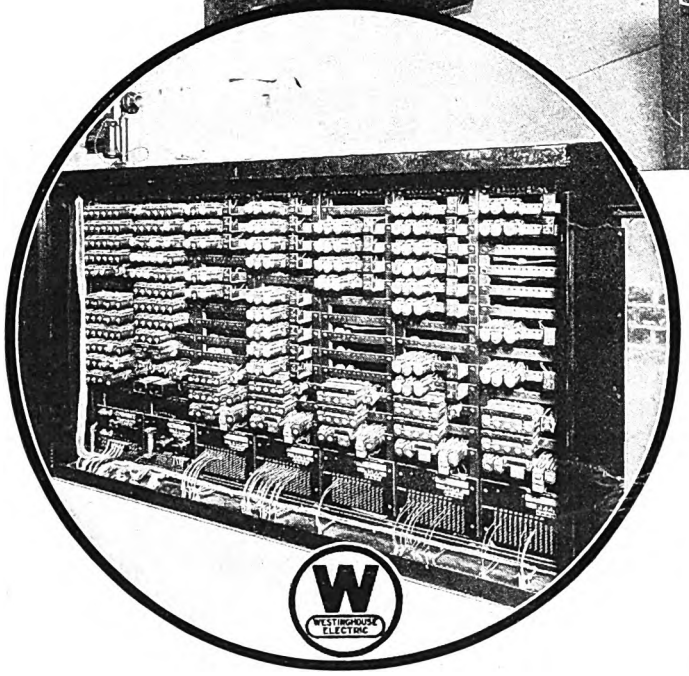

By means of Westinghouse Supervisory Control the operator at the St. George substation of the Staten Island Rapid Transit Railway System controls the entire system. Under his control are four automatic railway substations, and two high-voltage power switching substations.

Above are shown the dispatcher's control desk at the St. George substation and the Clifton Junction substation relay cabinet.

1926

Trustworthy Apparatus

ONLY standard automatic telephone relays are used in Westinghouse Supervisory Control Systems. They are peculiarly adapted to the needs of supervisory control. Years of use on telephone lines have proved their dependability.

That the design of these relays is correct is shown by their operating records. A single unit has made, on test, more than 50,000,000 circuit closings without failure or any appreciable change in contact resistance.

In some large city telephone exchanges, after 15 years of continuous operation, the relay failures are only about 200 a year for 50,000,000 operations. In one large exchange the percentage of failures is but one in 5,000,000. The relays are given only an occasional inspection.

That is reliability.

And this is the kind of apparatus used in Westinghouse Supervisory Control Systems.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania

Sales Offices in all Principal Cities of the United States and Foreign Countries

Westinghouse

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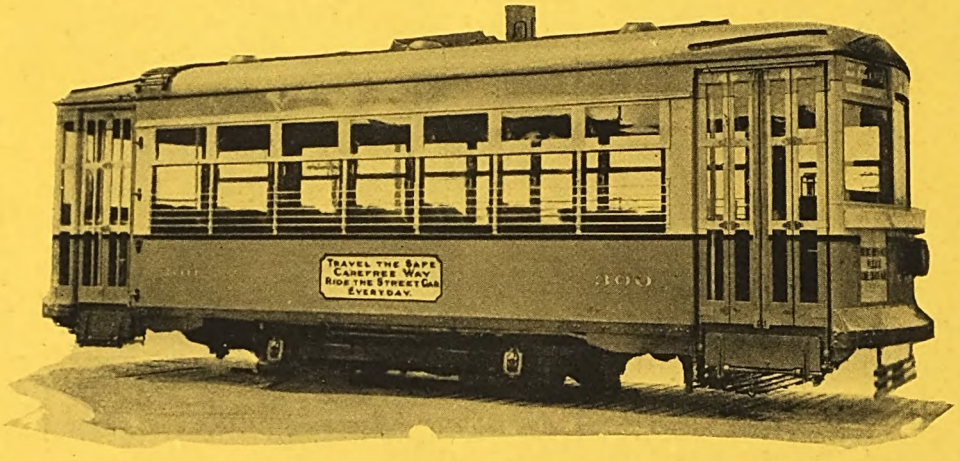
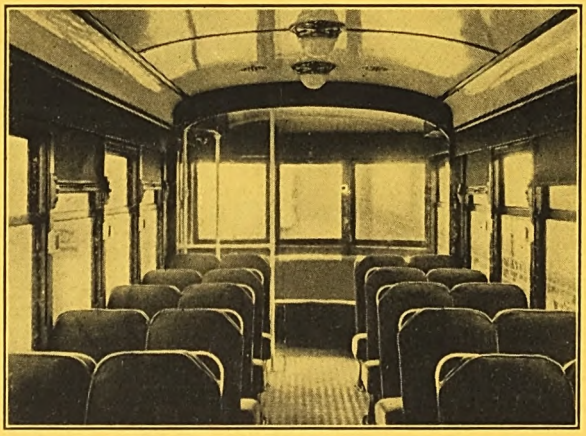


Thirty "1926" Safety Cars—

Another electric railway, with utmost confidence in its future, has just placed in service 30 new single-truck safety cars equipped in 1926 style and built by the American Car Company.

Plush upholstered Brill No. 105-B type non-reversible seats with divided backs, dome lights, control equipment and piping encased, and rubber tile floor covering, are included among the principal innovations. Numerous slogans are painted on the sides of the cars.



Attractively finished and equipped for comfort to stimulate car-riding

THE J. G. BRILL COMPANY
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AMERICAN CAR CO. ST. LOUIS MO. — G.C. KUHLMAN CAR CO. CLEVELAND, OHIO. — WASON MANF'G CO. SPRINGFIELD, MASS.

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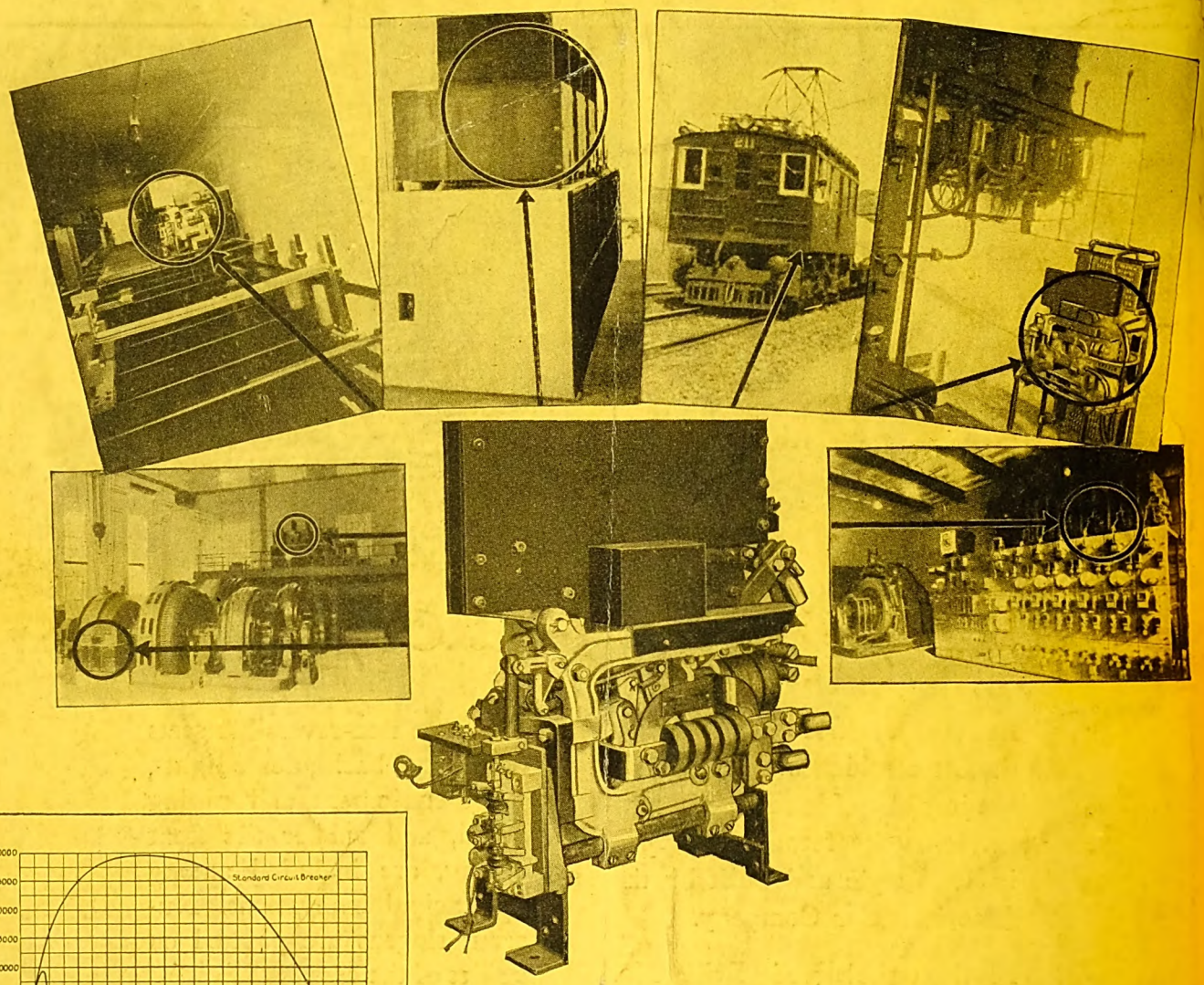

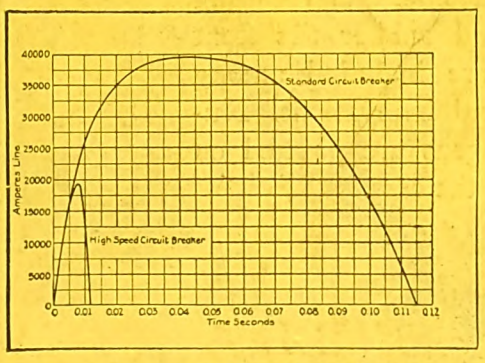

The measure of the added protection

Put it where convenient —it's self-contained

—and the accompanying curves plainly show the ideal character of protection which the G-E High-Speed Circuit Breaker provides. It protects synchronous converters, generators, motor-generators, rectifiers, motors, and feeders from overloads and short circuits. It can be installed to protect old or new machines without any change in their design or arrangement.

Backed by 9 years of experience —and by 900 in use

Bulletin 44742.1 describes the G-E High-Speed Breaker. Your G-E office has copies.

3-17

GENERAL ELECTRIC

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ELECTRIC RAILWAY JOURNAL

DEC 27 1926

Timken-Equipped A. E C. buses are used by the est Bridgford Urban District, England

Common carriers on streets, highways, and rails, in Europe, as in America, are being Timken-equipped. The special considerations of safety, comfort, economy, endurance and speed are being met by the special features of Timken Bearings and the responsibility of the Timken institution.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

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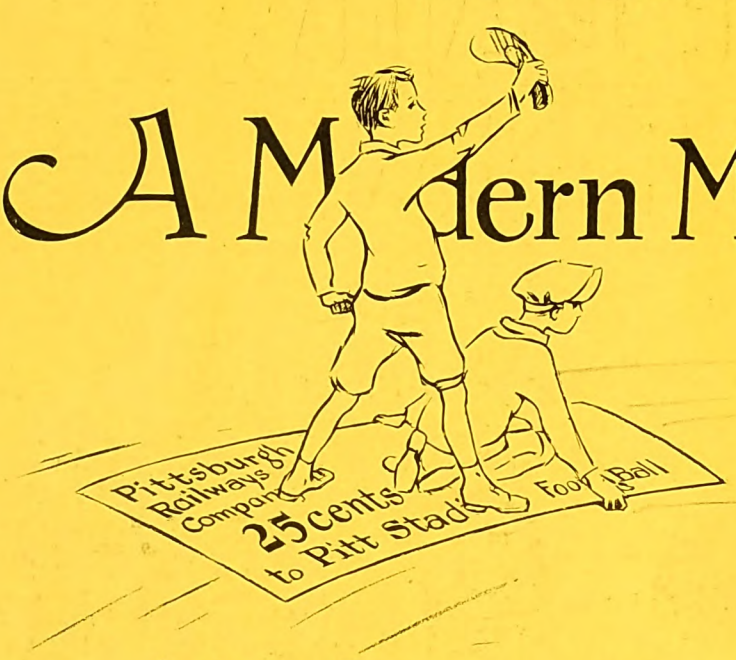

—brings Joy to thousands of boys, *and Street Railway Companies, too.*

THE Pittsburgh Railways Company, notable in the traction industry because of its efficient modernization program and its excellent service, has gained during the past season further popularity among its patrons and prospective patrons.

Cooperating with the University of Pittsburgh, Carnegie Institute of Technology and Pittsburgh's leading newspapers, the Pittsburgh Railways Company offered thousands of boys an opportunity to see major college football games at either of the city's large stadiums, in addition to round-trip transportation to and from home on passes—"*all for the price of a quarter*".

The inestimable good-will won by this action of the Pittsburgh Railways Company was manifested, not only by the youngsters themselves, but also by the parents. By this playtime offer, the company has assured for itself the friendship and support of not only potential car-riders, but,—looking forward—the car-riders of tomorrow.

An average of five thousand boys have been afforded the opportunity of seeing college football each week, the attendance increasing steadily, and consequently, during this afternoon period the off-peak curve has been nearly levelled out.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the United States and Foreign Countries

MEMBER AERA 1926

Westinghouse

X91013

Approximately 2400 Westinghouse 514 Motors are in service on cars of the Pgh. Rwys. Co.

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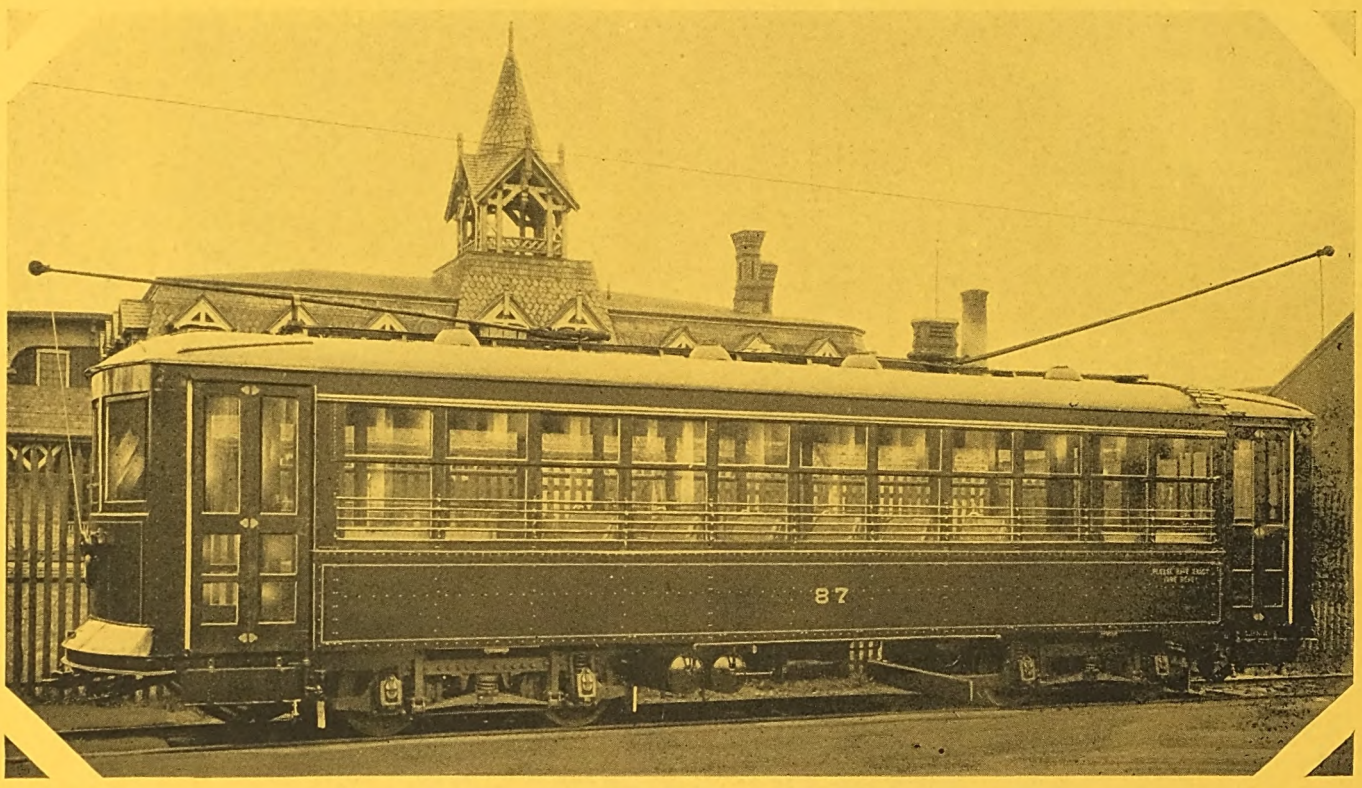

Wason-built light-weight cars for Milford & Uxbridge Street Railway

Light-weight Modern Cars

eliminate unnecessary expense

Excessively heavy cars are expensive to operate. With the introduction of new modern cars the railway company is relieved of its burden of moving unnecessary weight, and increased efficiency results. The Milford & Uxbridge Street Railway reduced its operating cost per car mile from 34.20 to 26.55 cents.

	Actual Operating Costs Per Car Mile	
	Old Cars	New Cars
Way and Structures	5.07	3.61
Maintenance of Equipment	3.09	3.25
Power	8.15	6.72
Conducting Transportation	14.92	10.40
Traffic	.....	.....
General and Misc.	2.97	2.57
Total	34.20	26.55

THE J. G. BRILL COMPANY
PHILADELPHIA, PA.
AMERICAN CAR CO. ST. LOUIS MO. — G. C. KUHLMAN CAR CO. CLEVELAND, OHIO. — WASON MANF'G CO. SPRINGFIELD, MASS

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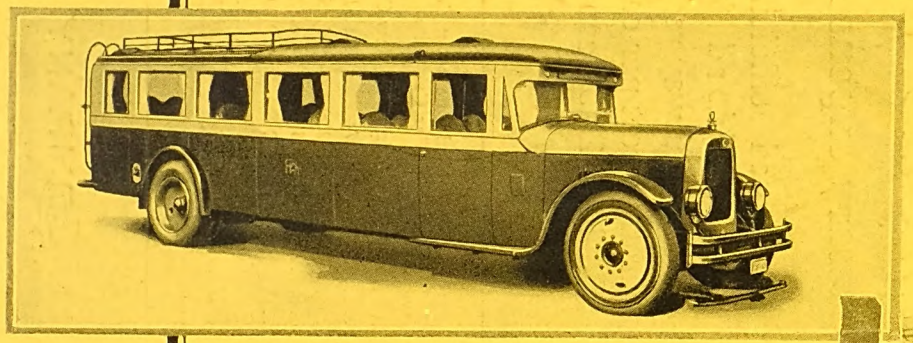
Not one pull-in with Gas-Electrics



33,225.7 miles in one day

. . . on the day of the great fight for the heavy-weight championship, we had in operation our entire motor bus fleet consisting of 362 buses, carrying approximately 150,000 passengers and did not have a single bus taken out of service for any reason. This includes not only our entire city operation, but also intercity buses which, as you know, operate from Philadelphia to Atlantic City, New York, Wilmington, Baltimore, Washington, and even over the Pennsylvania mountains to Niagara Falls, N. Y."

— FROM A LETTER WRITTEN BY MR. J. A. QUEENEY, VICE-PRESIDENT OF MITTEN MANAGEMENT, INC.

The Gas-Electric bus has no clutch or gear-shift transmission. The smooth and even flow of power makes possible more rapid acceleration, consequently higher schedule speeds. These are compelling factors in decreasing operating costs.

Philadelphia is not the only city which has tried the Gas-Electric bus and found it to be superior. There is an ever-increasing list of satisfied users.

General Electric has been building equipment for the transportation industry for more than thirty years. The G-E equipped Gas-Electric bus was designed to meet the urgent need for a more economical and more dependable rubber tired vehicle. The Gas-Electric buses of the Philadelphia Rural Transit Company—both city and intercity types—are daily demonstrating the many advantages of this design.

390 18C

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

SALES OFFICES IN PRINCIPAL CITIES

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